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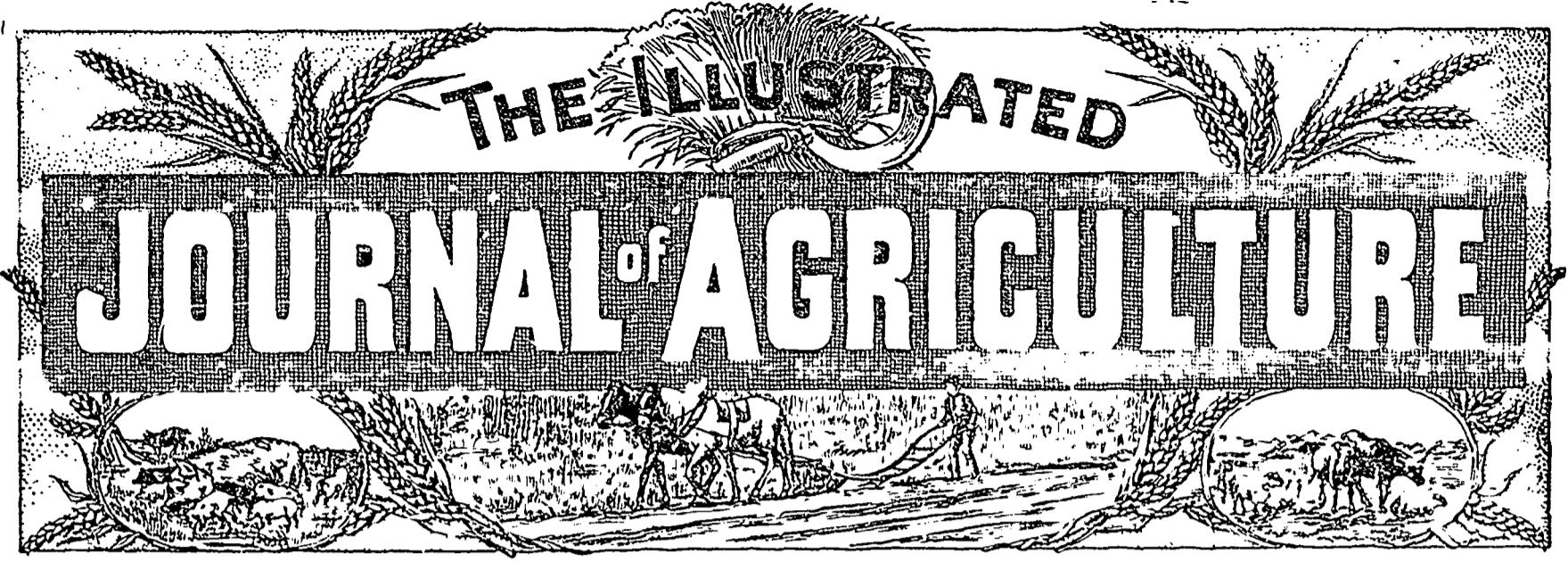
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Vol. 19, No. 4.

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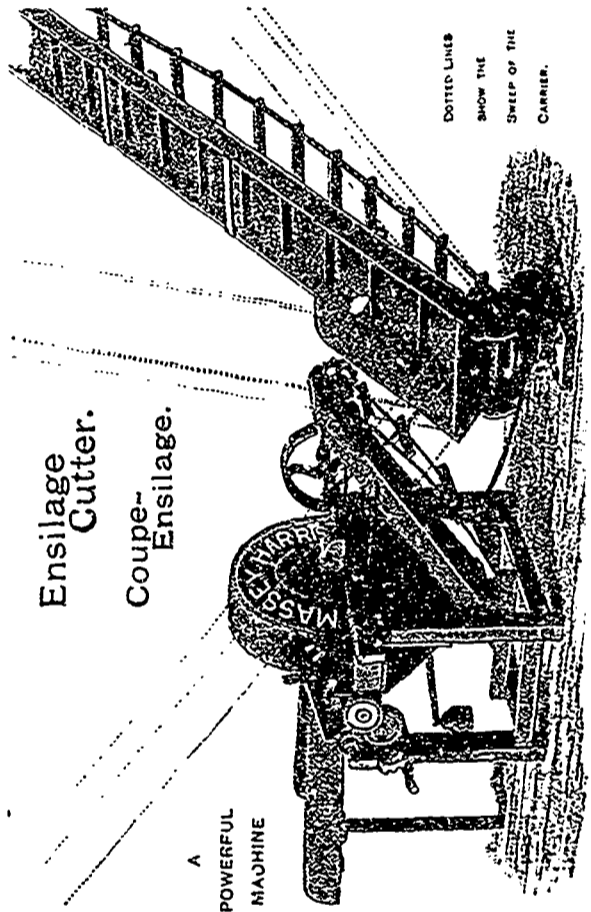
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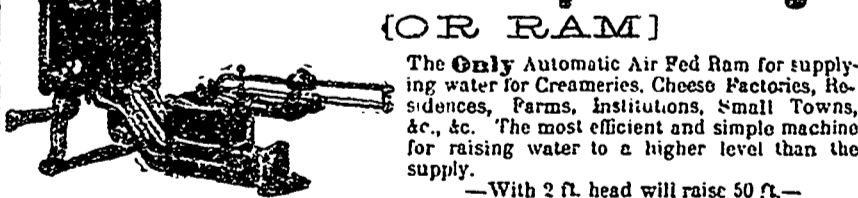
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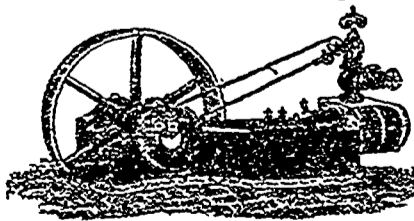
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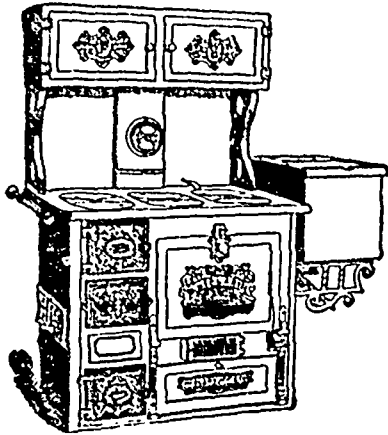
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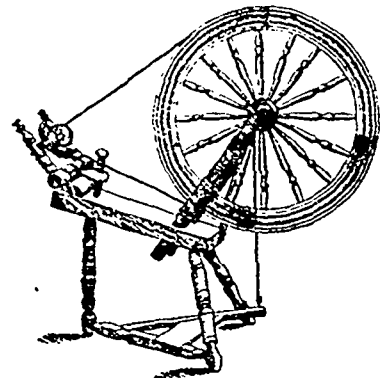


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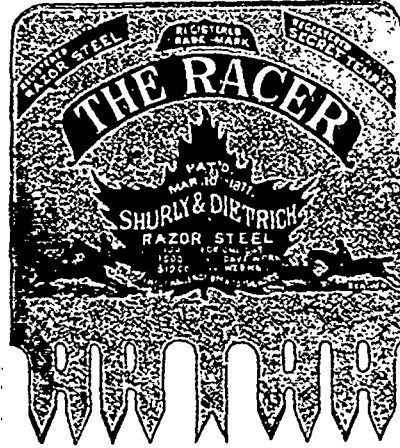
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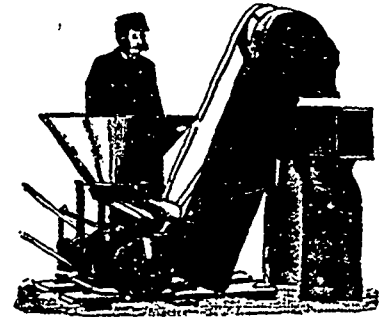
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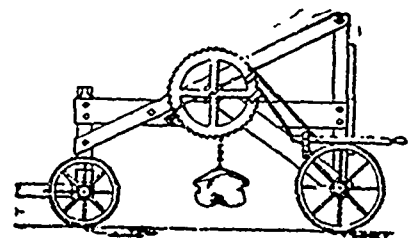
TESTIMONIAL FROM A WELL KNOWN OWNER OF HORSES IN MONTREAL: Kimball's Horse Exchange, Montreal, July 12, 1897. J. H. KIMBALL, Horse Exporter and Dealer, Proprietor Horse Exchange.—English Veterinary Embrocation Co., City.

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THE ILLUSTRATED Journal of Agriculture.

Montreal, October 1, 1897.

Notes by the Way.

SPARROWS.—It may interest our farmers to know that the sparrow has, in England, been summarily tried and condemned by Miss Ormerod, the Entomologist to the R. A. Soc. of England, and Mr. Tegetmeyer, the well known writer on poultry. The flocks of these vermin to be seen in Montreal are appalling, and means should be taken to destroy them.

RAPE used formerly to be ploughed in close after the sheep-fold, to preserve the manure left by the latter, but, now-a-days, it is accounted better to let it stand for a second crop of leaves. As far as we understand of the Ontario practice, from Mr. Macfarlane's interesting letters, the sheep in that province are turned loose into the field of rape and remain there until the crop is consumed. We prefer the plan we were used to in S. E. England; we harrowed off a fresh piece for the sheep every two or three days, and gave cake, pulse and grain, in troughs, in addition. (1)

(1) See a sheep crack up whole horse-bean!—Ed.

RYE and WINTER-BARLEY.—Are these grains ever sown in this province for early spring-feeding? We have never seen any growing here, but we cannot help thinking that they should be tried. We should sow 2 1/2 of rye and 3 1/2 of winter-barley to the ACPENT.

ORIGIN OF THE HORSE.—The well-known professor Flower, V. S., has clearly shown that the original propagator of the whole equine race is the TAPIR of South America. Stale news, perhaps to some, but quite new to us

LAMMAS.—We have to apologise for misleading our readers on a point we conceitedly thought we were rather strong upon! The word Lammas is not derived from "Lamb's mass," a mass in recognition of the weaning of the lambs, as we erroneously stated a couple of months ago, but from hlaf-mas, i. e., loaf-mas; the word "Lady," as most persons know, is from the same root, hlaf, and signifies "distributor of loaves."

THE SCALE-INSECT has been committing its depredations for some eight-teen years; it was introduced into California from Australia in 1850, and, like the Colorado beetle, most people wish it had stayed at home.

MICROBES.—The GERM-theory of diseases is by no means a modern discovery, it having been promulgated, as long ago as 1658, by Athanasius Kircher. This physiologist and physician attributed all diseases to germs, or animalcules, as he called them. According to Kircher, each kind of "putrefaction" gave rise to a special "virus," which produced a definite species of disease.

An advance in the price of bread in France has caused much excitement, and popular leaders are already clamouring for the suspension of the duty of 12s. 3d. a quarter on wheat. The difference between the average prices of wheat in France and England is greater than the amount of the French duty, probably because millers are more dependent upon the native supply in France than they are in England, and the French growers are holding out for their prices. Even in this country, there is already a good deal in the daily papers about possibly dear bread; but this is decidedly premature. We have not heard of any greater advance than a penny a quarter of 4 lb. at present, and bread is still cheap, and it should be so even if wheat rose to 50s. a quarter, a price which was considered moderate twenty years ago.—Eng. Ag. Gazette.

It has been left to M. Rochefort to put a climax to the absurd exaggerations as to the probable dearness of bread in France. Of course with conscious hyperbole, he predicts "that bread will soon be at three francs, then four, then ten, then a louis the kilo, and, finally, as the augmentation of price grows higher and higher, fashionable ladies will wear little pellets of bread in their ears instead of diamonds, and a necklace composed of grains of wheat will constitute a parure of far greater value than a necklace of diamonds.—Eng. Ag. Gazette.

ENGLISH vs. AMERICAN BEEF.—We saw a statement in the papers, the other day, to the effect that beef sent from this continent to the London market is quite equal in flavour, etc., to En-

glish beef. If so, we are very badly treated here in Montreal, for, during the last three months, we, though invariably paying cash, and dealing with one of the leading West-end butchers, have only had two pieces of really decent beef. But in England, there is beef and beef; Highland Scots (Kyloes) and coarse-bred draught-oxen the difference between which quality of beasts is something prodigious: "ecce signum."

Table with 3 columns: Quotations per 8 lbs. (sinking the offal), inferior, Second, First quality. Rows for Beasts and Fat cows.

WEATHER PREDICTIONS.—It may not be generally known that constant observation of the character of the clouds is second only in importance to the study of the barometer. Cirri, which are the wispy-looking fibrous cloudlets, seen high in the atmosphere, and commonly called "mare's tails," should be most attentively studied and the following weather changes noted for future reference. But all old-fashioned methods of weather predictions, or almost all, have fallen into disrepute, though they are hard to kill, particularly the idea of the influence of the moon or the weather, as well as that animals govern their proceedings by the kind of weather that is to come. For 20 years, Dr. Abbott, of New Jersey, kept records of the building of their houses by muskrats, of the storing of nuts by squirrels, and other movements of animals, which are popularly supposed to indicate the character of a coming winter, and he found that these instinctive acts are in no way connected with the mildness or severity of an approaching winter.

Now, these cirri, or curl-clouds, are of various forms, and occur at a great height in the atmosphere. Sometimes they are like long narrow rods, lying still, or floating gently along the upper regions, their motion being from South to North, but chiefly from S. W. to N. E. At other times, one end of the rod is curled up, and spread out like a feather; and in this shape, the cloud travels more quickly than in any other, being evidently affected by the wind. This rod shape is supposed to be caused by the cirrus cloud being the means of the transit of electricity from one cloud to another.

Again, a form like a thin sheet of fibrous looking cloud is assumed; another resembling a goat's beard, etc., for there are many changes of appearance in these cirri. Keanitz, the meteorologist, says that they are composed of snow, not of vapour, their great elevation in the atmosphere placing them in the region of perpetual snow, their height above the earth being not less than 13,700 feet.

When cirri appear in a clear settled dry sky, a change in the weather is taking place. When they look like "mare's tails," wind will follow from the quarter to which the tufts point. When they unite and form what are called cirro-strati clouds, rain is at hand, particularly if they seem to descend towards the earth. When seen through a broken cloud, in a deep blue sky, the rain will continue. Cirri extending on both sides of the point above the observer's head (the zenith), forebode a wind-storm of long duration, and in whatever direction cirri are seen to be moving, and whatever may be the direction of the wind at the surface of the earth at the time of observation, the wind will be felt in a few hours as the cirri indicate.

If we have any reputation as a judge of weather to come, a long practice of attentively observing the formation and changes of these clouds, combined, of course, with due attention to instruments and other things, has been the cause of our knowing, perhaps, a little more of the coming changes than some of our neighbours.

**REFRIGERATING CHAMBERS.**—The principle, on which refrigerators are cooled, is this: compressed air being thoroughly cooled and then allowed to expand, becomes cold enough, in the act of expansion to freeze water. To accomplish this, the air is taken by air-pumps from the meat-chamber and then compressed; after which it is cooled by jets of water and passed through a system of tubes. After passing through the expanding apparatus, the air is discharged, at the rate of 40,000 cubic feet an hour, into the meat chamber. The air, thus managed, is drier and this system works better than was commonly the case with the first experiments of preserving meat, etc., through a long voyage by means of blocks of ice.

**RENTS IN THE LAURENTIDES.**—It sounds impossible, but it is true! A young friend of ours, who has been passing the summer in a "health resort" at St. Hippolyte (1) de Kilkenny, tells us that the house in which she was staying, with 120 arpents of land, was let to the tenant for twenty dollars a year. Heavens! what a chance for a good shepherd to hire four or five contiguous farms, throw them into one, and make a real sheep-farm of the whole.

### Government Notices, &c.

#### IMPROVEMENT OF THE ROADS.

The improvement of the roads in the rural parts of the Province of Quebec becomes more and more a duty incumbent on the rate-payers. People in general have no idea of the enormous losses incurred by the absence of easy modes of communication. Our neighbours have been before us in the improvement of their roads, and it is high time that our province should adopt a vigorous policy, and emerge from the state of inferiority in which it now supinely rests.

The present administration proposes to afford active support to the rural municipalities, by helping them to acquire the improved machines for the mending of their roads.

With this in view, it will place at the disposal of each county, during the current year, a contribution of \$3,000.00, to be divided into shares of \$125.00, \$100.00, and \$75.00, between the three first municipalities that shall inform the government, by a resolution of the municipal council, that it is their intention to buy one of these machines, and shall, in reality, become possessors of one during the present season.

In order to acquire a right to the government grant, the following conditions must be complied with:—

1. The machine must be approved of by the government;  
2. A report must be sent in to the Department of Agriculture at the end of the season, stating the length of road

(1) The correct spelling. It means simply "Coachman."—Ed.

that has been repaired, which is not to be less than two miles, to give the municipality a right to the grant;

3. The machine must continue to be the property of the municipality for at least three years, and shall not be sold without permission from the government during that term.

4. The working of the machine shall be carried on at the expense of the municipality, the government, however, agreeing to send, temporarily, an instructor, in case of necessity, to any municipality that shall ask for the services of one

"From the French."

(Signed), F. G. M. DECHENE,  
Commissioner of Agriculture.

#### ROLLERS OF HARD-MAPLE FOR WALL-PAPER FACTORIES.

London, July 9th, 1897.

To M. G. A. Gigault, Asst. Commissioner of Agriculture, Quebec.

Dear Sir,

I have lately received, from M. G. P. Nadeau, of Stanfold, a request for information respecting the consumption in England of rollers made of hard-maple wood as used in the manufacture of wall-papers. He had heard that there was a demand for this article on the English market. As hard-maple is plentiful in the province of Quebec, and as many of its people may be interested in the question, I send you the information I have obtained on this subject.

"Mr. Jas. Barret, who is making rollers for many manufacturers of wall-papers, writes as follows:—The maple rollers that I use are 2 ft. 2 in. long and 5½, 6½, and 7½ inches in diameter, with a central vacant space of 2 in., which should be bored quite straight. The heart of the wood should be cut out. The trunk of the tree, I believe, is first split; then the wood is roughly turned to the proper size. At present, I have enough in stock; but I should be glad to know what would be the cost, delivered here, of each size of rollers made of Canadian hard-maple. I am paying 25 to 26 cts. for a roller of 5½ in.; 37 cts. for 6½ in., and 50 cts. for 7½ in. I buy a thousand, or more, at a time, and I keep them 3 years in store before using them. My purchases depend upon the samples and prices sent me."

Mr. Barret's address is 226, Old Ford Road, London. If any persons in Canada would like to do business with him, he will be happy to hear from them.

There is no doubt about there being a great demand for these rollers in different parts of the country.

Faithfully yours,

HARRISON WATSON.

Curator of the Museum of the Imperial Institute.

#### CONCRETE, ETC., FOR FLOORS BORDERS AND WALKS—GROUT FLOOR.

(Extracts from "The Horticulturist's Rule Book" by L. H. Bailey).—1.—To secure a good grout or cement floor, make a good foundation of small stones or brick bats and cover 3 or 4 inches thick with a thin mortar, made of 2 parts sharp sand and 1 part water-lime.

2. Fresh powdered lime, 2 parts, Portland cement, 1 part; gravel, broken stone, or brick, 5 parts. Mix with water to a liquid consistency, and let it be thrown forcibly, or dropped into its position. It should be well beaten or rammed to render it solid. A "skim" of thin, rich mortar may be placed on top as a finish.

#### PAINTS AND PROTECTIVE COMPOUNDS

**HOME-MADE WASHES FOR FENCES AND OUT-BUILDINGS** may be made by various combinations of lime and grease. The following are good formulas:—

1.—Slake fresh quicklime in water, and turn it to a paste or paint with skim-milk. The addition of 2 or 3 handfuls of salt to a pail of the wash is beneficial.

2.—2 quarts skim-milk, 8 ounces of fresh slaked-lime, 6 ounces of boiled linseed oil, and 2 ounces of white pitch, dissolved in the oil by a gentle heat. The lime must be slaked in cold water and dried in the air until it falls into a fine powder; then mix with ¼ part of the milk, adding the mixed oil and pitch by degrees; add the remainder of the milk. Lastly, add 3 pounds of the best whitening and mix the whole thoroughly.

3.—Slake ½ bushel of lime in boiling water, keeping it covered; strain and add brine made by dissolving 1 peck of salt in warm water, and 3 pounds rice flour, then boil to a paste; add ½ pound whitening and 1 pound of glue dissolved in warm water. Mix and let stand for a few days before using.

#### FIRE PROOF PAINT.

4.—In a covered vessel, slake the best quicklime, then add a mixture of skim-milk and water, and mix to the consistency of cream; then add 20 pounds of alum, 15 pounds of potash and 1 bushel of salt to every 100 gallons of the liquid. If white paint is desired, add to the above 6 pounds of plaster of Paris.

#### FOR DAMP WALLS.

5.—¾ pound of hard soap to 1 gallon of water. Lay over the bricks steadily and carefully with a flat brush, so as not to form a froth or lather on the surface. After 24 hours, mix ½ pound of alum with 4 gallons of water; let it stand 24 hours, and then apply it in the same manner over the coating of soap. Apply in dry weather.

6.—1½ pound resin, 1 pound tallow, 1 quart linseed oil. Melt together and apply hot, two coats.

#### WATER-PROOFING PAINTS.—FOR LEATHER.

7.—½ pound of shellac, broken into small pieces in a quart bottle; cover with methylated spirit (wood alcohol), cork it tight, put it in a warm place, and shake well several times a day; then add a piece of camphor as large as a hen's egg; shake again and add one ounce of lampblack. Apply with a small paint-brush.

8.—Put into an earthen jar ¼ pound of beeswax, ½ pound of neat's-foot oil, 3 or 4 table spoonfuls of lampblack, and a piece of camphor as large as a hen's egg. Melt over a slow fire. Have both grease and leather warm and apply with a brush.

9.—1 pint of linseed oil, ½ pound nut-ton snet, 6 ounces of clean beeswax, and 4 ounces of resin; melt and mix well. Use while warm with a brush on new boots or shoes.

#### FOR CLOTH FOR PITTS AND FRAMES.

10.—Old pale linseed oil, 3 pints; sugar of lead (acetate of lead), 1 ounce; white resin, 4 ounces. Grind the acetate with a little of the oil, then add the rest and the resin. Use an iron kettle over a gentle fire. Apply with a brush, hot.

#### FOR PAPER.

11.—Dissolve 1¼ pound of white soap in 1 quart of water; in another quart of water, dissolve 1½ ounce of gum arabic and 5 ounces of glue. Mix the two liquids, warm them and soak the paper in it and pass through rollers, or simply hang it up to dry.

#### TO PREVENT METALS FROM RUSTING.

12.—Melt together 3 parts of lard and 1 part of powdered resin. A very thin coating applied with a brush will keep stoves and grates from rusting during summer, even in damp situations. A little black lead can be mixed with the lard. Does well on nearly all metals.

#### TO PREVENT RUSTING OF NAILS, HINGES, ETC.

13.—1 pint of linseed oil, 2 ounces black lead; mix together. Heat nails red-hot and dip them in.

**AMOUNT OF PAINT REQUIRED FOR A GIVEN SURFACE.**—It is impossible to give a rule that will apply in all cases, as the amount varies with the kind and thickness of the paint, the kind of wood or other material to which it is applied, the age of the surface, etc. The following is an approximate rule: Divide the number of square feet of surface by 200. The result will be the number of gallons of liquid paint required to give two coats; or divide by 18, and the result will be the number of pounds of pure ground white lead required to give three coats.

#### GLUES.

(Liquid Glue). 1.—Dissolve 2 pounds of best pale blue in 1 quart of water in a covered vessel, placed in a hot water-bath; when cold, add to it 7 ounces of commercial nitric acid. When cold, put in bottles.

2.—Finest pale orange shellac, broken small, 4 ounces; methylated spirit, 8 ounces; put in a warm place in a closely corked bottle until dissolved. Should have the consistency of molasses. Or borax, 1 ounce; water, ¾ pint; shellac as before; boil in a closely covered kettle until dissolved; then evaporate until nearly as thick as molasses.

(Flower Gum). 3.—Very fine white shellac mixed with methylated spirit in a stone jar; shake well for ½ an hour and place by a fire, and shake it frequently the first day. Keep in a cool place. Leave the camel's hair brush in the gum. Never fill the brush too full and gum the petals close to the tube.

(Gum for Labels and Specimens). 4.—2 parts of gum arabic, 1 part of brown sugar; dissolve in water to the consistency of cream.

5.—5 parts of best glue soaked in 18 to 20 parts of water for a day, and to the liquid add 9 parts of rock candy and 3 parts of gum arabic.

6.—Good flour and glue, to which add linseed oil, varnish and turpentine, ½ an ounce each to the pound. Good when labels are liable to get damp.

**TO PREVENT BOILERS FROM FILLING WITH SEDIMENT OR SCALE.**—Exercise care to get clean water and that which contains little lime. 2. Blow it out often. It can be

blown out a little every day, and occasionally it should be blown off entirely. 3. Put slippery-elm bark in the boiler tank. Or, if slippery-elm is not handy, use potato-peelings, flax-seed, oak-bark, spent tan, or coarse sawdust. 4. Put in, with the feed-water or otherwise, a small quantity of good molasses (not a chemical syrup), say  $\frac{1}{2}$  to 1 pint in a week, depending upon the size of boiler. This will remove and prevent incrustation without damage to the boiler. These vegetable substances prevent, in a measure, by mechanical means, the union of the particles of lime into incrustations.

### COLD STORAGE.

(Continued)

Special provision has been made for trial shipments of fruits, particularly those that have not hitherto been exported with any degree of success, such as grapes, pears, peaches, and tomatoes. One of the essential conditions for the safe carriage of the tender and easily injured fruits, is that they should be thoroughly cooled before they are put into the railway car. If cooled to a temperature of 36 or 30 deg. Fahr., practically all fermentation is stopped, and the fruit will not generate heat by its ripening, but when fruit is put into cases while warm, and these are put directly into a car, the ripening of the fruit generates heat, and it thus becomes self-destructive. A cold storage building has been erected at Grimsby, Ont., for trial shipments of fruit, and several of the growers there have agreed to furnish at least one carload a week. The fruit will be thoroughly cooled before it is put aboard the refrigerator cars, which will carry it to Montreal; there it will be placed in the cold storage chamber on the steamship, and when it arrives in Great Britain there will be some one to look after its reception and distribution there. These trial shipments will demonstrate the practicability and profit of shipping these fruits to England, and the fruit growers can carry on the business afterwards in the light of the knowledge gained by these experiments.

### COLD STORAGE INSPECTORS.

In order to make the cold storage scheme as perfect as possible, the Government has engaged two inspectors. One will see that the cold storage building and railway cars are in good condition and giving satisfaction to those who use them, and the other will be stationed in Montreal to look after through shipments. In the case of a shipment missing the steamer, as may happen through unavoidable delay on the road, he will see that the goods are stored in a proper cold storage building till the next steamer is ready. If notice is given to the inspector by the shipper at the starting point, he will see that the goods are taken care of, and only the actual outlay for cold storage will be charged forward on the bill of lading. No charge will be made for the services of the inspector. To still further aid the producer in Canada the Minister of Agriculture has decided to place at least two men in Great Britain to look after the distribution of perishable food products. These men will not compete or conflict with the regular commercial agencies, but will do what they can to aid in securing the best possible market in Great Britain for Canadian farm products. They will be in a sense national

commercial travellers, not selling for any particular firm, but pointing out that many firms in Canada can furnish the same class of products as they send samples of.

All this cannot but be of immense benefit to Canada, both to the individual farmer and to the country as a whole. The former will be benefited, inasmuch as the cold storage will preserve his produce from loss, and also prolong the marketing season; and the consumer getting a better article, will consume more of it and will be willing to pay a higher price. The country as a whole will be benefited, for the more widely Canadian food products become known in Great Britain, the more widely will the advantages Canada has to offer as a field for settlement become known. This will another link be forged in the ever-strengthening chain that binds Canada to the Mother Country, and no more appropriate time could such movement be inaugurated than on this the Diamond Jubilee year of our most Gracious Sovereign, Queen Victoria.

Montreal "Star."

### Correspondence.

Calumet Island, Que.,

September 6th, 1897.

Dear Sir,

The Farmers' Club of Calumet Island intend holding a ploughing match early in October, the first that we have had, and I have been requested to ask you if you would be so good as to give us, in the October number of the "Journal of Agriculture," points as to what the judges in this match should constitute good ploughing, such as the depth, breadth, and so forth. Please to give us an article in the October number relating to this and oblige

Your's respectfully,

JOHN KELLEHER LEE,

Treasurer Farmers' Club.

ANSWER.—A full reply to the Treasurer of the Farmers' Club of Calumet Island, would occupy, at the very least, the whole of this number of the Journal, and how to condense the information asked for into a moderate space we hardly see. But it must suffice to say briefly, that:—

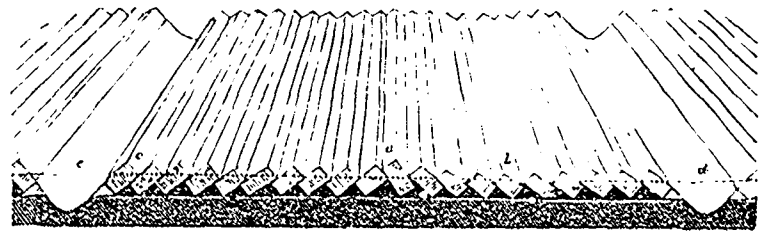
1. Good ploughing demands that the whole land to a certain depth be turned over; to effect which the bottom or sole of the furrow must be perfectly flat, inasmuch that, if the ploughed surface were removed, then would be discovered a flooring, so to speak, as level as a billiard-table.

2. To ensure this, the furrow turned over should be in the form of a carpenter's pencil, i. e., composed of four sides, two and two parallel to each other: the figure mathematically called a parallelogram. The depth of the furrow must depend upon the purpose for which the ploughing is done; for fall ploughing, on stubble in preparation for hoed crops, the following season, 10 x 7 inches would be our choice; for ploughing sod, or lea-ground, 9 x 6 inches; and the same would do as well for turning over land from which roots have been carted, or corn harvested. These depths and widths will give the lay of the furrow an angle of 45°. Take your judges, if possible, from a distance, to ensure impartiality. Let them be present during the whole time the ploughing is going on; this will not only give them

a chance to see that the bottoms of the furrow are, or are not, left flat: some ploughmen get into such a confirmed habit of pressing on one stilt—the near side almost invariably—that they cannot help canting the plough to that side, and consequently, the bottom of the furrow is left in ribs. Besides, the judges, having had a full opportunity of watching the work, will not be so long after the contest is over in coming to a decision, to the immense relief of the spectators.

Mark out for each competitor 2 or more ridges of land, and drive down pegs into the ground, to be numbered, and let each man draw, as in a lottery, a corresponding number, and take that plot as his task.

Some regard should be had to time occupied in the work, though of course



EXAMPLE OF A RIDGE ILL PLOUGHED.

accuracy is far superior to pace. We remember well, at the last ploughing match we acted in as judge, being nearly driven wild by the dilatory work of an aged ploughman, with his very sluggish team; and the worst of it was that he was the recipient of the first prize after all, so superior was his work to that of his competitors. And our brother judge, too, though the three prizes could have been decreed by a lad of fifteen at a glance, insisted upon going over the whole ploughed piece two or three times, after the contest was finished, before deciding the merits of the men, because, as he said, "if we did not do so, the spectators would think we were careless!"

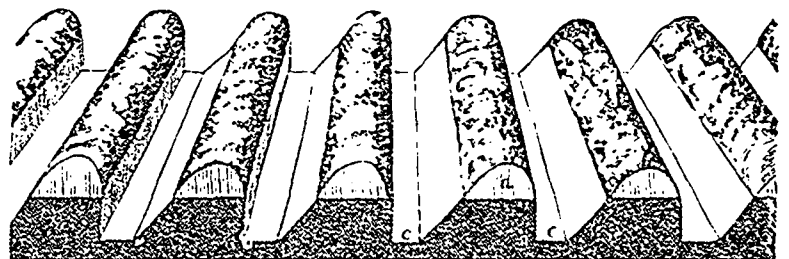
If you want to learn what perfect work means, try and see an English two-wheeled plough in action. Of course a "Smar's," Scotch plough, in the

liable book "Stephens on the Farm," and the author's observations on the defects observable in it are worthy of your attention.

Permit us to say that a couple of days spent in the Island of Montreal, in going over the farms of Mr. James Drummond, Mr. Buchanan, and others, would give you and your friends an infinitely deeper idea of what good ploughing means than a dozen of the best essays we could write.

"These are all instances of good substantial ploughing with rectangular furrow-slices; and were they constantly practised, there would be no instances of bad ploughing as in fig. 29, no high-crowned ridges as at "a," caused by bringing the two feather-slices or the two open furrows too close together from opposite directions; no "lean"

flanks, as at "b," by making the furrow-slices broader than they should be, with a view to ploughing the ridge fast, and constituting hollows which become receptacles for surface-water to sour the land. When the soil is strong, lean flanks become so consolidated, that they are almost sure to resist the action of the harrows, when passed across the ridge; and in light soil they are filled up with the loose soil by the harrows, at the expense of the surrounding heights. No "proud furrow-brows" as at "c," by setting up the furrow-slices more upright than they should be, to the danger of being drawn entirely into the open furrows on the harrows catching them too forcibly on leaving the ridge in cross-harrowing. And no "unequal-sided open furrows, as at "d," by turning over the mould-furrow flatter than the other. Not to extend this lengthened



RIB-PLOUGHING STUBBLE LAND.

hands of a thorough workman does its work as well as can be wished, but the Ransom, Busby, and Garrett's ploughs, are so fitted that, when once the depth and breadth of the intended furrow are determined upon, and the wheels set at the corresponding depth and width, the plough will keep the furrow to its desired proportions from one day's end to the other, even in the hands of a very immature ploughboy.

See that the entrances and exits of the ridges are of equal width, and that the "crumb"-furrow, as we English call it; the "hind-end" furrow is well laid up, and thoroughly packed close. A very bad feature in some of the farms near St. Hyacinthe is, in fall-ploughing, leaving these unploughed to be finished in the spring.

The appended cut shows a ridge ill-ploughed. It is taken from that lava-

catalogue of evils accompanying bad ploughing, I will only mention that every sort of crop grows unequally on an ill-ploughed ridge, because they grow better on the spots where the soil is most kindly, but the bad effects of bad ploughing are not confined to the season in which it is performed, as it renders the soil unequal when broken up again, and the thinner and harder parts do not yield so abundantly as the deeper and more kindly. The line "d" "e," fig. 29, shows the position of the surface before the land was ploughed, and the irregular relation of the furrow-slices to that line, show the unequal manner in which the ridge had been ploughed."

Bleury; Ste-Thérèse,

August 15th, 1897.

Dear Jenner Fust,

I am very busy here, getting in my hay, what there is of it, i. e., very little:

and, also, having to break in, and get into condition, 5 young horses, most of which are, however, very tractable and gave but little trouble. As they are all very fat, it is hard work to find time enough to give them sufficient exercise.

An Englishman, who has been on his ranche, in Colorado, for the last 20 years, has been staying here. He told me about making hay of alfalfa, as they call lucerne there. I tried to make some of the first cut of mine into hay, but as, unfortunately, it lay exposed to the rain for 3 or 4 days, nearly all the leaves dropped off, though it is not much discoloured. Stock do not seem to care for it; still, I shall try again.

(Monsieur Bouthillier probably let his lucerne stand too long, the stem, consequently, got hard and sticky. Where irrigation is practised, as in the Western States, the plant can be cut in its most lush state, and as there is no other stuff to make hay of, this treatment of the crop may answer; but we doubt it being profitable here. We have seen acres of it in England, but it was always used green and cut before flowering, or else the stock, as M. Bouthillier says of his animals, did not care for it.)

The Hungarian grass although sown two months ago, is quite short, and will not come to anything; but that is not the fault of the grass.

(Perhaps, as it was getting late in the season, the seed was hurried in, without due preparation. Such things do happen, even with such careful attention as the Bleury farm receives!)

Do you know anything or everything, about "Bromus Inermis," or Austrian Brome-grass?

(The Austrian Brome-grass we never grew, so we do not pretend to give advice about it; but, from all we hear, it is decidedly productive, a rapid grower, but, like couch-grass, if it once gains possession of the land, its long, wandering, deeply seated roots make it difficult to eradicate.)

Yours truly,  
C. F. BOUTHILLIER.

### AWARDS of PRIZES for ESSAYS.

The following letter, from the Secretary of the Eastern-Townships' Agricultural Association, explains itself.

Sherbrooke, Que. Sept. 13, 1897.

A. R. Jenner Fust, Esq.,  
4 Lincoln Ave.

Montreal.

Dear Sir,

I am in receipt of your favor of the 12th. inst., and although the essays have not yet come to hand I expect they will arrive by next mail.

I have to thank you on behalf of the Association for your very prompt decision as to the awards. I quite agree with you that it would be a much wiser course, and one that should certainly be followed in the future, to leave out the names of the competitors altogether, so that the judges would be relieved from that embarrassment, and, as you say, it would also perhaps be advisable to have type-written copies of the essays made, so that there would be no possibility of the judges learning who the competitors are.

As I presume it would be the wish of the Department of Agriculture to have the prize essays appear in the Journal of Agriculture, I will send you copies, should you desire it.

I am  
Yours truly,  
H. R. FRASER.

## The Horse.

### THOROUGHBRED STALLIONS.

As so many farmers put their mares to thoroughbred horses, and as I believe in the thoroughbred being the best sire in existence to get hunters, saddle and carriage and general purpose horses, from half-bred or cold blooded mares, I thought a sketch of the principal stallions, which have stood for mares in and around Montreal for the last twenty years, might be of interest to readers of the "Journal."

As I am writing entirely from memory, I hope my readers will overlook the many errors and omissions which must have crept in, or, better still, kindly correct them.

I have endeavored to arrange the names of horses as far as possible according to the date of their importation. Only one horse out of the twenty-four, I shall mention (Speculator) having been imported in Canada.

The first thoroughbred horse I can remember, was the gray horse THUNDER, by Lexington out of Blue Bonnet, by imported Hedgeford.

Thunder was brought to Montreal, by the late Mr. John Shedden, about thirty years ago. When I first saw him, in 1872, he was quite white, and very handsome, with a good deal of Arab character. He was quite a successful sire among his get being Rainbow, Gray-Cloud, Lady D'Arcy, and many other good horses; the best of all being Neilson, which I consider one of the best mares ever bred in the province of Quebec.

Imported True Blue by Veelette, was a good-looking, dark-brown horse, owned at one time by the Huntingdon Society. I am not certain if he ever stood for mares in the neighbourhood of Montreal, but he was exhibited both at the Dominion Exhibition, and the Hochelaga Society's spring show.

REJOINER, by Kettle Drum out of Repartee, by Pantaloon, was a very small but bloodlike, and very wellbred horse, imported by Mr. P. Rooney of Verdun. He was a chestnut, with a blazed face, and four white legs. I do not remember any good colts left by him.

AEROLITE, a bay horse, by Asteroid, out of Edith, by Sovereign, bred at Woodburn, Kentucky, was also owned by Mr. Rooney. Unlike Rejoinder, I think with a fair chance he would have been a very successful stallion, but I know of only two good mares being bred to him: 1. Mr. Henderson's Topsy, the produce being that rattling good steeple-chaser, Sunshine, who unfortunately broke his neck at Bel-Air when just at his best, and 2. The late Sir Joseph Hickson's imported mare Sweetbread, whose produce was Skylark, one of the fastest and best province-breds ever foaled.

HELMBOLD, by Australia, out of Lavender, by Wagner, was a beautiful, bloodlike dark chestnut horse, brought to Montreal by Mr. Andrew Allan. As a race-horse, he was almost if not quite, in the first class in the States, and as a sire he may be classed as one of the most successful ever brought to Canada. In the States he sired a good race-horse in Helmsman, and after coming to Canada, he sired Roddy Pringle, a very fast horse and winner of many races, both in Canada and the States. He

was also the sire of Mr. Paton's Will-you-do-it, Wishmay, and Iolanthe, and of as good a quartette of halfbreds as any sire in America could boast of. These were Mr. J. P. Dawes' Rose, Mr. Stanley's Rienzi, and the Messrs. Pennistons' Emergency and Madeline.

OWEN OUTTIER, a chestnut horse by imported Leamlington, out of Venice, by imp. Australian, was also brought from the States by Mr. Andrew Allan. I do not think he left many colts as, after serving one to two seasons here, he was sold to go to England.

TUBMAN, by War Dance, out of Lass of Sidney, by Knight of St. George, was a bay horse, imported from the States by Mr. J. P. Dawes, of Lachine. This horse was one of my greatest favorites. He was a somewhat plain horse with flat ribs and a rather coarse but good natured head.

He was a good race-horse in the States, and won at all distances up to four mile heats.

As a sire I consider he was a great success. I do not believe he ever got a foal that was not worth rearing. If they were not race-horses, they were hunters, carriage-horses, or, at worst, good work horses. One thing noticeable about all his stock was their hardy constitution. I know horses by him which might pass as four year olds on the street to-day, although the youngest of his colts must be nearer fourteen than four.

Among the best of his get, as race-horses, were Montepedia and Keewatin, winners of the Queen's Plate; Bird-catcher, Tearaway, Hudu, and three really good halfbreds; May Bee, Thistle and Emma.

CHARLIE RANSOM was a wellbred, and very handsome little bay horse by Asteroid, also owned by Mr. Dawes. He sired one fairly good cross-country horse, Little Charlie.

MONARCH, by imported Monarch, dam by imported Admiral, was brought to Montreal by the Jacques-Cartier Agricultural Society.

He was a very good-looking, and wellbred horse but, unfortunately, a complete failure as a stockgetter.

SPECULATOR was a big and rather coarse brown horse, by English Speculum, his dam Sweetbread having been imported in foal with him by the late Mr. Shedden. I believe that he served very few mares, while here; but after going to the States, he sired a really good and fast horse called Wheeler.

DAY-STAR, by Star Davis, out of Squeezem, by Yorkshire, was brought to Montreal by Dr. Craik. He was a good-looking and very bigboned, stoutly made horse. His stock were fairly good, especially his halfbreds, two of the best of which were Mr. Finnie's Dianthus, and Messrs. Pennistons' Rapid Star.

TERROR, by Alarm, dam Lady Walenstein, by Lexington, a good-looking big bay horse, also owned by Dr. Craik. This horse was one of my especial favorites as I have always thought his chances were sacrificed in favor of Day Star.

He was, however, the sire of a much better race-horse than Day Star ever got, at least, in my opinion; this was Mr. Dawes' Zea, out of Regonia, by Moecassia. He was also sire of Rob Roy a fast but rather erratic colt.

ONE DIME, by Wanderer, out of Swift, by Scythian, a chestnut horse, owned by Dr. Craik, was a good race-horse and very well bred. Unfortunately he broke his leg soon after coming here and had to be destroyed.

ALLIANCE, a brown horse, by imported Hurrah, was used as a hunter for some years by Mr. Baumgarten. He was afterwards owned by Messrs. Penniston, and sired many good halfbreds.

QUITO, by King Alphonso, out of Cruifix, by Lexington, was the sire of several good halfbreds, including Quaker, Quito, Quirk, and others.

RAVEN, by Monday, out of Camille-Urso, by Lodi, was a good race-horse, but I do not think he ever had a fair chance at the stud.

LONGSTOP, first called Attorney, and afterwards Fenton, was a very handsome and highlybred brown horse, by Longfellow, out of Endless, by Enquirer. He was brought here by Mr. W. H. Arnton, and afterwards became the property of Colonel Strathy. Although he only served mares for two or three seasons, he sired those two good steeplechase mares, Rapid Queen, and Lapwing.

MOCASSIN was a dark bay or brown horse, by Macaroni, out of Madam Strauss, by King Tom. He was imported by Mr. P. Lorrillard, of New York, and brought to Montreal by Mr. J. P. Dawes. He was the sire of Mamood, Mokana, Manitou, Minden, Magic, Ronette, and other good winners.

GEORGE FREDERICK, winner of the English Derby of 1876, by Marsegas, out of Princess of Wales, by Stockwell, was imported by Colonel Strathy. He was I think the grandest looking stallion I ever saw; although we are all apt to think a horse good looking, when we know he is good. He was the sire of Beau Brunnell, Fritz, and many good winners in England, but was too old to be a sure foal getter when brought to Canada.

I now come to the thoroughbred stallions at present standing for mares on the Island of Montreal. There are I believe only five; Mr. J. P. Dawes' Redfellow; Mr. H. Paton's Gladiator; Colonel Strathy's Tom Flynn; Mr. Finnie's Bushbolt, and Mr. S. Montelth's Governor RUSSELL.

RED-FELLOW, by Longfellow, out of Red Woman, by War Dance, has too solid and well-founded a reputation as a race-horse to require any recapitulation here of his performances. It is sufficient to say he is one of the best horses ever brought to Montreal, and I hear most favorable accounts of his young stock.

GLADIATOR, a chestnut horse, by Glen Athol, out of Lotta, by Hunter's Glencoe, full brother to the great race-horse Glenmore, is owned by Mr. Hugh Paton, and stands at his farm at the Back River. He was a good race-horse both on the flat and across country, and should prove a successful sire.

TOM FLYNN, a dark brown horse, by Emperor, out of Staccato, is owned by Colonel Strathy. This is a grand, big horse, with bone, breeding, and quality, and in his time, was a good race-horse.

BUSHBOLT, by Himgar, out of Booty, by Asteroid, is a brown horse owned

by Mr. C. F. Finnie of Montreal. He is a good looking and very wellbred horse and was a fast but unlucky race-horse. He should be a successful stallion from his appearance and breeding.

**GOVERNOR RUSSELL**, by Cyclops, out of Mamie Russell, owned by Mr. S. Monteth of Verdun, is a big, good-looking chestnut. From his breeding and performances and the promising appearance of his foals, he should not be over-looked by breeders.

Of all the horses I have mentioned, I have a special liking for four: Helmbold, Tubman, Terror, and AÉrolite, these I believe to be the best sires brought to Montreal within the last twenty years.

I class AÉrolite among the four best stallions because he sired Skylark, one of the three best province-breds I ever saw; the other two being Neilson and Zen, and the best of all I think was Zest.

W. WARDLE, JR.

### A FEW SUGGESTIONS.

**EDS. COUNTRY GENTLEMAN.**—Some days ago at the lower end of a piazza of a summer hotel were gathered ten men who not only own and drive fine horses, but take great delight in caring for their pets. One or two own trotters who could easily give the dust to "the other fellow" on the road, but the majority find their pleasure in high steppers that find no road too long for them. With such men there are always many things to be learned, and after the "meeting" was over I noted as many of the good points as I could remember. As many of them are very good, I give them to your readers about as I heard them.

"Have you ever tried swedes for feeding your horses? New? Yes; it was new to me when an old breeder in England last year gave the notion to me. I had praised his team for their fine coat and abundant spirits, and asked what he fed them. You know that turnips might be said to be the foundation of English farming, but as horse feed they were a new article of diet. I have found them excellent in my stable. My horses have splendid coats and are always in superb health and spirits. I feed them sliced and heavily sprinkled with corn meal and bran at night. The horses eat them eagerly and the effect is splendid."

"Speaking of a coat and England," said another, "I learned a good trick in the stable of one of England's great job-masters, as the liverymen are called in that country. One of my pleasures when I go over across the pond is to see how the best masters treat their stock. The groom at the country place of a friend of mine was using a big wad of straw to clean his horses, but it seemed somewhat different from any that I had seen, and I asked the groom to hold it out so that I could inspect it. It was a wisp of straw twisted into a rope, tied into a knot and battered flat against the wall. The smooth side of the knot was dampened, and it made an excellent cleaning rag. It is the best thing that can be used in the summer and not only smooths the hair, giving it a healthy, polished appearance, but it removes the dust and soothes the skin. Try it, and you will compel your grooms always to use it in place of the curry-comb and rag." (1)

(1) A curry-comb is only used to get the dust out of the brush. An English groom holds the curry-comb in his left hand and the brush in his right hand, or vice versa.—Ed.

"The curry-comb has always been a mystery to me," said one of the men who owned the trotters. "I have thought that perhaps in the old days, when they thought you must suffer to be clean, the people invented this instrument of torture. Their horses certainly must have had tougher hides than ours of to-day, if they used the curry-comb as I have seen some grooms manipulate it. The use of the tool with its saw-teeth is agony to a well-bred horse and only serves as an irritant. I do not want to be too positive, but in my opinion no humane master will allow a curry-comb in his stable. To have a fine coat, especially in winter, the hair should always be rubbed the way it lies. Close hair is warm, and trying to get the dirt out by going the other way is shutting the door after the horse has been stolen. I am going to try that knot of straw. It is cheap and it seems to me that it would be just the right thing in the right place."

"My team of horses have not been doing well since I came up," said a man over in the corner, whose high-steppers are known all over the country. "They seemed simply out of sorts until yesterday, when they both began coughing. The veterinarian, whom I sent for, ordered them to have bran mashes and the medicine that he left for them. Now it seemed to me that the bran mashes were just what the animals should not have. My experience with horses is that a sick horse is in a typhoid condition and needs nourishment, instead of trying to weaken him. I had the groom give the team boiled barley (2) in place of the bran, and they are certainly much better to-day. I learned to use barley out in California years ago. I spent much of my time out west, and there the horses are fed almost entirely on barley. I must confess that I saw green barley hay given to a pet mare the first time with heavy heart, but she was all right in the morning and did her work up in great shape. Boiled barley is not only pleasant to the taste of the horse, but it is strengthening and a tonic. Bran is laxative and has but little nourishment in it, which makes it to a certain extent weakening."

"I saw a good wrinkle this morning," said the saddle-horse man of the group. "A groom had out a bad tempered horse of Mr. —, and with the bucking the groom had his hands full. He tried in every way to quiet the animal but in spite of all that he could do the horse was about to get the best of him. He called to two men to catch the head of the horse and quickly slipped from the saddle. I thought that he was going to return to the stable, but he had no such intention. He unbuckled the reins from the snaffle bit and running them through the rings on the end of the bit he fastened the ends to the girth. Then he vaulted back into the saddle and had the horse in such purchase that he had to give in. You can readily see the purchase that such a disposal of the reins would give the rider, and I felt like applauding when I saw how neatly the groom had beaten the horse."

In the discussion about watering it was decided that a horse wants and needs a drink as often as his master. How would this fit with the frequent habit of most farmers to water only at meal times? The horse is just as susceptible to thirst as man, and from his size naturally needs more liquid. Without a dissenting voice these men advised allowing the horse to drink in mo-

(2) Commonly used in Scotland.—Ed.

deration as frequently as he desired. Too much water makes the horse logy (3) and is not desirable.

E. T. RIDDICK.

### Sherbrooke Prize Essays.

#### CLASS 44. SECTION 1.

#### FIRST PRIZE.

**On the best method of tillage in case of scarcity of fodder caused by the destruction of meadows and pastures by frost, or by any other cause, and the methods to be adopted to make the best of such meadows and pastures.**

The proper tillage of the soil in case of a scarcity of fodder, caused by meadows and pastures being winter-killed, is a subject of great importance to farmers in this Province, especially during the present season. When, as during the past winter, a meadow or pasture has been bare up to a late date, and sometimes, what is worse, covered with ice, the probabilities are that a large portion of it will be winter-killed. When this occurs, we must naturally have recourse to green fodder to help the cattle through the summer and meet the deficiency caused by short pastures. These green crops should be selected and sown to be ready for use at different periods, following one another in regular succession.

First come, oats and vetches, or oats, peas and vetches, which furnish a large amount of fodder per acre, and are best for early feeding, as they mature early.

They should be sown at intervals, beginning as soon as the land is ready to work; so that as soon as the first is fed, the next is sufficiently advanced to cut. When oats and vetches are sown, the quantity per arpent should be one bushel of the former to two of the latter; when peas are combined with the above the mixture should be, oats, 1½ bushels, peas, ½ bushel and vetches, 1 bushel. Even when the pastures have not been winter-killed, a fair proportion of oats and vetches should be sown for summer feed, when a good deal less pasture would suffice; and if they are not all needed, what is left may be cut and dried. When cut just before ripening and dried in the same way as hay, they make an excellent winter-feed. They are cut in the morning and cocked up in the afternoon of the same day. After two or three days they are ready to be taken in, without any further turning. They sweat in the cocks, and come in green and tender.

For winter fodder, corn is the most valuable crop, and the one which yields the largest amount of food per acre. Corn feeds freely on decaying vegetation and may thus be sown profitably after meadow or pasture. The varieties are so numerous that experience alone can determine those adapted to any particular locality. For summer feeding, the ensilage or fodder is preferable to the sweet varieties. From 15 to 20 cart-loads of manure per acre is about the right quantity; and when the manuring has not been done in the fall, green manure may be used if rotted manure is not obtainable. Artificial fertilizers are also of much value for this crop. In this Province the proper time for planting is generally from

(3) A new word to us! What does it mean?—Ed.

May 15 to June 10. The land should first be ploughed and thoroughly cultivated to bring it to the finest possible condition. The sowing is sometimes done broadcast, but this practice is much to be condemned, as one can nearly always notice that corn grown in this way has a pale, spindly and woody stalk with only a few leaves at the top. In my opinion it is little better than wood and water. Sowing in rows is much to be preferred, as it allows of the land being cultivated, and also gives a better yield per acre. The rows should be 30 inches apart, and for fodder the seed should be sown about every 4 to 6 inches, right along in the row. The quantity required is from 1½ to 2 pecks per acre. A few days after the seed is sown, the land should be harrowed to destroy weeds, and as soon as the plants are a few inches above the surface the land should be harrowed again. A "Breeds Weeder," or a harrow with teeth inclined backwards, is the best to use, as they do not drag out the plants or tear the leaves. After this the Planet Jr. cultivator should be used, and if followed by handhoeing, it will leave the ground in a clean state. Frequent use of the cultivator should be made until the corn is too high, but care should be taken not to injure the roots. For the last cultivation, put on the mouldboards of the cultivator and bank it up slightly, but not too high. The time for cutting is when the corn is glazing and, if possible, before frost. The silo is undoubtedly the best means of preserving it for winter feeding, but in default of a silo, corn, dried in the shock and stored in the barn, makes an excellent winter-feed, without being cut. It is allowed to ripen a little more than when it is intended for the silo, tied in bundles and stood up in shocks in the field to dry. I would never advocate leaving it out all winter in snow and rain, as some do.

Where there is not room in the barn, any place under cover will do, but it must be stood up. If piled up lying down, it is sure to become mouldy.

In this neighborhood, (Montreal), many sow either oats and vetches, or corn after the early potatoes have been sold off, say about July 20th, which serves the double purpose of keeping the land free from weeds, and of supplying a lot of green feed for the cattle. Turnips or rape is often sown broadcast also, and the cattle allowed to graze on it about the middle of October. Of course the milk cows are not allowed on this land. What is left over is ploughed in and makes excellent green manure.

The growing of roots, such as carrots, mangels, turnips and sugar beets is also highly to be recommended for supplying feed for the winter.

In regard to meadows which have been winter-killed and which it is not desirable to plough up, they would be very much improved by harrowing, one stroke all over, as early as the land will permit. Then sow:—Timothy, 1 gal. to 1½ lb. red clover, and 1½ lb. alsike per arpent.

In the spots where it is completely winter-killed, use the spring-tooth harrow where the nature of the land will permit. After this sow two bushels of oats to one peck of vetches per acre, and from 150 to 200 lbs. fertilizer according to the richness of the soil. Give it another stroke of the harrow and use the roller. Sowing the oats and vetches will give fodder, and will also protect the grass seeds while growing.

This treatment, I am positive, will give a good return in fodder and will



renew the meadow for years after. There are thousands of acres of meadow in this country which do not produce more than a quarter or a third of a crop through being too old and run out. For such, even when not killed by frost, give from 150 to 200 lbs. fertilizer per acre and then harrow and roll. They would more than compensate for this, both in quantity and quality of hay.

For pastures, give one stroke of the harrows, then sow timothy, white, red and alsike clover, June grass, meadow fescue, red top and any other good pasture grasses. Then give another stroke of the harrows and follow it with the roller.

It is better to have good pastures and not too large, than too much and not good. It makes too much walking for the cattle for little feed. We all know that in the Eastern Townships there is much land which is new yet, but with care and a little labor the above treatment would prove very beneficial to the pastures.

GEO. BUCHANAN,  
Côte St. Michel,  
Montreal.

## The Farm.

### FARM-WORK FOR OCTOBER

Hay, grain, and silage, all safe in barn, stack, and silo, now the farmer has to turn to preparations for the next year, and the first thing to be done is ploughing the stubble, in which there are no grass-seeds, for the hoed-crops of the year 1898. And here let us for a moment consider in what form the ridges or lands should be laid up. We do not hesitate to avow our dislike to broad ridges on heavy land. Some of the heaviest crops of wheat grown in England are raised on ridges not more than what are called "4-bout lands," i. e., ridges made by four turns of the plough, that is, in width about 6 feet 8 inches. In Kent the ridges are wider, but not much, "5-bout lands," or 7 feet 6 inches wide; and it has been found that if these widths are exceeded, the crop suffers. Many years ago, in the "Thirties," some of the large land-owners in the S. E. of England brought farm-stewards from the North, and entrusted the management of their farms to them. The first thing these men did was to broaden the narrow lands of the south to the 15 and 18 foot ridges they had been used to in their own country; but the change was not advantageous, and before long, even these North countrymen were convinced that the local custom was founded on right principles and was the best for the locality.

It must be observed that, in South-east England, all the implements connected with the cultivation of the soil are made to fit these narrow ridges, except the plough. The horses in sowing never set their feet out of the furrows. The harrows exactly fit the ridge of 6 ft. 8 in. or 7 ft. 6 in., a long whittle-tree extending between the horses keeps them apart, each in his own furrow; the shafts of the drill are "quartered," so that the horses, generally three in number, walk at length instead of abreast; and the roller is, so to speak, broken in the middle; the horses again being harnessed at length, go up the furrow between two ridges, half of each of which is rolled at a time. Without these precautions, the heavy clays of our country could not possibly have produced the crops we re-

member in the past; forty to forty-eight bushels of wheat to the acre was no uncommon yield, and that on by no means good land.

All these things being considered, we must agree with M. Timothée Brodeur in doubting if 90 feet ridges with 3½ feet water-furrows, as practised by M. Richard, of Joliette, would answer on heavy land. (See 15 An. Rept. of The Dalrymen's Association, for 1896, p. 177).

THE COWS will still be at pasture, during the day-time, throughout the month, but on wet chilly days they would be far better in-doors with a little hay and a few carrot-tops. We say carrot-tops, because these scour cattle less than the leaves of mangels and swedes. At all events, as soon as any tops of roots cause cows to become relaxed in their bowels to any great degree, stop them at once: cows giving milk must not enter their winter-quarters in a debilitated condition.

When the RAM is with the ewes, it is a good plan to make a small fold, for him and one ewe, and to keep him in it during four or five hours, in the middle of the day, giving him, in a small trough, a few pease and a little cake: linseed or cotton.

SWINE will still find plenty of grass in the fence-corners, and, in a late season like the present, there will yet be a few grains of shed wheat and barley to be picked up. There is a good deal of fuss being made about the "best pig for bacon;" but the fact is, the earliest-maturing long-sided hog is still the best. Moderately good keep, including pease, from weaning up to fattening-time, will prepare the hog to be finished off, with good food, in from 15 to 20 days, without much danger of getting too fat. A hog, like every other butcher's beast, must be reasonably fat, or else the lean meat, not being interspersed with layers of fat, will inevitably be hard. To our regret, we must say that such a thing as a tender ham is very rarely to be met with now-a-days, however carefully and gently it may be boiled. By the bye, a good way to finish off a ham is to rub it over, when about cooked, with a "slab" mixture of high-wines and maple-sugar, and then put it into a pretty hot oven for ten minutes or so. It is marvellous how the sugar penetrates the meat when thus treated.

Doubtless, there are still many acres of POTATOES not under cover, and a great mistake it is to leave the tubers out so long. This season, every possible care should be taken of the crop, as, from all accounts, every bushel will be wanted, the potato having failed, or rather having been destroyed almost entirely, in Ireland, as well as in the West of Scotland, Lancashire, etc.

Now is the time to bring the HORSES in at night. A horse out in a frosty morning, even if it is only a white-frost, does not benefit much by his breakfast. They should be gradually accustomed to hard food, and a cold bran-mash given them every Saturday night, as a mild laxative.

### CONTRASTS OF ONTARIO AND QUEBEC.

"To the Editor of the "Journal of Agriculture."

Sir,

I have just returned from a 2 months tour of the western province. I have also the issue of September before me of the Journal, and there is one error you have in it: West Essex should

be West Essex, in the South Riding of Shire. There is fine soil round the city of London, in Middlesex. Take it along the shores of Lake Ontario, and from Niagara to Hamilton the soil is of a sandy nature with a clay bottom. In the neighborhood of Kingston, there are more stones, although there is a formation of limestone pretty nearly all over that section. In some places there is less soil than others: it makes fine building stone. Kingston, as you are already aware, is called the Limestone City. The roughest portion of Ontario, that I saw, was in the Muskoka district, not bad soil, but a man would require to have at least 400 acres of land before he could say he had 100: the 300 would be rocks. In the Niagara district is the fruit section of Canada; there, the plums, peaches, pears, and berries grow to perfection. The apple crop is light, but I have no doubt that there will be more money in it than last year, as round Colborne and Brighton they are contracting the apple crop at \$2.00 to \$2.25 a barrel, on the trees. I have seen many and large fields of rape since the first one that I fully described in my former letter. I would say that a crop of grain and then seeded down to grass, and good crops, would be always insured, after the rape. I cannot say whether on account of the wet season or not, but I never saw such a crop of thistles: the common Canada thistle, as it is called, (some years ago, they used to grow in this province), but lately I have not seen many, but this year I was surprised, I also thought that the pest "sweet clover" was only grown to perfection at Chateaugay, but they can grow it well in many sections of Ontario, they can grow good crops of wild mustard also. One thing I was pleased to see in many sections that is, the kilns for burning and making tile, the price of which ranges from \$3.00 to \$5.00 per M less than in Montreal, and, consequently, there is more tile-draining done than in Quebec. As I said in my last, the crop of fall wheat was excellent. I saw the wheat of one field that yielded 50 bushels to the acre. I need not tell you the wheat was excellent, and with the increase in price will help Ontario and also Manitoba greatly: not before it was needed. In many sections of Ontario, where grain growing only has been followed, the farmers are hard up, living too high, expensive machinery to pay for, left out carelessly. I have heard it said by a machine agent, that weather and rust were the best friends of theirs; there was more machinery destroyed in that way, than in cutting and storing all the grain put together. Another contrast which I observed was a good deal of summer fallowing, especially west of Toronto; usually, fall wheat follows the fallowing—and after a crop of pease they sow wheat also, showing positively that they need manure: feed the soil and the soil will feed you—is an old maxim learn. I also think they grow more root-crops than we do. I saw a practical demonstration that turnips take quite a good deal from the soil. At a place called Holstein, in the County of Grey, South Riding, I noticed a small field of corn growing, one part of which was of a very luxuriant growth while the rest was rather poor. I asked the man-carrier if they had been trying an experiment with dung or some kind of artificial manure—there was such an immense difference. He could not tell me, but Mr. Brown, a good farmer, on my return to the station, informed me that the whole place had been well ma-

nured one year ago, and that corn on one portion with turnips on the rest, had been grown. He also told me that there had been a great crop grown—about 600 bushels to the acre—the corn had done well too, between 20 and 25 tons (green) per acre, but such a difference in this year's crops (all corn) no manure had been used, you could tell almost to the very inch, where the turnips grew. (1) Another idea of money making I saw at Bainsville, where Mr. Macpherson, M.P.P., of Lancaster, owns a farm. He sows clover and tares very thick, and early he had 130 pigs on an acre and a half. They were not able to keep it down very short, and the crop of hay where they pastured last year would cut over 3 tons to the acre. He expected to make a handsome profit on his acre and a half. One more contrast, and I have done: The farmers in nearly all the sections, pasture the road sides! It seemed so strange to see sheep, pigs, geese and cattle feeding along the public highway. I informed them that, with us, it was against the law; they said it was against the law there also, but, still, that particular law was a dead letter on the Statute-book. The wild weeds and thistles were not quite to the taste of the animals and were left to contribute towards seeding down for future generations—ages; Ontario can beat us in many things and among others they grow more weeds and thistles than we do.

PETER MACFARLANE,  
Chateaugay, 8 September, 1897.

### PAINTING FARM MACHINERY CHEAPLY.

The wooden parts of all farm machinery should be painted every three or four years, and the iron parts that are worn should have a coat of paint every season and the sooner after the season's work is over the better. No matter how well protected, the polished metal portions will draw dampness and corrode. Some grease the mold boards, shares, etc., but this does more harm than good. The proper way is to paint them.

Get five or six gallons of raw linseed oil, a gallon or two of white lead, a small box of prussian blue, a small box of chrome yellow in paste form, and 10 to 15 lbs. of venetian red in powder. For the wooden parts, there is nothing better than venetian red and raw linseed oil. The mixture will make a dark red. If a bright red is preferred, mix some chrome yellow with it in the proportion of 15 parts of venetian red to one part of the yellow. This makes vermilion, the brightest red known. If blue is wanted, mix white lead four parts with one of prussian blue. This will make a dark blue, which can be made as light as wanted by adding white. Green is made by mixing yellow and blue. Any of these colors will answer for the wooden portions of the machinery. Do not use any drier as the paint will last much longer without it. In winter, a much longer time between coats is required for paint to dry than in summer, but when it has become solid, it lasts much longer than if it dries rapidly.

Do not use white lead to paint metal surfaces of any kind for the acetic acid it contains will tend to corrode them. For all this kind of work use venetian red and oil or get some of the common

(1) Wherefore, in England, we feed-off two-thirds of the turnips on the spot with sheep, giving them pease, oats and cake in troughs.—Ed.

black paint sold especially for this purpose. For the portions which are expected to scour, mold boards, plow shares and similar points, etc., use a paint made as follows: Mix yellow ochre with coal tar and thin to a working consistency with turpentine. This will effectively prevent rusting but it will rub off quite readily when the plow is to be used.

"New England Homestead."

## PRACTICAL FARMING.

(By James Dickson.)

### Looking back, and forward—Meadows Pastures—Potatoes.

Looking back.—Farmers seldom pass through such a summer of surprises as that of 1897. In consequence of the ultimate rains and frosts the grass crops appeared to be completely ruined. Then the cool, moist June,—real grass weather,—started a thick mass of growth, and a torrid July after the ground was well covered with verdure, converted bare fields into good meadows. Also, in the early part of the season, dairy prospects were poor, and with no demand for store cattle, and prospects for hay never worse.

The future of the farmers for this year were gloomy enough. But with the hay crop up to an average, grain crops good, roots doing well, a weekly rise in butter and cheese values, the surprising demand for store cattle, the apparent demand in Britain for all our produce, and the arrangements of the Administration for its transportation, has all led the farmers to

Look forward.—With a more cheerful view, and though once in a while there may be a case of Klondike or other fever, there is no doubt but that the young man of this Province will in future be more likely to aim at being a prosperous farmer, and to learn that there are worse places than Canada in which to make a home. Some of them will be like Sam Jones who lived in Maine:

Good corn, raised chickens, and sowed grain. But he was cut out for larger work than that: Oh, Yes! And he would do something big. He went to Vermont to make Gilt-edge Butter, but the butter wouldn't come without churning, and also all the previous requirements; so he went to a California fruit farm; from thence to herding Australian sheep; and as he had not yet got the soft place.—his groove—he went to London to call on the Queen, but no one appeared to know that he had arrived, even the Police ordered him to "move on," and he soon found himself in a coal bunker, more like a "nigger" than a duke wroking his way across the pond.

And now he's on the farm again, hoeing corn, feeding chickens, and raising grain.

For there's no place like the State of Maine.

Meadows.—In this matter there is great room for improvement, and the destruction of the meadows last spring may turn out to be a "Blessed calamity." There are many who had fields that ought to have been reseeded, and when frosted, turned them over, sowed oats and grass seeds, and cut more oat fodder than they would have cut hay even in a good season, and next season, they will have a double crop of better hay. This will be a valuable experience to many, and will urge the advantage of turning

over the sod oftener, and reseedling. There is no necessity of ploughing more than once, and generally a better seed-bed is then obtained than by a second ploughing. After this date (1st Oct.) it is better to keep the plough going, and seed down with oats in the spring. Sow before the ground is dry, and roll: the seeds will stand drought much better. Some writers advise sowing \$10.00 to \$12.00 worth of seeds per acre. I know that generally there is not a sufficient diversity of seeds sown, and no doubt the old stand-by—timothy and clover—will continue in favor but by sowing some other seeds that mature about the same time as these, undoubtedly there will be a greater cut of hay, and also of fall feed; for, unless the weather is favorable, timothy makes a poor fall growth, and on no account can it be fed close, else the stock will pull the root bulb out of the ground. With all these considerations, I have generally restricted myself to a cost of about \$1.50 per acre. Thus—timothy 8 qts; Long red clover 3 lbs; Short red 1 lb; Red top 2 lbs. If the ground is rough and rocky omit the short red, and if damp omit the mentioned clovers, and replace with three lbs. of alsike clover, and to get a good catch there is nothing like a sprinkling of rotted manure, and roll heavily when dry. For pasture, add two lbs. white clover, and a large double handful of orchard grass of Lucerne for an early bite.

Potatoes.—It is generally held that the sooner potatoes are dry the better, when they begin to rot. In all cases they ought to have as little rough usage as possible, and the neatest way of handling them is to put them into bags on the spot, drawn to the cellar and carried in. The old style of lugging them 20 or 30 yards and throwing them into a 30 bushel ox-cart, and dumping them through the cellar window, two or three hundred bushels in a heap, does not succeed well. In those days, potatoes remained green until frozen down, and they were ripened and tough skinned but the "civilised" potato is not made that way. By the way, the spraying method does not seem popular, as yet. In digging potatoes, do not forget that a great aid is to have the rows cleaned of the tops before commencing, and that a horse hay-rake is an excellent thing for that purpose. In these days of improved machinery it seems strange that there is not on the market a serviceable cheaply constructed implement with which to dig potatoes. To me it seems that all that is required for a proper machine, is a set of wheels to run a shaker composed of steel rods, to riddle out the soil, and leave the potatoes on the surface, and a scoop to run under the drill to lift them into the riddle. Usually in the townships there are not more potatoes grown than sufficient for the local requirements, and the usual way of digging them is to run the plough through the ridges and hoe them out. Certainly a proper potato-digger would be a boon, but the \$40.00 bruisers have only the popularity they deserve.

### EARLY AUTUMN CULTIVATION.

If we consult the agricultural literature of the fifties and sixties we shall find that the best English farmers of those days were great enthusiasts for autumn cultivation, and that they endeavoured to carry it out as early as possible. Some of them even sent their ploughs into the

corn fields to plough the stubbles between the rows of sheaves placed in stook, and when this was not done skill cultivators surface-worked the stubbles as soon as the corn was carted off. This shows what a high value was set on seizing on all opportunities to raise autumn crops and to clean foul stubbles while the sun retained powerful influence to scorch up rapidly the pared-up weeds. Then, again, as to the utility of sending ploughs into the corn fields before the crop is rid off, very little time is to be gained compared with what used to be the case. Our reaping machines now perform the work of cutting so rapidly that more harvesting can often be done in a fortnight than our fathers could perform in a month a few years ago. Of course we have late and unfavourable harvests, which necessitate corn to remain in the fields longer than owners like even now sometimes, so that we cannot altogether declare the artifices of our forefathers useless, but in nine cases out of ten our improved modern machinery has changed the entire order of things, so as to render early autumn cultivation considerably more easy than it was found to be even in the last generation.

There were two parties in the old days, just as there are now, the fast cultivators and the slow steady goers, a favourite motto of whom was, that "a shilling saved is just as good as a shilling won." I remember this being hurled at my head once—quite forty years since—when advocating the great advantage of surface-cleaning stubble lands that they might be cropped to green crops for consumption by sheep the following spring and summer. My reply was that if the surface-cleaning was not effected immediately after harvest it had to be done the following spring, after the land had had ample opportunity of getting more foul meantime, and that, by causing a valuable green crop to be raised, the expenditure in autumn cleaning was well repaid. Of course the agricultural Conservatives of that day denied that the autumn green crop could be raised without endangering the success of the future root crop. Science has informed us since that if we do not crop our stubble lands to green crops, the nitrification from rains and dews will fail to invest them with fertility, or, in other words, that the nitrates thus generated are washed through barren furrows and lost, whereas the rootlets of the green crop would take them up. Thus we perceive now how it happens that the green crop which occupies the ground in winter and spring actually takes very little out of the soil, and experience has proved that in drought summers swedes and turnips put in after one of these green crops are more likely to succeed than after the bare fallow, simply because the moisture has been kept from evaporation by the over-shadowing of the green crop. The agricultural Conservatives who oppose autumn green cropping have very little ground to stand upon now-a-days.

### ALL ABOUT THE HORSE BEAN.

J. B. LINDSEY.

The horse bean (*Vicia faba*), a leguminous plant, is grown quite extensively in England and on the continent. The bean when green is used in those countries for human food, being prepared in much the same way as the green

bean in this country. (1) It is said to be quite palatable, and very nutritious. When mature, the bean is ground, and fed very extensively to all farm animals.

It has been thoroughly tried by many of the experiment stations in our northern states, and in Canada. It develops normally till it begins to blossom, when the blossom is attacked by a small fly (2) which very seriously interferes with the formation of the seed. The plant will grow from two to three feet high, (3) and serves exceedingly well for green manuring, but cannot be recommended for seed production. On account of the insect pest, it should be turned under when in blossom. It is very succulent and decomposes rapidly in the soil. Horse beans should be sown in drills 28 inches apart, and manured with potash and phosphoric acid, but very sparingly with nitrogen. (4).

The white lupine is also a valuable plant for green manuring. It should be treated in the same way as the bean, with the exception that, not being troubled by the fly it can be allowed to develop as far as late blossoming, before being plowed under.

The horse bean can also be used as a nitrogenous green feed, but the soy bean (*Soja hispida*), a medium green variety, being more leafy, is to be preferred. The cowpea is also a very valuable nitrogenous crop, and would probably succeed better in the southern states, either for green feed or for manuring, than any of the other crops above mentioned.—N. E. Homestead.

### SPONTANEOUS COMBUSTION OF HAY.

Not a year passes, in England, without hay-stacks, aye, several dozens of them, being burnt, or at least having to be pulled to pieces to save them from being burnt. But hay is not allowed to stand till dead there. It seems to be quite a new idea in the States, this of "spontaneous combustion."—Ed.

"Whether or not hay ignites spontaneously has never been determined. Usually the fire has originated where considerable quantities of clover hay have been stored. In nearly every case the stacks or buildings were entirely consumed, so it was impossible to determine the origin of the fire. At the Pennsylvania experiment station barns in 1895, fire was seen dropping from the ceiling of the cow stable.

Investigation proved that the fire was confined to a mow of hay 18 x 23 and about 23 ft high. The drafts were stopped and the top of the mow kept covered with wet blankets. Openings were made in the sides of the barn (5) and all the hay, about 30 tons, was pitched out. While removing this the entire center of the mow was smoldering and ready to burst into flames when exposed to the air. Fortunately, a hydrant was near at hand and the top was kept constantly saturated and the barn thus saved. All the center of the mow was thoroughly packed, hot and smacking.

(1) A most absurd statement! It is the "broad-bean," not the "horse-bean," that is eaten by "humans."—Ed.

(2) Not usually, but sometime.—Ed.

(3) We have often seen it six feet high in heavy clays.—Ed.

(4) Pure theory.—Ed.

(5) Hay is never stored in barns in England.—Ed.

The high temperature of the hay made it decidedly uncomfortable for those who were removing the smoldering fodder.

The holes burned through the mow floor were over the middle of the stable and not near the walls. It is evident that the fire could not have been either accidental or incendiary. The hay was second growth clover and timothy, mostly clover, and when harvested was thought to be in unusually fine condition. The fact that it was very compact gave color to the theory that the combustion was spontaneous. Examination of the hay, after being thrown out of the barn, showed that a large proportion of it was so thoroughly charred that it would crumble when handled. Some of it had not been subjected to so great a heat and was only brown in color, but was wholly unfit for stock.

For several days previous to the fire, a peculiar odor had been noticed about the barn and examination seemed to indicate that the roxen was heating, but there were no indications of fire. This odor soon became so strong that it was compared by some to that of burning grain. While positive proof as to the origin of this fire may be lacking, the circumstances are such that it is safe to consider it spontaneous.—Ex.

**SPARROW DEPREDATIONS.**

Sir.—I think it but right to mention, in acknowledgment of the valuable assistance given by yourself, and also the agricultural Press generally, by mention of the leaflet of the "House Sparrow" (recently issued by myself, with the valuable co-operation of Mr. Tegetmeier), that the application has been so great that in little more than a week it was necessary to have a second impression of 5,000, and good, widespread application still continues.

It is especially applied for (for distribution) by land-holders, farmers, and those connected with local administration in connection with parish councils, and amongst these there is a very good amount of application from parish clergy, and also from the gentlemen acting as estate agents to some of our large landed proprietors.

The information which, in many cases, accompanies the request for leaflets quite confirms all that has been said of the devastating ravage of this special bird on corn crops, and amongst these of the entire ruin often caused on the patches of allotment holders to the amount (in some localities) of it being useless to put in seed; the point also of injury to buds and garden crops, and the driving away of other birds, are all entered on. But in all this great mass of many hundreds of letters, though few deny that the bird takes some insects, no reports of its general usefulness have been sent in.

In regard to an objection taken in one quarter to judging of nature of the food of the sparrow by examination of its contents, as merely a "rough and ready" sort of work, I should like to mention that this expression can hardly be applied. The observations are made of contents of sparrows, adult or nestlings, for every month of the year; observations have been taken also by qualified observers over long periods up to fifteen or more years; and likewise careful examination made and recorded of the different stages, in development as frubs, or perfect insects, in which the creatures were found, and also whether of helpful or injurious kinds.

This is the plan adopted by the leading scientific authorities in my leaflet, including among these the ornithological staff of the Board of Agriculture of the U.S.A., and Dr. Riley, its State Entomologist. In the way we can see for ourselves what the food has been; but in what is called "computation," based on a sparrow being stated to take an insect with it on each journey to its nest, and these journeys being so many a day and the insects being found in such and such situations, multiplied by the acreage of the country from which the writer considers the insects would be taken, we seem (to me at least) to be less certain of our ground.

But, anyway, the Yorkshire farmers asked for something definite as to proof of sparrow food, and I think that if where doubt arises they would adopt the motto "Look within," it would clear the subject of many entanglements; and, trusting that the investigation may be of some service,

I am, yours, etc.,  
**MLEANOR A. ORMEROD, F.R.S.**  
 Torrington House, St. Albans, August 26th.

P.S.—Leaflets will continue to be sent with pleasure on application to Mr. W. B. Tegetmeier, Alexandra Grove, North Finchley, N., or to myself.

"Agricultural Gazette."

**LIMING LAND.**

(By the Editor.)

The experiments that are being made in the province on the effects of lime on land must, if they are to be of any practical use, be extended over a series of years. Lime is not like superphosphate or nitrate of soda, the effects of which are fully evident in the same season in which they are applied, but a lasting dressing that hardly develops its best effects till four or five years after it is laid on. In Scotland, and in the North of England, where farms are held on long leases of from 19 to 21 years, a tenant, on taking to a new farm, begins by liming all the land in the first limb of the rotation, generally one-fifth of the whole, and continues on the same scale till the whole has been gone over in the first five years of the lease, when no more lime is used during the currency of the lease, the first application being, it is considered, sufficient to keep up the productivity of the soil.

The conduct of an experiment in agriculture is a most difficult thing; and, when the results are to be compared of the field of two pieces of land, one manured with, say, sulphate of ammonia, and the other kept unmanured in any way, it is hardly scientific to say the plot No. 1 gave one third more than plot No. 2, "by the decision of the judges." The mere cross-harrowing of two contiguous plots has a tendency to mix the soils of both, and thereby vitiate the results of the experiments.

**EXPERIMENTAL FARMS.**—An experimental farm may be defined as that sort of a farm establishment which is chiefly applied to the making of experiments, with the view of ascertaining unknown causes, effects, or results, in the various departments of husbandry.

This is a plan which has been often attempted in drygone times, but unmitigated failures have been the ultimate result until lately. The cause of these failures has generally been the want of a due combination of

"real practical" agricultural knowledge with the soundest scientific acquirements. We can find every-where good farmers and good chemists, but the man who unites a thorough knowledge of the art of farming and of the science of chemistry is as yet far to seek.

For experiments are not easy or simple things to make, even were it determined what experiments should be made; and to obtain sufficient results to found one generalisation upon will occupy the time, care, and patience of the experimenter for more than two or three seasons. "For," as says a writer of the last century, who had evidently studied his subject, "the term "experience" may be said to denote those deductions which a person draws as the average results of practice continued for a considerable length of time, and which is unquestionably the surest guide that can be followed, where the observations are sufficiently correct, and the circumstances discriminated in so clear a manner as to create no sort of confusion, still, where these peculiarities are wanting, the conclusion thus drawn may be extremely fallacious. And what increases the evil in this case is, that when conclusions have been once drawn in consequence of an imperfect discrimination of circumstances, there is scarcely any hope of eradicating the error; as the mind when once accustomed to think in a certain way, is apt to proceed in the same ever afterwards; and that the same want of discrimination which caused the first error will induce a succession of similar errors ad infinitum."

Again, we must not forget that it happens, unfortunately, in farming, that things which are capable of affecting the results of a process or operation are so jumbled together into one chaotic mass, that it is a matter of extreme difficulty to distinguish such as are essential from those which are merely accidental, and, consequently, it is easy to mistake one for the other.

The primary object in every experiment should be to make it comparative in its circumstances, as regards the field, soil, situation, time, and labour, with a crop raised in the ordinary way. Without making such an extensive comparison, no satisfactory conclusion can be arrived at, since no common ground would exist by which to measure the loss or gain obtained by the experiment.

The present experiments being tried in England seem to me to be conducted on a proper principle; as thus: A farmer announces to the county society his desire to submit part of his land to the process of experiments in, say, the growth of roots. The chemist employed by the society analyses the manures to be applied, a committee visits the farm in question two or more times during the season, and the crop is carefully taken up, weighed, and analysed, under the superintendence of the committee and their chemist.

From the county of Norfolk, I hear all sorts of good reports as to the good that has been derived from this system; the practical knowledge of the farmer seems to have acted as a check on the theoretical knowledge of the chemist. In Sussex, this has been gained: Mr. Jamieson, the chemist, who has been running a mack for some eight years against the use of sulphuric acid in the manufacture of superphosphate, is at last convinced that the acid does not produce "finger-and-toe" in the root-crop, but that a dressing of superphosphate may with advantage be substituted for part of the fine-ground coprolite to promote early germination.

tuted for part of the fine-ground coprolite to promote early germination.

One of the earliest experiments we should recommend to be made on any experimental farm established in this country, would set at rest for ever the question whether our "apatite," in a finely ground state, is capable of assimilation by plants. The experiment has been tried over and over again in England, and the universal verdict of both practical farmers and agricultural chemists is, that apatite, however finely ground is, unless dissolved in acid, perfectly useless. And yet M. Franchot, the manager of an extensive apatite mine near Hull, gravely states: "the pulverised phosphate (apatite) is superior to that "manipulated;" which means diluted with sulphuric and other acids." On the other hand, M. Abalski, the mining engineer employed by the Quebec government, states in his report for the year 1883: "Valuable as the apatite is for manure when dissolved in sulphuric acid, in a simply ground state it is utterly useless."

The question is so thoroughly decided in England, that undissolved apatite is now never tried there even by the most sanguine experimenter. Still, there are people here who, whether from interested motives or from pure obstinacy we do not know, refuse to be convinced of the absolute truth of this fact, and it would be worth while making the experiment in this province to complete the demonstration.

Another point that demands a thorough elucidation is the "Guénon" theory, which is too familiar to all breeders of milk-cattle to need any dwelling upon. The Guernsey people evidently do not believe in it, and we hear from private sources that the Jersey farmers only pretend to believe in it to please their American customers. In England, in nine cases out of ten, the milkmen utterly ridicule the idea that the position of certain hairs in the hindquarters of a cow can afford any indication of her milking powers. Still, my dear countrymen "are" prejudiced, and there "may" be something in it.

Ensilage, again, and its divisions, into sweet and sour; here is a vast field for practical investigation. For instance, we all know that in Scotland from two to three bushels of turnips a day, with oat-straw, will make a bullock ripe fat. In fact, until about thirty years ago three-fourths of the fat cattle sent to London from Scotland never tasted any other food; oil-cake and bean-meal being quite modern innovations in that country; as may be seen by referring to the 1851 edition of "Stephen's Book of the Farm." Well, would ensilage and straw fat a bullock? That would give one some idea of the practical value of ensilage as compared with turnips. I believe in ensilage most devoutly, but I believe also in the root-crop, and I do not wish to see the one extrude the other without good reason.

What is the cost of growing swedes or mangels? With farmyard dung alone or combined with artificials: is there so much salt in the sandy lands of this part of the word, that the addition of more is pure waste? Which answers best for roots and grain, "old char," containing 80 per cent. of phosphate of lime, at \$15.00 a ton, or superphosphate containing 24 per cent. of "soluble and precipitated" phosphate, at \$26.00 a ton.

Seed to the acre, again! How shall we sow, thick or thin? Is the true principle that, as we believe, the better the land the less the seed required, or as

certain people here maintain, sow thin on poor ground and thick on rich soil? Again, as to the depth at which the seed should be deposited: shall we follow the Rural New Yorker, and never sow wheat deeper than one inch, or the plan we have so often advocated, viz., sow it from three to four inches deep and let the germinal and coronal roots have a chance to do their best offices for the young plant.

Once more; shall we sow wheat thin and barley thick, as recommended by Mr. Olare Sewell Read, the celebrated Norfolk farmer, at the December meeting of the London Farmers' Club? Shall we sow oats at 6 pecks an acre and reap at the utmost 30 bushels, or shall we sow as our friend Mr. Gylling of the Fosbrooke's Farm did, 4 bushels and reaped 72?

Is it true that, in a warm summer climate like ours, where the grain runs through its stages with great rapidity, less seed is required, than, as in England, where the grain takes a month longer in coming to maturity?

There are heaps of other points waiting a solution: use of roller on heavy lands; what grasses for heavy and light land, respectively; permanent grasses vs. alternation of grasses, grain, and roots; methods of growing fall-wheat in the western part of the province of Quebec; cheapest way of singling roots, does ammonia hasten or retard the ripening of crops? (1) and innumerable others "quæ nunc præscribere longum est."

**WHAT WE WANT TO KNOW.**—Now that we have an experiment-station at work in the province of Quebec, we are encouraged to hope for an answer to several questions that seem to us to be of pressing importance. Among other things we want to know is: Why is the average crop of wheat in the province about ten bushels to the acre, when we ourselves measured up a lot of fall-wheat on the Manor-farm at Saint-Hilaire which yielded thirty-six bushels to the acre? The Abbé Charlier, of the Seminary of St. Hyacinthe, attributes the bad yield of such wheat-crops to the neglect of drainage; but, that can be only a partial reason, as there is plenty of good dry land to be found on most farms.

Again; why should the singling of root-crops cost one man \$2.50 an acre, when another cannot get it done for less than \$13.00?

What is the best rotation of crops for both light and heavy land in our climate?

Which is really the more profitable, a crop of fodder-corn or a crop of roots; their respective effect on the other limbs of the rotation being considered?

As to the quality of milk sold in our towns: if cows fed on hay, swedes or carrots, cake, and corn, give milk containing 13 per cent of solids, what would be the contents of milk from the same cows fed on brewers' grains, straw, and mangels? In other words, are not milk men often fined for adulterating, or lowering their milk with water, when the food the cows receive makes the milk poor enough without the pump be-

(1) M. Chapais, in his experiments on the use of sulphate of ammonia, seems to be convinced that this manure hastened the ripening of his potatoes. We, on the contrary, have "always" found that nitrogenous dressings, whether in the form of guano, nitrate of soda, sulphate of ammonia, or pigeon's dung, have the effect of lengthening the active growth of the plant, and thereby delay its maturation.

ing resorted to?

Do 6 lbs. of "ammonia," sown broadcast on an acre of land in any crop, make any perceptible difference in the yield of that crop? According to Lawes, it takes that quantity to produce "one bushel" of wheat!

We constantly hear of such dressings as 40 loads of dung to the acre being applied for potatoes, corn, etc. Would it not pay better to give half the quantity to the hoed-crop, and reserve the rest for top-dressing the grass? Should not "hoed-crops" follow the last limb of the rotation rather than be sown on grass? Are not oats the natural successors of grass, and do not hoed-crops cost more to clean after grass than after stubble, cleaned in autumn?

Does not cotton-seed meal sometimes cause abortion in cows, and constipation in calves? Would not a mixture of husseed with that meal improve it for all purposes?

How do pease drilled 24 inches apart and 3 inches deep, harrowed after they are up, and horse-hoed, compare with pease sown broadcast and, after being harrowed in, left untouched till harvest?

Horse-beans drilled in 24 inches apart and three inches deep, harrowed and horsehoed, answer well on the Island of Montreal, and are, indisputably, an excellent food for horses and cattle in winter. Are they not worthy of an experiment on heavy land, in good condition, in all the more forward parts of the province?

Hurdling sheep on summer-crops of vetches, rape, etc., has been proved to be a profitable system at Sorel. Could it not be tried on the Seminary farm?

Which is more profitable, as food for milk-cows, the condition of the animals to be taken into consideration, 2 lbs. crushed linseed, 6 lbs. pease, 2 bushels straw chaff, and 45 lbs. of roots; or 6 lbs. hay, 4 lbs. bran, 4 lbs. cotton-seed meal, and 35 lbs. of silage "as usually made?"

What is the "practical" manurial value of one ton of poultry dung, compared with one ton of carefully made horse-pig and cow-dung, mixed, in a fairly decomposed condition?

Should wheat and other grains be harrowed after they are up?

Is or is not the inferior yield of our grain-crops attributable in great measure to the very slovenly way in which the harrowing is conducted?

Is it wise to manure abundantly a few acres round the farm-buildings, and to let the rest of the land lie out "on pasture" for several years, until it is supposed to be fit to grow a scanty crop or two of grain, after which it is to be allowed to revert to its original condition? Would not, say, \$5.00 an acre, expended in artificial manure, produce sheep crops, which, being fed off on such fields, might be expected to produce after-crops such as would astonish the whole neighbourhood?

Would it not pay to establish, at the station, a good-sized flock of Hampshire-down ewes, from which ram-lambs might be dispersed over the province, thereby improving, both in quality and in the valuable property of early maturity, our, at present, very inferior and very slow-growing breeds of sheep?

Do, or do not, "Black-Tartar" oats yield from 6 to 9 bushels an acre more than any other kind, all other things being equal?

If 3 bushels of oats are a sufficient seeding for an acre in the first week of "May," does not the habit of that plant indicate an extra half-bushel as requisite in the first week of "June?"

If wheat has two sets of roots, the germinal and the coronal, does not that peculiarity indicate the propriety of the deep sowing of that grain, in order that both sets may exercise their power of supporting the stem of the plant, and preventing the crop from "lodging" when at or near maturity? And, in the case of autumn-sown wheat, would not the roots of the deep-sown be more likely to escape being thrown out by the frost, than if both the coronal and germinal roots were close to the surface, as in the case of ordinary broadcast-work?

Science.

TENTH ANNUAL REPORT OF THE CHEMICAL DIVISION OF THE DOMINION EXPERIMENTAL FARMS, 1896.

A copy of this valuable and interesting report has just been received and we presume therefore that it is now ready for distribution among the farmers of the Dominion.

It would appear that the past year has been an exceedingly busy one for the chemist, (Mr. Frank T. Shutt), for the forty-odd pages of his report are crowded with results of analyses, and deduction therefrom of soils, fertilizers, cattle foods, well-waters and a host of other materials more or less closely related to agriculture.

Among what appears to us the more important features of this work, we notice the following. An exhaustive account of certain typical soils in British Columbia. Their relative fertility is noted and suggestions made for their profitable treatment.

The economic improvement of muck soils is the subject of a chapter that will be found most useful to all farmers having muck deposits on their farms. Mr. Shutt has been able to demonstrate the value of wood-ashes, (potash), and lime for these soils.

The result of pot experiments shows a large increase in the yield from such treatment. A well executed cut of the pot experiments illustrates this chapter.

Many analyses of "mucks" "muds" and substances of a like character occurring naturally have been made. It has been shown that many of the deposits are of a highly nitrogenous character, while others are useful as "mendments" rather than as fertilizers.

Instructions are given how to make composts with swamp muck, and attention also is called to the value of this material as an absorbent in and about the farm buildings.

Some instructive results by rotting manure are given. They show that even under fairly good conditions, there is considerable loss of fertilizing material. Manure must be kept compact, to exclude air, and moist (not wet). If the loss during fermentation is to be minimized.

Some valuable experiments regarding clovers as green manures have been made, the data show the extent to which the various clovers enrich the soil with nitrogen. This chapter contains information of the greatest importance to every farmer who is anxious to maintain or increase the fertility of his land.

A large number of materials of fertilizing value, such as wood-ashes, fish-meal, etc., etc., have been analysed and their composition is stated in plain language.

On the question of cattle foods the chemist presents his results on the chemistry of the "complant;" an important piece of work which clearly indicates the changes that take place during the growth of the crop. Scientific data are given to show that the corn should be allowed to arrive at the "glazing" condition before it is harvested.

The results of the chemist's examination of waters from farm homesteads is anything but encouraging. They show that on many farms polluted water is being used. Mr. Shutt points out the great danger to health both of man and beast from the use of a contaminated water supply.

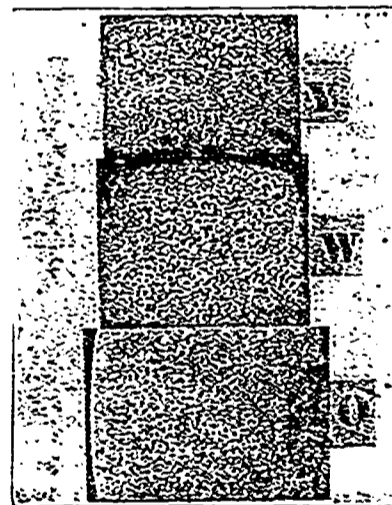
All thoughtful farmers we believe will be interested and benefited by a perusal of this report, and we should therefore advise them to apply to the chemist of the Dominion Experimental Farms, at Ottawa, for a copy.

THE INFECTION OF MILK BY MICROBES.

"A lecture, by M. E. Castel; illustrated by 36 Magic-lantern slides."

Mr. President and Gentlemen,

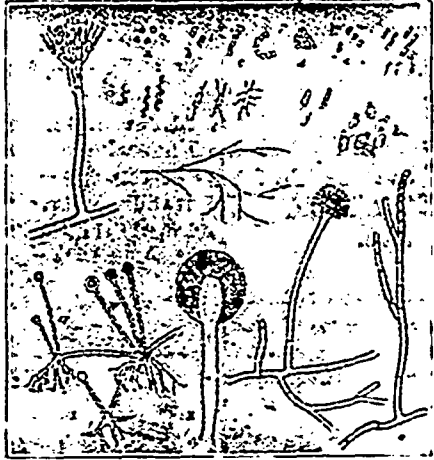
The first idea of this lecture occurred to me as I was reading the work of Prof. H. L. Russell, the bacteriologist attached to the Dairy-school of Madison, in the 11th and 12th Reports of the Wisconsin Experimental-Station. As the Professor was good enough to entrust to me his photographs and engravings, I was enabled to begin the collection of slides that illustrate this lecture. These I shall display before you, completing the series by some loans I have made from Freudenreich, Fleischman, Bolley, etc., etc.



Slide No. 1.

The explanations I shall give you, as the slides are passing through the lantern, are almost entirely due to Prof. Russell; at any rate, his are the plan and divisions of the lecture; even the title is borrowed from that published by him in the report mentioned above. M. Leclair, as well as M. Vaillancourt, complained, during the convention, about the quantity of bad milk delivered at the factories, and of the share it has in the making of inferior cheese. Here are 3 cheeses (Slide No. 1) which were made from milk sown, purposely, with a microbe that causes gas. Do you honestly think that they are worth the highest market price? You reply in the negative, do you not? Well! the depreciation of the quality of these cheeses is due to the microbes.

What, then, are the Microbes we so often hear spoken of, and which are crawling along everywhere? Are they members of the animal or of the vegetable kingdom? Formerly they were supposed to be animalcules, but they are now recognised as PLANTS; but plants invisible to the naked eye, needing a powerful microscope to detect them; the tiniest of all plants, consisting of only a single cell. But though they are the lowest forms of vegetable



Slide No. 2.

life, their entire does not the less constitute a flora which we represent to you (Slide No. 2); let us cast a rapid glance at it; it comprises Microbes or Bacteria (a to j), yeasts or leavens (k), and moulds (l-o).

I only repeat their unorth names that you may learn their signification. We have at: (a) the MICROCOCCI; their name signifies tiny balls (coecum = a berry); (b) DIPLOCOCCI; double balls, in America called Dumb-bells; (c) STREPTOCOCCI, little chains; (d) STAPHYLOCOCCI, bunches of grapes; (e) BACTERIA little, very short sticks; (f) BACILLI, rather longer sticks; (g) SPIRILLI, corkscrews, tiny screws; (h) BACILLI ramified, hair-like; (i) BACILLI with organs of locomotion, with cilia or things like the eye-lash, to help them to move; (j) BACILLI with organs of reproduction, spores; they look like pods full of peas, so much do the spores resemble the seed of the pea; (k) YEASTS or LEAVENS, resembling



Slide No. 3.

egg-like bacilli, with spores; (l) PENICILLIUM GLAUCUM, a greenish mould (on bread or Stilton cheese); (m) ASPERGILLUS NIGER, a black mould (on lemons or acid media); (n) MUCOR RACEMOSUS, a white mould (on horse dung); (o) OIDIUM LACTIS, a velvety mould on cream.

M. Taché told us, last year at Waterloo, how rapidly these microbes multi-

ply themselves (v. 14th report, D. Ass., p. 167), up to 62,000 times in 24 hours, at a temperature of 77o. F.

With such a rapidity of multiplication, it is not difficult to imagine to what a degree of infection a milk, once sown with pernicious germs, may arrive. I say "sown", for numerous experiments show that the milk of healthy animals is free from germs as long as it is in the mammary gland (Slide No. 3). If the milk in a healthy teat may, as we shall

see further on, meet with microbes, still easier is it to understand that a diseased animal, attacked by tuberculosis or inflammation of the udder (mammitis), may yield a milk unfit for dairy use.

This granted, we must feel that we, who must never send to the factories anything but the most irreproachable milk, cannot avoid devoting earnest study to discover where, when, and how the milk can be infected by microbes. This once done, we shall find out by what means we can prevent this infection or, at least, attenuate its effects, in a way practicable by farmers; and, lastly, we shall examine the effects of this infection on curd and cheese, the practical object of the lesson.

Professor Russell has classified the sources of infection of milk by microbes under five different heads. Foremilk, Unclean vessels, Animal, Milker and Barn Air. We will investigate successively each of these five causes of infection.

FOREMILK.—The first spurts of milk that leave the teat, at the beginning of the act of milking, are called the foremilk. Although the milk of healthy animals is, as we said just now, free from germs, it is a not less constant fact that the first spurts of milk, before even leaving the teat, are infected with numerous germs, and that even when the cow is sound and healthy. This is due to external infection and happens in this way: however perfectly a milking is done, however thoroughly an udder may be drained, a few drops of milk invariably linger in the teat; those who have tried to thoroughly drain a Rabcock pipette, after the milk has been poured out, will not be surprised at this; these drops of milk, at the temperature of the cow's body, constitute a moist and warm medium most favourable to the rapid increase of the microbes which may introduce themselves therein. Let us see, then, how they manage to get in.

Myriads of bacteria are always spread over the surface of the udder and teat, as we shall see further on; we observe here (Slide No. 4) a communication between the outside and the inside

through the opening (a) at the end of the teat. This passage, which allows the milk to flow during the milking, offers a spacious avenue for the microbes, 25,000 of which can dwell abreast on the space of one inch; to this passage is always open; those who are provided with hairs like eye-lashes, can slip into the inside; oesee there, they multiply in quantities, I was almost saying in innumerable quantities, but no, their numbers have been counted by manifold experiments, one instance of which will suffice.



Slide No. 4.

After having carefully washed each teat, the first spurts of milk were drawn out into sterilised flasks, containing not a single microbe; the small mouths of the flasks and the sloping position in which they were held, diminishing as far as possible the other chances of external infection. This done, the rest of the milk was collected as usual. What was the result? In the first case, were found 2,800 germs to the c. c. (cubic centimetre, about as much as would fill a child's thimble); in the rest of the milking, there were only 330 to the c. c.; the first drawn milk contained in itself alone 2,500 to the c. c., the greater part of which were lactic acid ferments, while in the rest the sorts varied.



Slide No. 5.

"Unclean vessels."—There we have one of the most influential factors in the infection of milk; and by unclean vessels, we do not mean only those that bear visible traces of filth and excrement, but also those that, in consequence of the usual inefficient methods of cleaning, are covered with living germs, with those organisms that science discovers by the thousand on the walls of the utensils, and by myriads in their cracks and seams. Ordinary cleaning, with hot water, takes off the filth and dirt, and with them the great bulk of microbes, but, even then, forests of them remain, which nothing but a minute cleaning with boiling water, or, still better, with steam, can destroy. Again, these strong remedies must be "applied at some length"; the steam,

too, must be applied in a close vessel, and under a pressure of at least 10 lbs; otherwise, the living germs might indeed be destroyed but the spores would remain uninjured. Such treatment may appear to many to be exacting and impracticable, and yet the Norman peasant-women, in the butter-renowned district of Isigny, have known for many a day that it was highly advantageous to pass their dairy utensils over burning "braise." Thus, they practised sterilisation in advance of Pasteur! Look at the representation (Slide No. 5) of a bacillus heated up to 224o F. for five minutes. Observe the black points in the midst of the tiny white sticks.

## The Dairy.

### SOMERSET CHEDDARS VERSUS SCOTCH CHEDDARS.

Most dairymen who care to be up to date in all that pertains to their business, are familiar with the long-time rivalry between the Cheddar cheese-makers of Somersetshire, and the makers of the Scottish Cheddars, and that the latter makers should have several times succeeded in carrying off the chief honours from the parent county at the London Dairy Show has been a very sore point with the best Somerset makers, and yet they never could see exactly where their weakness—if weakness was the name for it—lay. That they had been beaten, they could not deny, because the awards were given by judges in sympathy with the old English make of Cheddar. The Scottish makers were generally understood to have abandoned the Somerset system, and adopted an American system, setting up elaborate head quarters teaching institute at Kilmarnock.

And that these Transatlantic innovators should come down to London in full war paint, time after time, and beat the combined forces of the original order was "a caution." It was a regular eye-opener to Somerset, and for that matter continues to be so. There was some talk a year or two ago, about sending an organized deputation from Somersetshire to Kilmarnock, to try and recover the art of making the old English Cheddar by studying the Yankee factory system. I am not quite sure that a deputation was ever officially sent, but several of our Somerset friends visited that wondrous emporium of caseous knowledge individually. Yet the secrecy of the supremacy remained as inscrutable as the Sphinx. Several of the makers on their return

tried to make the wonderful "Lord Mayor's Cup Cheese" on the lines they had gathered in the North; but it persisted in working out hard, brackly, insipid, and indigestible, like a good deal more of American complations. And in regard to some American cheese the following circular has been sent out by an American shipping agency—"United States cheese has suffered very much in reputation and standing for some years past in consequence of "imitation cheese," "filled cheese," or "cheesine," being largely made in the States, (especially in the State of Wisconsin), and shipped as pure cheese to England. This article is made from skim-milk curd, cotton seed oil, neutral lard, and Co., (better not inquire into the source of the & Co., one would think. W. R. G.) which in combination predispose the product in hot weather to become rank and offensive, if kept long after its manufacture. When fresh it is inoffensive in smell, and is sold by many retailers as pure cheese at 6d. (12 cts.) per pound." Things must have reached a pretty pitch when American cheese merchants have to thus appeal to English buyers to protect them against their own "slush."

But, fortunately for Somerset, the still, small voice of truth was never entirely silenced, and a small cloud continued to float over the Kilmarnock horizon. Some little time since there was occasion to call a meeting of the Stewartry Dairy Association, for some formal purpose of co-operating in some experimental work, when to the surprise, and disgust of the leaders, the dairymen insisted on putting the matter to the vote. A general meeting was called, and though they were threatened that dissent on their part would jeopardise all grants from Board of Agriculture, etc., the dairymen remained obdurate, and said they would forfeit everything rather than drift into the semblance even of connection with Kilmarnock. It was seen by the leaders that if this adverse note stood, it was knocking the key stone out of the arch of the entire fabric of dairy education in Scotland, which has occupied a dozen years and so many thousands of dollars in building up; but again it was to no purpose, for the rebellious dairymen won the day.

The significance of this apparently trifling local Scottish circumstance, to Somerset dairymen, is that they need no longer weary themselves in solving the secret of the American opposition, and at times apparent supremacy. Somersetshire asserts it has been a delusion from the first, and these good old Stewartry dairymen know it.

The "North British Agriculturist" has been the most staunch supporter of the American innovation, and a bitter enemy to Somerset. The strength of language sometimes indulged in, may be gauged from the following extract. "The fact that the milkers during the milking operations, are every few minutes engaged in tying and untying a rope which is splashed all over with excrementitious matter is enough to sicken anyone at the sight of a Somersetshire Cheddar. Scottish Cheddar-makers make cleanliness the first principle to be aimed at, and they have often had good cause to complain of the prejudice in favour of English Cheddars, shown by judges at the London Dairy Show, and also by London Cheese-merchants at the same show." And yet it was, but a few weeks after the above, that the following appeared in the same paper. "It seems perfectly clear, there-

fore, that we are on the eve of a radical change being effected in what may be called the established system of Cheddar cheese-making in Scotland. Undoubtedly Mr. Drummond believed in the superiority of the American system, and our readers will remember, that he, challenged Mr. Wallis, an advocate of the Somerset system, to a public demonstration of the relative merits of these systems. (It will be remembered I mentioned this in a former article on Cheddar cheese, W. R. G.)

But, all the same, the American system is subject to the serious disadvantage of trouble by means of discoloration, for as cheese-makers admit, there was no trouble with discoloration before the American system was adopted."

This on the part of the North British Agriculturist, is throwing up the sponge with a vengeance, and is a virtual victory for Somerset, after that general denunciation of all creation, for having a prejudice in favor of Somerset Cheddar.

It now transpires that the upholder of the American system only "believed" he was right, but was willing to stake the issue on a bet, while Mr. Wallis who was coaching in the old Somersetshire system at the time "knew" that he was right, and had more common sense than to even accept the appearance of doubt on so important a national question. These few humble dairymen have gathered strength to attack the innovation, and say they will presently kick it bag and baggage out of the Kingdom in spite of the influence that backs the delusion.

W. R. GILBERT.

### THE PROPERTIES OF GOOD BUTTER.

Good butter is easily distinguishable in many ways from bad butter. Good butter should possess a uniform appearance, neither patchy nor striped. Its colour, which is influenced by the feeding, and perhaps also by the individuality of the cow, is in this country in winter pale yellow, occasionally almost pure white, but in summer it is generally a far deeper shade of yellow. In artificially coloured butter, an entirely yellow uniformity is required in the various markets. Good butter should neither be dull nor entirely sparkless in appearance, but ought not to possess too strong a glitter. It should have a tender, subdued glitter which it has when it possesses the characteristic ripe grain, which distinguishes it from all other fats. In properly prepared butter the exceedingly fine division which the fat originally possesses in the milk should not be entirely lost, but should be distinctly recognizable. To this may be ascribed the fact that butter-fat is very easily emulsified by the gastric juices, a characteristic that distinguishes butter-fat from all other fats, and renders it easily digestible. Good butter should neither be too soft, that is to say, greasy or sticky and of the nature of a salve, nor too hard, that is dry and friable. The drops of moisture and of salt brine present in butter should not be too large nor too abundant, but must be quite clear and should not possess in the slightest degree a milky appearance. Salted butter should not contain undissolved salt. The smell, odour or aroma of butter is always in close relationship to its flavour, and should only be very slightly developed in good butter, and then it should be of a pure characteristic butter odour.

The flavour of good butter should be that of pure butter only, and should not be associated with any kinds of foreign or unusual flavours. Apart from the fact that salt butter is distinguished from unsalted butter by its salt taste, butter possesses an essentially different flavour, according as it is prepared from sweet or sour cream.

Butter made out of sweet cream is characterized by a clean, extremely mild, and by no means strong flavour; butter made out of sour cream possesses a certain aroma and powerful characteristic flavour, which in many markets is now demanded as an absolutely essential quality. Regarding the origin of this aroma, so far as is known, it can neither be traced to the food, nor is it already formed in the milk. It seems to be first formed during the process of souring, in consequence of the change and the mutual decomposition of the constituents of the milk, probably of the milk-sugar, and its origin is connected with lactic fermentation, and can frequently be detected during a certain stage of the fermenting liquid.

Butter made from the milk of cows that have been in milk for a time, is generally firmer than that from the milk of recently calved cows, and usually possesses also a less fine flavour. With regard to the influence of the feeding of the cows on the condition of the butter, it has been proved that colour, smell, flavour, keeping qualities, and in a very special degree the solidity of the butter, are dependent on the properties of the food consumed by the cow. In a much greater degree, however, the condition of butter is influenced by the treatment of the milk before churning, by the kind of churning, and by the method in which the raw butter is washed and worked. These conditions have a greater influence than the food.

In addition to the above-mentioned points, the appearance, the smell, the flavour, the solidity, the fat-percentage, the quantity and the condition of the brine of the butter, and its keeping qualities, have all to be taken into account in judging its condition. The condition of butter depends on the condition of the milk, as well as on the method of treatment, the feeding of the cow, on the lactation period, probably also on the breed, the individuality, and the age of the cow, but above all on the method in which the butter is manufactured.

H. WESTON PARRY.  
"Compton Model Farm."

### MOTTLES IN BUTTER.

(Continued.)

"Still, I was not yet definitively certain of the reason why working butter only "once," in summer, gave no mottles, and, as soon as the cold weather arrived, it needed an hour's rest between "two" workings to ensure the perfect dissolving of the salt.

"Shortly afterwards, we built a room expressly for working the butter in. The building was warmed by steam, but we put no radiator in the new room. Imagining that, by leaving the doors open, plenty of heat would enter from the creamery.

"For some time, we were not deceived, but when the real cold weather arrived, the mottles again made their appearance. I ordered one hour, two, three, and at last twenty-four hours' intermission between the two workings, but it was no good; I ordered the working to be kept up longer, and longer

still. At one time, the maker was sorely tempted to give up; the mottles wouldn't go.

"All at once, the thought occurred to me that the temperature of the working room might be in fault. The next day, I found the thermometer at only 55°; I put in a radiator, and the following morning it was at 70°. Result: no more mottles!

"Weighing all this, the question seemed to me, as clearly as possible, to be reduced to a simple physical fact, i. e., that "the dissolving power of liquids varies, directly, with the increase of temperature. It is evident that less water is required to dissolve salt at 70° than at 55°."

And now, after this rather long quotation, I return to my point: "How are mottles formed?" Our Texas friend shows clearly "under what conditions they arrive;" and I add my testimony to his, and assure you that in nine cases out of ten they arrive in that way. But "how are the mottles formed?" Does salt deepen or bleach the colour of butter?

Many of the competitors in the "Chicago Produce" say it "depens" it.

But I am induced to think,—even admitting that "salted" butter is darker than unsalted butter,—that if the salt is in excess in some parts of the mass, from not having been well dissolved or well mixed, this excess will discolour the butter, producing veins or mottles. The salt used is chloride of sodium: now both chlorine and soda are "bleachers."

At any rate, our friends at the Dairy-school can easily solve the question by analyzing the white and the darker parts of mottled butter, when freshly made: the relative content of salt will be the answer. I said "when freshly made," because the mottles become in time less distinct; unfortunately, time does not improve the quality of butter.

See, now, what happens when mottled butter is made: it leaves the churn too dry; or it is too much dried on the working table before salting; and there is not water enough in it to dissolve the salt during the time it is being worked; it does not mix well; it prevents the lumps or sheets of butter from coalescing well; and, lastly, it turns out in distinctly marked couches or layers, instead of being equally and perfectly divided throughout the mass.

Or, again, the butter leaves the churn too cold; or it is warm enough, but it is worked in too cold a room, and the salt is hard to dissolve; or the work of the kneader is not efficient, the butter is too hard a state gathers together with difficulty, and the salt is, consequently, unequally divided in the mass.

Once more, perhaps while carefully attending to the requisite conditions of temperature and humidity, the working is badly executed; sufficient care is not taken to spread out the butter in sheets of equal thickness, to roll and cut it afterwards so as to refold it or pile the pieces one upon another, in order that at each turn under the roller and at each renewal (reprise) the layers of salt be multiplied in geometric progression, 1, 2, 4, 8, 16, 32, 64, and so on, as often as the operation is repeated.—The mechanical worker is safer from this point of view than the butter-table worked by hand.

Or, perhaps, all this having been well done, the butter is not worked long enough.

Too long working must be avoided; still, the time of working must not be too short.

Here, then, is a general method which will guard against the mottles caused by the salt:

To be certain that the salt shall be sufficiently moist, as soon as the butter in the churn is drained, add to it one-third of the entire dose of salt you intend using; turn the churn gently, so as to distribute the salt over the whole mass; this salt will retain water enough to moisten the rest of the dose. This plan may require a "little more" salt; so the third of the dose used must count only as the fourth of the dose, or thereabout.

20 Work the butter in summer at about 55, still warmer in really cold weather, but never cooler in the height of summer, though it may happen that the working may be begun with butter at a lower degree to get the working over before it warms itself up too much.

In the fall and in winter, warm the room up to say 65, or even 70; the butter will of course cool itself down again afterwards.

30 Work the butter long enough; here, the rule is not easy to lay down.—21 revolutions of the kneader with revolving table (Mason or V. F. M. Co.), is Gurler's rule, but take care that all the other conditions, of "temperature," that is, and "moisture," be observed.

I have found that 24 revolutions were not sufficient in certain cases in autumn,—for want of these precautions.

As to the haul-worker, the operator must avoid giving blows with the roller; but the working must be carried on long enough to ensure that the butter be thoroughly blended in a homogeneous mass (*que la pâte du beurre soit bien liée*).

I think it would be the best plan to slice the sheets of butter and to pile up the piece, instead of rolling up the sheet in itself; the salt sprinkled on the surface of sheets would be more equally divided. The working must be always thwarted (*croisé*), by making the pile of butter take one-fourth of a turn at each renewal of the rolling.

Another often discussed question belonging to our subject: Is it best to allow an intermission in the working to ensure the perfect amalgamation of the salt and butter? My mind is not made up on this point; there are pros and cons about it. But there is no doubt that, the temperature being equal, the salt will dissolve more easily by stopping the operation before the working is finished, because there will be more water present. This is the usual practice in Denmark; however, the Danes' chief object therein is not to avoid mottles, but to expel the water and butter-milk; that is their principal aim.—On the other hand, the working cannot be suspended without some inconvenience: where can the butter be put during the intermission? The question demands consideration. In the cold? that would cause a more or less complete cooling of the lumps, and unequal cooling means an unequal dissolving of the salt, unequal resistance to the roller, and, consequently, unequal admixture of the salt.—And in what atmosphere? The aroma of the butter might suffer if the air were not choice.

Any how, if the butter worked as above has no mottles, it may be considered unnecessary to let it rest during the time of working. If, which I do not think likely, the mottles appear in spite of these precautions, have recourse to twice working to rid yourself of them. But do not expose your butter to the cold; keep it at 55 or 65 according to the season as explained above.

A last word, now: a maker, young or old, ought always to try at least one tub of butter a day, the day after the making; if he find it mottled, he can at once correct any defect in his produce, and, as regards the mottled butter itself, he should re-work it until all the mottles vanish. After a fresh working, the mottles that one saw never re-appear; while, on the contrary, in the butter at its first working, they never show themselves at once, but only after the lapse of some hours.—(From the French).

### ODOR IN MILK.

F. W. Mossman, Massachusetts.

To determine whether an odor in milk is due to bacteria or otherwise, set a pail of the milk at a temperature of say 70 degrees in a room known to be free from odor. After three or four hours go to the milk, stir it briskly, and notice whether the odor has increased or not. If the former, then the trouble is of bacterial origin. If the latter, it is an odor from some outside source and can probably be traced to the stable or milk room. At all events clean everything thoroughly. If the cause is bacteriological, that is, there is an undesirable ferment present in the milk and the cleaning does not remove it, go to some one who has milk that is known to be all right. Get a quantity after it has become sour, bring it home and put a little into all the pails, vats, strainers, churn, etc. In fact, wash them in this sour milk, leaving some in to act as a starter to correct the bad fermentation when more milk is introduced.

The most troublesome ferments may be got rid of by such a course. Bad ferments betoken uncleanly work. By far the best of all remedies is prevention and prevention is obtained by cleanliness.—N. E. Homestead.

### The Grazier and Breeder.

#### IMPRESSIONS OF THE ROYAL SHOW.

HELD AT MANCHESTER, ENGLAND, IN JUNE.

"Eds. Country Gentleman.—This year the great Royal Agricultural Society of England held their 58th annual exhibition at the city of Manchester—one of the largest and wealthiest cities in England outside of London. I say wealthiest; that is a claim the city makes, but to see the great number of poor people in the city that are daily and nightly visible in the streets would make one think it was one of the most poverty-stricken cities in the country. I never saw so many really poor people in any city. All cities have their poor, but nowhere are they so conspicuous as in Manchester. In front of the Queen's Hotel, in one of the principal parts of the city, is a square or park, a portion of which is paved, and on this portion there has been erected a very costly monument, the base of which is formed by several tiers or steps of granite. These stone steps and the benches along the park front are the abode, day and night, principally night, of many of the city's poor—young girls, young women, old women, drunken women, little boys and men, old men, and even babies at their mother's breast, sleep there, eat there, and in fact, live there. I saw two boys about six or seven years old quarrelling as to which should have his

length of a certain stone step of the monument for a bed for the night, but that was nothing compared with the scene, as a whole in this particular square, especially in the early hours of the morning. It was something revolting and a disgrace to a city of such wealth as Manchester. I said something of the kind to a policeman, who was in the midst of it all, but he simply said if I thought that a hard sight I should go on certain other streets, or in a certain district.

The town was gaily decorated in honor of the queen's jubilee, and most of the decorations and buntings were left up to do duty for the Royal. When the Royal, the Bath & West, or Royal Counties Society visits a town (they are all annual itinerants), the town so honored blossoms with flags and bunting, and the main thoroughfare from the city to the fair ground is usually dressed to the utmost, not only the street but many of the private houses along the route. Everybody knows in the city of Manchester that a great fair is being held in their city, and that's more than can be said in some cities I could mention in the States.

The Royal Show is in every respect a most creditable one, as are also the Bath and West and Royal Counties, which in most respects are quite equal to the Royal. The only fair in America that can be compared to the Royal is the Toronto Industrial of Toronto, Can., which to my mind is hardly second to it from an agricultural point of view, while in point of attendance the Royal must take second place. This is probably accounted for from the fact that the Toronto exposition furnishes great attractions not purely agricultural. The average attendance at the Royal has been in round numbers about 27,000 daily for the past five years. The Toronto exposition has averaged more than double that number.

There is an interesting thing brought out in the table of attendance in the official catalogue, which gives the attendance of each day of the fair for the last eight years. They charge different rates for different days, beginning with the first day, which is called "judging day," for which day the admission is 5s. (\$1.25). The second day is called "half-crown day," 2½s. or 63 cents. The third day the charge is the same as for the second day, while for the fourth and fifth days the admission is 1s. (25 cents). The following will illustrate a point I have often made in regard to the price of admission at our New-York State Fair—it is the average attendance for the last three years on the 5s., 2½s. and 1s. days:

Admission.	Average attendance.	Rate.	Receipts.
5 shilling day...	1,950	\$1.25	\$2,437.50
2½ do .....	14,202	.63	8,947.36
1 do . . . . .	62,552	.25	15,637.00

I may be asked with such an example as this why the English continue the 5s. day, when it is their best drawing day. I asked several Englishmen this question, and received several different answers. One said it was to keep away the crowd on judging day. But that cannot be, as the society is for the promotion of agriculture, and on the day of all others when the principal lessons to be taught the farmers are being given—on that day surely they should not be barred by an admission fee five times greater than another day. Others said it was to permit the upper classes to come when they would not be crowded; another, that it was an old custom

and the practice at all shows of this kind in the kingdom. This latter is no doubt the case. To change an old-established custom in England requires a revolution.

Americans, with such a lesson as the foregoing, would require little to make a change; but it must be remembered that while the English love money, the question—does it pay? is not, as in the States, the first and all-absorbing point. It is a custom here. But that is not all. It is a country of classes—first class, second or middle class and third class. Railways furnish first, second and third-class tickets and compartments to match. The first-class carriages are poorly patronized, and I should say they were drawn over every road in England, at a loss, but, nevertheless they are drawn. It is a custom. Second-class carriages, while much better patronized than the first class, are not nearly as profitable as the third class. A third-class ticket in a railway train costs about two cents per mile, second class two and a half, and first class three cents. The difference in the carriages will be slight. Class, class, everywhere class! It is printed on the doors of the cars in large letters—"first class, second class, third class. At the railway stations there is a first, second and third-class waiting-room, first, second and third-class eating-room and bar, first, second and third-class lavatory—the same on steamboats. It is a custom, and pay or no pay, a custom it will remain. The difference in the rooms is slight. A third-class dining-room or restaurant, for instance, (which is generally in the same building with the first and second class rooms, and often only separated from them by a light board partition) differs from the other rooms principally in the furniture. In a third-class restaurant you can sit on a wooden bench and eat or drink from a plain wooden table; in the second class, chairs and a better table are furnished; in the first class there will be a table-cloth on the table. You pay as much for a bun, or a cup of coffee in one as in the other. It is the custom. A division of the classes is what it principally amounts to.

The Royal is a show divided into classes—five-shilling day, first class, two-and-a-half-shilling day, second class; one-shilling day, third-class. You can see as much on the third day as the second. Of course the great difference in the receipts at the gate on the shilling day is not all there is to say in favor of the cheaper admission, where dollars and cents are the prime factor. There are sixty times as many people in the enclosure on the shilling day as on the five-shilling day. There are that many more people to patronize the grand-stand; the privileges and licenses are worth sixty times as much on the shilling day as on the five-shilling day—so that the increased profits of the one-shilling day are only partially apparent in the gate receipts.

#### AMONG THE LIVE-STOCK.

At the Royal the great interest centers in the exhibition of live-stock. The judging is all done on the first day in an immense ring about 700 feet long and 250 wide with a grand-stand the entire length of one side of the ring, capable of seating eight or ten thousand. The ring itself is divided into numerous smaller rings where the horses and cattle are judged simultaneously. Each day (after the first) all the animals are brought out on parade in this enclosure. The grand-stand is well filled besides,

a crowd ten or twelve feet deep standing all around the railing.

I mention this as showing the great interest taken by the general public in the awards and not so much in the awards perhaps as in the stock generally. It is rather the animal-loving instinct of the Britisher that keeps him there for hours watching the live-stock parade as well as the judging. It is in the breed of the people. No Englishman is contented without some domestic animals about him. It does not matter much whether it is dogs or cats, rabbits or race horses, he must have them. It is a rare home in England that has not some variety of domestic animals that are being bred with care and attention. In the humbler homes it is usually rabbits or dogs. As a class the English and Scotch as well are natural born breeders of domestic animals. In this respect they out-rank the combined nations of the world. I need only to point to the great families of cattle, horses, sheep, swine, poultry, pigeons, dogs and cats that have originated in England and Scotland to establish the fact.

The live-stock exhibition was of course the chief attraction of the show. Of horses there were—hunters, 197 entries; Cleveland bays and coach, 40; Hackneys, 183; harness horses and ponies, 103; Exmoor and New Forest ponies, 17; Welsh and Shetlands, 32; Polo ponies, 95; Shires and draft, 184; Clydesdales, 51; Suffolks, 44; draft in harness, 35, total, 891.

Among the cattle exhibits, the Short-Horns came first in point of number—184 entries—Jerseys next with 149 entries, and Guernseys 61 entries. There was a fine show of Red Polled, Gallo-way and Aberdeen-Angus; the Herefords also made a grand display, and I must not omit to mention the Ayrshires and Kerries. These were especially attractive, and next to the Jerseys, the most interesting lot of cattle, to me, at the exhibition; while the exhibition of the Suffolk Punch horses was the largest and best I have ever seen. I always wonder why this most useful horse has never found favor in the States and Canada. Perhaps it is their color (solid chestnut) that is objectionable, but in conformation they are as grand a stamp of draft horse as can be seen in England, with the best of feet and a leg that for bone is above criticism, and what suits most Americans, free from long hair, that is characteristic of the Clydes and Shires. When some forty odd animals of this breed were paraded in the ring, thought it was the finest exhibition of draft horses I had ever seen. There were in all 803 entries of cattle.

In sheep, the Shropshires headed the list in point of number with 141 entries, of which 103 were rams, and 38 were ewes. Next in prominence were the Southdowns, with 74 entries. My friend and neighbor, Mr. T. Barrett of Wadsworth, N. Y., was for among them early and late, and some grand specimens fell to his persuasive arguments. Mr. Miller of Canada was there also, and the cream of the Cotswold exhibit will be seen in his exhibit this fall at the principal fairs of Canada.

Of the sheep, I was particularly impressed with the Lincolns, a breed that in England has to my mind improved more in the last 20 years (since I first knew them) than any other. Although I have always been a Cotswold fancier, I came very near being won over to the Lincoln fold, and I pulled myself away to prevent investing in a few for Squawkie Hill. I felt I must not see

too much of them, or I must see them always. "Thou shalt not covet" is a hard rule when a fancier's fancy is suited. I have had so many black marks against my name for breaking this rule, while in Jersey and England, that I hope the recording angel has by this time forgotten the count. Mr. Barrett is bringing out about a hundred head. I am sorry for the fellow that has to pick after him.

I also had the pleasure of meeting Prof. Wing of Cornell University, and Prof. Plumb formerly of the New-York Experiment Station, but now in Indiana, I believe. They were both very much pleased with the exhibition, and were evidently especially interested in the dairy exhibition and lectures in the dairy school, where daily exhibitions of butter and cheese-making were going on. There was also an exhibition of poultry-fattening and the handling of bees. The latter was particularly interesting and drew a large crowd. A gentleman went into a mosquito-net enclosure with a hive of working honey-bees and gave a lecture while he handled the bees and their product in the most approved fashion. I hope we shall see a similar exhibition at Syracuse. The poultry-fattening process was also most interesting and instructive, and would make another feature worthy of addition to our own State fair, especially as the process is little practised and less known in America than it should be.

F. S. Peer, "London, July, 1."

#### GENERAL BREEDERS' ASSOCIATION OF THE PROVINCE OF QUEBEC.

This Association held its annual meeting on the 23 and 24 August last, in Mr. S. C. Stevenson's office, Exhibition grounds, Montreal.

Mr. E. A. Barnard, presided, and Dr. J. A. Couture, V. S., was secretary. The following members were present:—Robert Ness, N. Garneau, M.P.P.; O. E. Talbot, M.P.; Revd. F. P. Côté; Revd. Father Trappiste Arsène Denis; Jos. Laporte; Thos. Hunter, D. Baxter, Ls. Labelle, J. C. Chapais, Ls. Thouin, H. Delaud, J. B. Delaud, E. C. Brosseau, and about fifty others.

The "Swize Breeders" reported that they had elected the following Board of management:—

MM. O. E. Talbot, M.P., chairman; J. G. Neair, God. Beaudet, J. H. Lloyd, Alfred Roch, Ls. Lavallée.

The "Sheep Breeders" reported that they had elected the following Board of management:—

MM. E. Casgrain, chairman; Arsène Denis, Guy. Carr, Chas. Robinson, God. Beaudet, Neil McCaig, James Cowan.

The "Breeders of French Canadian Cattle" reported that the following gentlemen will form the Board of management for the next twelve months:—

MM. J. C. Chapais, chairman; N. Garneau, M.P.P.; Arsène Denis, Revd. F. P. Côté, Jos. Girard, M.P.P., J. D. Guay, Frs. Gagnon.

The "Breeders of Jersey Canadian Cattle" made their report of the result of their election of the Board of management for the next twelve months which will be as follows:—MM. E. A. Barnard, chairman; Ls. Labelle, Paul Lavallée, G. Huot, A. Denis, Revd. Father Trappiste, Thos. Hunter.

The "Breeders of Canadian Horses" reported that their Board of management will be composed of:—MM. J. D. Guay, chairman; Robert Ness, Jos. De-

laud, J. Bte. Delaud, Féréal Barnard, Adeline Côté, Arsène Denis.

The meeting then proceeded to elect the president and two vice-presidents, and a secretary. Mr. E. A. Barnard was elected president of the Association; Mr. Robert Ness, 1st vice-president; M. N. Garneau, M.P.P., 2nd vice-president; Dr. J. A. Couture, V. S., secretary.

MM. E. Loiseau and A. Gingras complained that some large breeders of swine exhibited, at every exhibition, aged swine in classes opened for young ones. A lively discussion followed and it was decided that all the swine breeders present should sign a petition to the Montreal Exhibition Co., asking that an exhibitor should, when requested by one competitor, give a sworn declaration that the animal exhibited is not one that represented in the entry, and that this rule be put in force this year.

This petition was at once presented to the vice-president and to the secretary of the Exhibition Co., who promised that the rule would be enforced immediately.

It was unanimously resolved that a request be made to all the Exhibition Companies, asking: 1o. that three years old boars receive no prize; 2o. that a fourth prize be given to every section in the classes for swine; 3o. that no more than one prize be given to the same exhibitor in the class for the best pen.

This request was granted by the authorities of the Montreal Exhibition Co., which were warmly thanked by the breeders.

The sheep breeders complained bitterly that in the class for the best pen (1 ram, 2 ewes and 2 ewe lambs), some exhibitors, not having any old ewes, exhibited a ram with 2 yearlings and two ewe lambs. The members discussed the matter with the representatives of the Exhibition Co., and it was agreed that in future a pen shall mean 1 ram, two ewe lambs and 2 ewes aged of at least two years.

The sheep breeders also claimed that not more than one prize should be given to the same exhibitor in the class for the best pen. The complaint was found just and the representatives of the Exhibition Co. promised that in future the catalogue will be prepared according to the wishes of the sheep breeders.

The breeders of Jersey Canadian Cattle asked the support of the Association to get a special class for their cattle at the exhibition. A meeting was arranged to discuss the matter with the Authorities of the Exhibition Co.

The breeders of French Canadian Cattle passed a motion requesting their Committee of management to ask the provincial government for a subsidy of \$2,500 to help to select and to prepare two herds of these cattle to be exhibited, one in the New England States and the other in Ontario, in order to create a market for these cattle.

The breeders of Canadian horses pass a motion requesting their board of management to ask the provincial government to give them the subsidy of \$1,600 that was granted by the Mercer government, but that was never paid, to help to the selection of these horses in view of registration.

M. Dard, McCrae, of Guelph, Ont., addressed the meeting. He asked the Breeders' Association to use its influence to induce the federal government to appoint a Live Stock Commissioner, whose functions would be to encourage the breeding of beef cattle. The matter was referred to the Executive Committee.

MM. E. A. Barnard, N. Garneau, M.P.P., O. E. Talbot, M.P., E. Casgrain, Dr. J. A. Couture, were chosen to form the Executive Committee of the Association.

The meeting discussed whether it would be advantageous to affiliate this Association to the "Dominion Live Stock Association" and finally the matter was referred to the Executive Committee.

The meeting passed a motion asking the Hon. Minister of Agriculture of the Dominion to make some further efforts to have the Canadian Stock Books recognized by the Washington Government.

A vote of thanks was passed thanking the Montreal Exhibition Co. for their courtesy to the members of the Association and for having so readily granted all the requests made to them.

Col. Prévost said that the Montreal Exhibition Co. was well pleased to see these Breeders' meetings during exhibition time and that a good deal of good would come out of the discussion that took place on these various subjects.

Mr. Stevenson praised the "General Breeders' Association" of the Province of Quebec. He said that it would be beneficial to the two organizations to work in harmony; he hoped to see, next year, another large meeting of the breeders of pure bred stock of this province.

#### Farmers' Clubs, &c.

#### A TOUR THROUGH THE COUNTY OF PORTNEUF.

By Dr. W. Grignon.

(Continued.)

#### SAINTE CHRISTINE.

This is a new parish, having been only founded in 1893. The soil is partly sandy. But what energy is developed among these people! Looking at the village, consisting only of a church, a presbytery, and 3 houses, I was far from counting upon any audience at night; but I was wrong, there were a good many people came, not less, I was told, than 250, among whom were some 70 or 80 women, who paid great attention to my lecture.

Here, there is a great trade in wood, especially in pulp-wood, so that, in clearing their farms, the settlers turn the wood into money. However, it is not satisfactory to see many of them neglecting their farms and devoting themselves to the lumber-trade; so, in time that ought to be given to ploughing, sowing and harvesting their crops, you will see some of them who, for the sake of getting 80 cents in wages, will start off with a thousand pounds of pulp to Grondines, a distance of ten miles! This is but poor calculation, for we see that it is not these who are the most successful, but those who work on their farms in summer and in the lumber-business in winter.

"During the first five years," said the Curé to me, "after the land is cleared, things do well; but then we get down to the raw sand." "In my opinion," replied I, "as soon as the humus is exhausted, there is nothing left." I advised them not to sow grain more than two years in succession, and to put in 10 to 12 pounds of mixed clovers, Vermont, Red Western and White, with Orchard-grass, Kentucky blue-grass, and a gallon of timothy to the arpent. Lupines, too, and perennial vetches, I strongly



recommended to their attention, and I advise them not to lay their meadows more than two years, to cut them for hay when green rather than ripe, not to pasture them more than two years afterwards, etc., etc.

#### MEMORANDUMS.

(Mendments, in England, like amendements in France, mean dressings of clay on sandy soils, lime, etc.)

M. Louis Gignac, the father of 12 children, all living and as enterprising as 12 men, told me that, 20 years ago, he carted 300 loads of clay during winter on to a piece of sandy land, on which nothing, nothing, positively nothing, grew. He had, next season, a splendid crop of buckwheat, and "in my opinion," continued M. Gignac, "on raw, sand, clay does as much good as dung. My land still shows its effects."

The farmers of this parish might easily profit by the stuff washed down from St. Alban's, which has raised on this side of the river Ste. Anne a bank of clay, 2 miles long by 1 mile broad.

M. Adjutor Marcotte is so fully convinced of the value of these 'mendments, after an experiment he made last year, that he told me this: "Next year, my little boy will be 14 years old; I intend then to take him away from school, to buy him a horse and cart, for him to draw clay on to the farm with till he is 21 years of age. It is the finest legacy I can leave him, for he will then have use of the finest farms in the province to cultivate." Does it need more than this to convince the incredulous, the careless, who have only to try these 'mendments on their farms to see their beneficial effects.

#### COLONISATION.—A MODEL SETTLER.

M. Xavier Godin, the first settler, arrived here, all alone, 30 years ago. However, he was fortunate enough to find a wife who had the courage to share his solitary life: they have now ten children round their table. His capital consisted of his sinewy arms, his pluck, his energy, and his fine disposition. Now, he has property worth, at the lowest computation, \$2,000.00; he has \$2,000.00 in the bank (sic). 12 cows, 3 horses, 20 sheep, poultry, etc. Of his 5 grown-up sons, 3 have travelled and worked abroad, and as they were sober and industrious, their purses were not empty when they returned home. One of them lent, last year, \$1,500.00 to the church. They never lose time. The other two have an equal amount in the bank. Never have pride, laziness, or drunkenness penetrated into the interior of this blessed abode. The eldest son will inherit his father's property; as for the fifth, he has in the bank a sum equivalent to that his brothers earned abroad; this comes from wages paid to him by his father. M. Godin is a kind, honest man.

One day the parish priest told him that his land was suitable to the growth of lupines. He at once sent for some seed, sowed it, and the crop was good. When his children returned from abroad, they naturally did not have to pay for their board. "But they work by wholesale," said a farmer to me. What a fortunate family! One settler, then another, then ten, then twenty came and grouped themselves around the first settler and formed the parish of St. Christophe, erected civilly and canonically in 1893.

This man may fairly lay claim to the honour of having done something for the good of his country.

In consequence of having seen that a Farmer's Club might do a great deal of good here, I established one, and 40 farmers put down their names at once. The priest begged me to get the Department of Agriculture to send them, from time to time, some lecturers, and all the people hope to receive the "Journal of Agriculture."

#### PORTNEUF.

Many farmers here manure their meadows with ashes and phosphate (1), and find it answer.

The curé bought, a year or two ago, 15 arpents of land, for which he paid \$800.00. Many here laughed at the purchase, saying that he had better have put his money into the bank, and drawn the interest; but, after draining the piece, M. le curé made a clear profit out of it of \$150.00 a year, and feels confident of making in two years from the present time double that sum.

#### DESCHAMBAULT.

M. Grégoire Paquin, president of the club, tried plaster sown on the land, but gained nothing by it; while sowing it on buckwheat, when it was about 4 inches high, the results were astonishing. Others tried the "Victor" artificial manure on barley; the straw was stronger and the grain heavier. The results from a dressing of lime on bog-earth were very great.

#### ST. ALBAN'S.

Here are four large cheeseries. Great progress has been made since the Club was established. The curé is devoted to the interests of agriculture.

#### ST. GILBERT.

A new parish. Only 41 farmers. No Club. Still, one is needed. Two cheeseries within a few hundred yards of each other! They will be mutually ruinous. No roots, no green-fodder grown.

#### A ROUTINIST.

A farmer here says that no one wants clover- or timothy-seed! He farms 120 arpents, and does not grow enough hay to keep 2 cows! So he does not do very well as far as profit goes, while M. Prosper Paquin, and M. Alphonse Petit, each of whom sows thirteen to twenty dollars worth of clover and timothy, keep, on the same sized farm, 5 horses, 17 head of cattle, and sell hay, too. They attended the lecture, but the routinist stayed at home.

#### POINTE AUX TREMBLES.

A good club. Much of the land is drained, and a plenty of gas-lime and ashes used. This parish is lucky enough to possess like the parish of St. Augustin, a second Dr. Larue. Dr. G. A. Larue is so well off that he can live without any occupation and trouble (A fortunate man indeed!) He employs his leisure (which is clearly all his time) in improving his paternal acres which were formerly in a very bad state and brought in but little. They are now converted into an example of good cultivation. One of Dr. Larue's sons is intended to be a farmer; he is neither afraid nor ashamed of work. On 120 acres, 20 cows and 7 horses are kept, and the cows, partly Ayrshire, are worth seeing. They are fed on mangels, straw-chaff, linseed cake, and meal.

The harvest, in 1896, on this farm, yielded as follows: 9,000 bales of hay,

(1) For the hundredth time, we ask what does the writer mean by phosphate?—Ed.

900 bushels of oats, 1,300 bushels of mangels

"The first thing I did, on taking this farm in hand," said Dr. Larue, "was to cast off the stones and utilise them for walls and drainage." Ten thousand loads of stones were carted off the fields. From one arpent 12 loads of hay were harvested. On a piece of land, after hoed crops, from a sowing of eighty pounds of oats, Dr. Larue harvested 120 bushels! It reads like a dream, but it is strictly true. (1)

One day, as Dr. Larue was thoughtfully studying a marshy piece of land on his farm, on which, naturally, nothing was growing, a neighbour asked him what he was thinking about. "I was thinking," replied he, "of draining this piece and growing mangels on it." "Well!" said the other, "if you grow mangels here, I'll sow some in the river or in my soup-pot, and get as many bushels as you." But, to cut a long story short, the piece was drained, and the mangel crop on the 1½ arpent was 1,300 bushels. Others are proposing to follow such a good example, notably MM. Noé Grenier, Dolphis Vézica.

#### TIME IS MONEY.

When instances like these are laid before farmers, they take pleasure in saying: All very well; if I had Mr. So and-So's money I would do the same. I admit that a man of large means can do more at once on his farm, can buy superior stock, put up finer buildings, still we must not forget that there are many operations on a farm that need no expenditure except the expenditure of time.

For instance: if a field has to be drained, and the owner has a full-grown son or two, he needs no money to pay for labour, and the materials for the ditches, stone and wood, are all at hand. In fine, Dr. Larue's opinion is that no investment of capital is more profitable than the well considered, well planned investment of a reasonable sum in the purchase and stocking of a farm.

Dr. Larue has a cheesery, and is adding to it a creamery, this year, for he is under the impression (in which the Editor does not agree with him) that the Government will forbid the exportation of fodder-cheese. (From the French).

St-Pie-de-Guire.—Prizes are offered by this Club for the best crop of flax.

## Manures.

### GREEN MANURING.

(Continued).

This table shows that the crop of peas ploughed in was equal in manurial value to more than half a ton of nitrate of soda per acre, and was in this respect much superior to all the other crops. Blue lupins gave the next best return, as represented by an equivalent of value in nitrate of soda; but it must be noted that in the case of the peas the amount of dry substance required to yield the equivalent of 1,267 lbs. of nitrate of soda, or 7,140 lbs., was proportionately less than in the blue lupins,

(1) To appreciate the value of these statements, it is necessary to know how much each load of the twelve weighed, and how much land was sown with the eighty pounds of oats.—Ed.

whose equivalent value in the form of nitrate of soda was 1,081 lbs., from 7,020 lbs of dry substance. M. Grandjean states that another great advantage of this system of green manuring is that the nitrogen supply is gradually evolved as the buried substance decays, and is therefore available for the use of the crop throughout its growth.

Allusion has been made to the mechanical action upon the soil of the roots of leguminous plants, which, as M. Grandjean puts it, exercise a considerable influence upon the fertility of land. (1) This was not realised in any way until the important experiments at Lupitz had proved it in a striking manner. From these experiments it appears that when rye succeeded a crop of lupins its roots penetrated over three feet into the earth, and the roots of potatoes descended still deeper; but upon land adjoining, manured with farmyard manure, and not having had a previous crop of lupins, the roots of rye descended only between 16 and 24 inches.

The results of experiments in this direction are graphically shown by the figure on the next page.

This figure is reproduced from a photograph of deep sections of two fields together 37 acres in extent, cultivated for the potato crop with and without green manuring.

The letters A, B, C, D denote the nature of the strata of soil and subsoil of Field 1 through which the roots of the lupins of the previous crop had made channels, and facilitated the passage of the roots of the potato plants. Following these channels, the roots of the potato plants got into D, which on account of its depth had retained moisture. This caused them to spread laterally in an extraordinary manner, as shown in the figure, and the potato plants were thus supplied with water, thereby assuring the success of the crop, which equalled 9 tons per acre of well shaped, good cooking potatoes. The yield of Field 2, which had not been green manured, was only 6 tons per acre. The tubers contained more starch than those from Field 1, but they were less shapely and not so good for cooking. The cost of manuring Field 1 was about 19s. per acre. That of Field 2 was close upon £3 12s. per acre.

Experiments with rye gave similar results. After lupins the rye plants attained heights ranging between 47 and 67 inches, the roots were 45 inches long, and the yield per acre was about 14 cwt. of grain. Rye grown after potatoes only attained the height of from 27½ to 38 inches, the length of their roots varied from 20 to 24 inches, the crop was only equal to 6½ cwt. of grain per acre.

Of the various leguminous plants tried by M. Schultz, the roots of the blue lupins penetrated most deeply into the soil. The white lupin came next in this respect, and slightly surpassed the blue lupin in the fixation of nitrogen. The yellow lupin was not quite so good as the other species of lupin, while pease, though they exceeded the lupins in the fixation of nitrogen, did not penetrate the soil with their roots more than from 9½ to 12 inches. The different varieties of "Lathyrus" came next in value, and though they were not equal to lupins

(1) Wheat, after pease or vetches, generally finds the land too loose—"horrery" we called it in England—, unless a crop of rape or turnips, fed off by sheep, intervenes. The sheep's foot firms the soil better than the heaviest roller.—Ed.

they might be used instead of them. M. Grandeau is himself experimenting with regard to green manuring in France, and the results of his experiments will be looked for with much interest.

Records of experiments upon several Norwegian farms with lupins and other nitrogen assimilating plants have been recently published by Dr. Larsen. The principal subjects of experiment were crops of potatoes and oats taken after lupins ploughed in green in some cases, and in other cases harvested. The soil was of a poor sandy nature, and superphosphate, basic slag, and nitrate of potash were applied. In most cases the whole crop of lupins was ploughed under, but in one case it was harvested,

character from that employed at Lupitz or in Dr. Larsen's experiments in Norway, some of it being loamy, and some loamy with a mixture of sand, having considerable natural fertility. Upon taking this land in hand, Dr. Dehlinger got rid of the live-stock, and instead of farmyard manure adopted "green manuring" with most satisfactory results, obtaining good crops at a greatly diminished cost.

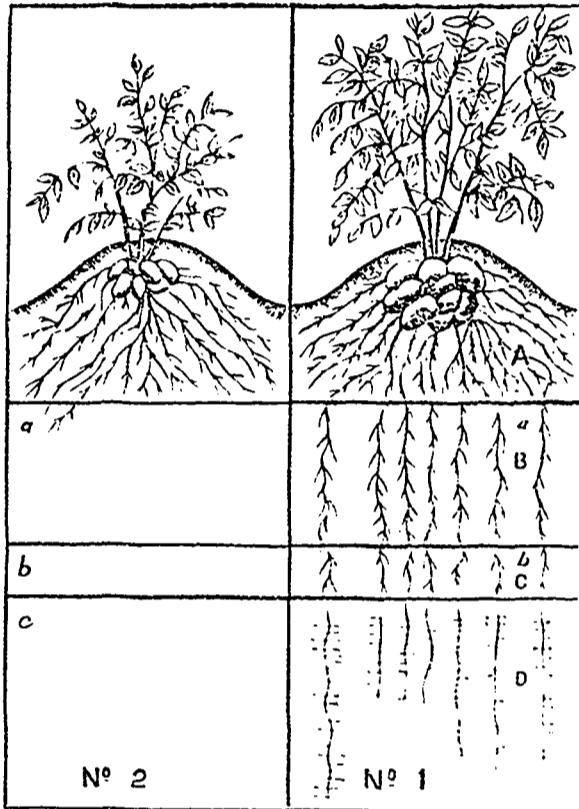
There have been other experiments in Germany under the superintendence of Dr. Salfeld, and in Sweden directed by Dr. Von Felliten, of a more or less successful character, and others are now in progress, which it is hoped will lead to more definite knowledge upon a subject

in the crop, was used, the yield was 3690 lb. The nitrate of soda cost \$2.53, and the increased crop was worth \$3.05.

On a crop of oats the addition to minerals of 424 lb. nitrate of soda gave a gain of 3250 lb. of oat hay to the acre.

The use of minerals without nitrogen, when nitrogen is required, will result in the partial failure of the minerals to serve the crops, and is not to be commended. With this advice to secure nitrogen through clover and other leguminous crops, I have no contention only observing that the method has its limitations, and these limitations are greater than its friends allow.

"Country Gentleman."



and only the stubble and roots ploughed under. The results were not so satisfactory as in M. Schultz's experiments, and indicate that the crop of lupins ploughed under was not able to supply the yield of potatoes.

as on several trial plots an increased amount of nitrate of potash added to sufficient nitrogen for the potato crop.

Inoculation, or infection, was also tried by applying to each acre of the land to be sown with lupins from 132 to 396 bushels of soil which had borne a crop of lupins. From these experiments it is considered by Dr. Larsen that 261 bushels per acre of lupin-infected soil is sufficient to obtain a good return of lupins, and that 132 bushels will often prove sufficient. It will be noticed that this amount of lupin-infected soil is enormously in excess of the quantity used by M. Schultz, and would render the operation far more tedious and costly. It seems to indicate that in Dr. Larsen's experiments the land was not so thoroughly infected with lupin-bacteria as in the trials at Lupitz by long-continued lupin-cultivation. The conclusion at which Dr. Larsen arrives are that infection with lupin-bacteria does not help the growth of other leguminous plants, but that on the other hand, lupin-bacteria, or soil infected with lupin-bacteria, added considerably to the yield of lupins, which appears to prove that each leguminous plant requires its peculiar or symbiotic bacteria to influence its growth.

Dr. Dehlinger carried on experiments near Darmstadt in 1891 with green manuring upon soil of quite a different

so important to agriculturists.

(Our practical experience in England proves, at least to our own satisfaction, that nitrogen "does" increase the crop of leguminous plants, notably of peas, beans, and clover.—Ed.)

### NITROGEN FOR LEGUMINOUS CROPS.

"Trials have shown that even leguminous crops are aided by an application of nitrogen. Laves' world-famous trials are marked by the high ratio of nitrogen demanded, this material being the dominant called for in his crops. Atwater's experiment with corn, a good nitrogen gathering crop, showed that 40 per cent. of the theoretical requirements paid for application, while a larger quantity still further increased the crop. In recalling the literature of the subject not a well sustained trial comes to mind that supports the statement put forth.

Nitrogen ratios have been tried by me on four farms, several crops and in three States, without giving any evidence that approximately supports the dictum of Mr. Peacock. I have taken for this year the results of nitrogen tests for grass on Wilson farm that are those of a series of trials, and find that where potash and phosphoric acid were used, the crop of hay was 2452 lb. to the acre. On an adjoining section where in addition 110 lb. of nitrate of soda containing 17.6 nitrogen, or 45 per cent. of the actual quantity found

to cure the best results it is a good plan, where it is possible to do so, to feed the grain in two or even three feeds. This may be done easily when less than 100 are fed together, but with more than that it is not a commendable plan. By feeding only one-third of the full feed intended it is easy to gauge the appetites of the wethers, which is a very important matter. The smallest degree of overfeeding is certain to react on the gain of the sheep, for in some instances it will probably cause scouring, in others constipation, and it may even result in the loss of some of the lambs.

"Essentials in management."—There are two essentials that contribute to cheap and rapid gains, and these are quietness and confinement. The least excitement brought on by the appearance of dogs, haste, or abuse on the part of the attendant is certain to be shown by the scales. For some time the Wisconsin Station used yards in connection with the fattening pens, but for the last two years they have been removed, and better results seem to have followed.

"Quantity to feed."—Careful attention must be given to the amount of grain that is fed. This part of the ration costs most, gives the quickest returns, and is the most likely to produce some disorder in the digestion of the sheep. For the first two weeks it is much better to give them only one-half what they need than to feed them too much; especially is this true if over 50 sheep are being fed together. Starting the sheep safely and well on a ration brings the feeder's skill into play, particularly if the sheep have been unaccustomed to grain. There are some foods that are safer than others to feed at the beginning, and among these oats or bran have a general preference. Wheat is comparatively safe, while corn is probably the most dangerous to feed alone. One pound per head daily of either bran or oats is liberal feeding for sheep that are accustomed to grain, and a slightly smaller quantity will be sufficient for those that have not been accustomed to it. The quantity of grain may be gradually increased as the capacity of the sheep to consume it becomes greater. The careful and successful feeder trains his sheep to eat with as much carefulness as the trainer teaches a colt to trot. It is safe to assume that wethers at this age may be fed all the grain that they will eat, as it is usual for them to profitably utilize it in making gain, unless they are unhealthy or the management is defective. It is a hard matter to estimate the amount of grain to feed owing to the variation in the consuming capacity of sheep. In starting it has been our custom to feed from 0.5 pound to 1 pound. A month later the wethers will probably be taking 1.5 to 2 pounds, and during the last month from 2 to 3 pounds per head has been the capacity of most of the sheep we have had in experiments.

"Cost and value of the increase."—In comparing foods for fattening sheep it has been the custom to compare them on the basis of the cost of 100 pounds of gain, overlooking the increased value per pound which the sheep realizes in the market because of the increase that has been made during the feeding period. It is but a moderate advance to accept 3 cents per pound as the cost price of feeders and 4 cents per pound as the selling price when ready for market. Thus each pound that cost 3 cents when the feeding began becomes worth 4 cents at the close of the feeding, owing to the better condition of the sheep,

## The Flock.

### SHEEP FEEDING.

(Continued.)

#### FATTENING WETHER LAMBS TO MATURITY.

"Preparation for fattening."—It is the common practice on most farms to withhold grain from the lambs for a time before and after weaning, in the belief that they will make quicker and more profitable gains while being fattened later. For four years we have fed lambs at the Wisconsin Station from birth until slaughtered, and have kept accurate account of their food and gain, so as to understand the influence of grain feeding at all times. The evidence is clear that the greatest and most profitable gain is made in the younger days of the lamb, and that the feeding of such food as bran, linseed meal, and oats before weaning and a small quantity of oats after weaning not only pays in direct profit if the lambs are sold at any of these times, but the fattening later is none the less profitable because of this management.

Feeding grain before weaning has produced an average of 61 cents per head more profit at weaning time than where no grain was fed. With lambs sold in the fall, feeding grain both before and after weaning produced an average of 34 cents per head more profit than where no grain was fed.

Feeding such foods as oats, bran, (1) and linseed meal before and after weaning did not influence the gain during the fattening period, which usually extended over three months. The cost of gain, however, was 29 cents per 100 pounds cheaper in the instance of the lambs that had not been fed grain.

One of the most profitable features of grain feeding lambs previous to fattening was observed to be the earlier maturity of those that had had grain from birth. For instance, in one trial the lambs fed grain from birth attained an average weight of 113 pounds seven weeks earlier than those that had no grain previous to fattening, and this weight was reached at a smaller cost in the instance of the lambs fed grain from the start.

"System of feeding."—There is unlimited variation in general practice in regard to this point. It has been our custom to feed the grain first, then the succulent food, and last the dry fodder. In feeding fattening sheep of the age indicated the aim should be to induce the wethers to eat as much as possible. At this time they should receive all the grain they will eat up eagerly. To se-

(1) For bran, read peas.—Ed.

which increases the percentage they will dress. This better condition is produced by the foods that are fed, so that in estimating the profits from any ration should be credited with this increased value per pound of the sheep. Calculations of profit in succeeding experiments here mentioned have been made on this basis.

"Fodders for fattening wether lambs." There is no doubt as to the preference of the sheep in the choice of fodders, but there is no experimental data upon which to base conclusions as to their relative values. Clover hay seems to be the fodder they relish most, then pea straw, corn fodder, and timothy hay. The condition of the fodder will materially influence the gain, for if it is musty, burned, or dusty, or has been allowed to grow too coarse, they will neglect it. Two or three pounds of any of the fodders mentioned will be about the quantity that wether lambs 9 or 10 months old will eat daily through the fattening period.

## Orchard and Garden.

(Conducted by Mr. Geo. Moore.)

### CULTIVATION OF VACANT LOTS NEAR CITIES BY THE INDUSTRIAL POOR.

Teaching self reliance—The moral effect as a sanitary measure—One of the most important forms of charity.

There is no way to help a man so good as that which teaches him how to help himself.

While on a recent visit to the United-States, our attention has been called to the system adopted in some of the American cities of encouraging the poor in the cultivation of waste or vacant lands in the suburbs, and with a view of interesting our readers, especially those who are willing to aid in any work which is calculated to ameliorate the condition of their less fortunate neighbours, we put ourselves into communication with the secretaries of several of the committees having the work in charge. These gentlemen, very politely, answered our request for information, forwarding circulars, letters, and newspaper reports, from which we quote some of the most important points. W. J. Nichols, Esq., the secretary of the Brooklyn, N.Y., Committee, says: "I am satisfied that the vacant lots plan may be, if rightly conducted, of great service to the poor in the cities, and may induce some of them at least to turn from the city to the country, when they find what are the possibilities of land cultivation."

Here we are met in the first instance with a most important consideration in favour of the plan. A great many of our immigrants, being from the cities of the old world, naturally flock to our cities on their arrival and are disappointed to find them overcrowded with workmen; while in the country parish-farmers are short of help in the summer, and even in winter there are chances for work in the lumber woods which many a man misses by remaining in the city. We are essentially an agricultural, and not a manufacturing people, therefore anything that we can do to prove the possibilities of land cultivation must have a good effect in preventing this overcrowding of our cities.

Another most important feature of the

movement is its moral effect; we quote further from the Brooklyn circular.

"The plan is becoming recognized as an excellent method of furnishing industrial aid, which is the best kind of assistance to those among the inhabitants of the city who find difficulty in supporting themselves. And more important than the direct material benefit is the elevating effect upon the characters of those who engage in the work. This has been very manifest in the case of a large proportion of the cultivators of the gardens in this city. The experience gained there has been the means of securing other employment. Moreover, the turning of the attention of the dwellers in the city to the possibilities of subsistence contained in the cultivation of the land is in line with the most hopeful remedy for the relief of the suffering due to the overcrowding of population in cities. Altogether, the plan of cultivating city lots is becoming recognized as a most useful method for the relief of distress and for the benefiting the poor..."

Municipal and State authorities will find that agriculture can be made a serviceable agent in maintaining those dependent upon public support, and in reforming many now confined in penal institutions.

As a sanitary measure the plan is an admirable one. M. Nichols says in regard to this: "One very feeble-looking man applied for employment, and I sent him out with very little hope that he could do much, but he did, and it has made a new man of him. His health has improved so much since he took up this out-door employment that he has been encouraged to seek other work, which he has done with success, and to-day blesses the farm for what it has done for him."

There can be no better means taken to preserve the health of persons, whose occupation is in close confined workshops, than by a little exercise in the open air and especially upon freshly turned up soil. It has been found that one-half day of good steady determined work weekly is sufficient to keep a plot 25 by 200 feet in order and this would mean only one hour per day, for the man to spend in it who has other employment; or in the event of his not being able to spare the time at the right season, he can get the assistance of his children, or wife, in an emergency: to help in the cultivation would be a valuable means to aid the education of the boys.

Of course to render the plan effective, organization is necessary and a certain amount of funds required; therefore the charitable and philanthropic must be appealed to, and it would appear that to aid the deserving poor, and to reclaim those who have fallen into bad habits, it should commend itself to their notice as eminently well calculated to bring about such desirable results.

We propose to give an outline of such an organization in a future issue.

In the last report of the Brooklyn Bureau of Charities occurs the following passage:

"The teaching men to cultivate land is perhaps the most important form of charity for the great mass of the unemployed. There can be no remedy for the hard conditions existing in the city that does not include the inducing a considerable number of those who are crowding together in the tenements to go out into the country, and that this may be accomplished, industrial education, especially in agricultural lines, is essential.

## HARDY HERBACEOUS PLANTS.

The taste for their cultivation should be encouraged—The old kitchen and flower garden—Natural orders of plants—Descriptive list commenced.

It is a pity that the taste for bedding plants should have made us lose sight of the hardy perennials.

It is true that, with some exceptions, they cannot compare for richness or color, nor profusion and continuity of bloom with many of the exotics which make the flower garden brilliant and gay during the summer months, but to those who love flowers for their individual beauties and peculiarities more than for the pictorial effect produced by planting them in large masses, the hardy perennials possess charms more enduring and fascinating. Many of us remember the old kitchen and flower-garden combined; with its two principle walks in the centre, one running from east to west, and the other from north to south, with the old sun-deal, standing where they intersected, the borders neatly enclosed by dwarf box hedges next the gravel, and with Espallier, dwarf trained, Apples, Pears, Plums, and Cherries, to divide them from the transverse beds of vegetables, all equally the pride of the good gardener's heart. These borders, being well stocked with hardy plants, were full of interest from the time the snow-drop raised its tiny head as the harbinger of spring until the Michaelmas daisy warned us of the approach of winter; each species succeeding the other in its season of blooming, and forming a floral kaleidoscope of ever-changing beauty. The amateur gardener may find great delight in this class of plants because they will not tax his knowledge and ability to the same extent as those which require careful pot culture, or to be grown under glass; and yet studying their habits of growth, the soil they require to thrive in, their height, season of blooming, and general characteristics will be a constant delight.

These remarks are suggested by a visit recently paid to one of the largest collections of herbaceous plants in the United-States, that of M. Jacob W. Manning of Reading, Mass. Here we met with a number of old favorites, beside many new species and varieties, all arranged and planted with the greatest attention to system; and correct naming, while a catalogue of the collection gives the generic and specific name of each, together with its natural order, and the common name by which it is familiarly known, native country, height, color, and season of flowering. For the purpose of reviving the public interest in the culture of flowers deeper and more instructive than that of the effect produced by bedding out, however beautifully or artistically it may have been done, we propose, from time to time to publish a list of the names of hardy herbaceous perennials of the most popular kinds together with their history, peculiarities, and a few simple rules for their culture.

### ACANTHUS (Bears Breech).

NATURAL ORDER.—Acanthaceae.—*A. latifolius* is the handsomest of this family, growing about four feet high, it has large rich green, shining foliage, and spikes of pink and white flowers. Great interest attaches to this species

from the fact that it furnished a model for the ornamentation of the capital of the Corinthian column which is one of the most beautiful examples of ancient Grecian architecture. *A. latifolius* and *A. spinosus* are natives of Italy. *A. mollis* of Greece—the architectural model above alluded to.

Plant in rich, well drained soil, cover deeply, and mulch the two first winters.

### ACHILLEA (Milfoil or Yarrow).

NATURAL ORDER (Compositae).—Before proceeding further, it will be useful to note the advantage of knowing to what natural order or family a plant belongs.

The titles of these families or orders are generally expressive of the forms of the flower, as for instance "Compositae" means that the flowers are composed of a number of parts or florets combined in one, as in this instance, and that of the Aster or Daisy.—Again the term "Cruciferae" is applied to those plants the petals of which represent a cross, as in the common cress or candy-tuft. In other orders one flower is taken as a type, thus we have Rosaceae, Liliaceae, Primulaceae, and all flowers with the general characteristics of the Rose, the Lily, or the Primrose, belong these orders.

It will be easily seen then, that when we discover a plant's natural family we can form some idea of its appearance before we see it.

The Milfoils grow in any garden soil and are easily cultivated. The most showy is *Achillea*, *Eupatorium*, bearing large, flat heads of bright yellow flowers, and growing four feet high, of bushy habit, is most suitable for the back of the border or for the shrubbery, the flowers are bright yellow and the deeply serrated leaves, a lively green.—*A. Millefolium roseum* bears dense heads of deep pink blossoms, and as it grows only 1 foot high, it will take a more forward place in the border.

*A. Ptarmica flora pleno*—produces all summer, very double pure white flowers; another variety of this called "The Pearl" has larger and broader heads of flowers on stiff upright stems and is therefore more desirable. Some of the common names of flowers are curious and how they can have originated, is a puzzle to us moderns. *A. Ptarmica Double Sneezewort*, and *A. Ptarmicaoides "The Fair Maids of France."*

The most useful of all for decorative purposes is *A. tomentosa*, (the Wolly Yarrow) it is a creeping plant, with deep green moss-like foliage, which is completely covered in June, with bright golden flowers; it will survive severe drought and is therefore valuable to cover sunny places.

### ACONITUM (Monkshood).

NATURAL ORDER.—"Ranunculaceae."—The tubers of the aconites are extremely poisonous therefore are objected to by many; the flowers are peculiar and resemble a hood.

*A. Lycocotum* or Wolfsbane, (not a bad plant if it were a bane to wolves, only) has very poisonous roots—it has clean "yellow" flowers, which is rather peculiar for its scarcely ever occurs. That "primitive" blue and "primitive" yellow exist in the same genus. And all the others are blue or white.

*A. nepellus* and *nepellus-abyssus*, which is very rare, and *A. bicolor* are the most showy.

(To be continued.)

**A ROSE CARNIVAL.**

**A contrast—The Queen of the Roses—  
A water "fête."**

Our own carnivals of ice and snow have their opposites in the summer carnivals of some of the countries where roses abound almost as plentifully as snow-flakes in the cold north. Last year at Tacoma, on the shores of Puget Sound, a Carnival of Roses was held with great "clat." The committee in charge issued the following characteristic circular.

"The City of destiny salutes you who languish in the stifling summer, and perish in the rigorous winter of the East; you who fly from the dread tornado, and terrible blizzard; you who long for nature in her gentle moods, and for a climate where extremes are unknown."

Tacoma is indeed the city of your highest destiny. Under the shadow of our majestic mountains, covered with eternal snows, and shedding a perpetual benediction on the favoured valley, by the shores of the Northern Mediterranean, with its miles of liquid azure, at the edge of the boundless forest yet untouched by the hand of man, Tacoma extends a welcome to the world, and declares a festival in honor of the "Queen of flowers"—a gala week;—a Carnival of Roses."

The accounts given of this festival are most interesting: A young lady was crowned "Queen of the roses," by the governor, and all the people joined heartily in their efforts to make the days, days of rejoicing, and thanksgiving.

The theatre was transformed into a bower of roses, and a concert was held in it, at which a class of Indian pupils sang.

In the street parade, 800 children, each with a bouquet of roses, marched in procession singing appropriate hymns there was a large float decorated with roses, and a carriage loaded with Jacquemots.

Imitating the Venetian Carnivals, there was a water "fête" in which many revenue cutters, some ocean liners, and the U. S. little ship "Oregon" took part all gaily decorated with roses.

The loyal subjects of Floras Queen must have had a glorious time.

**IMPORTANT TO INSURE SUCCESS.**

**"HOW TO MAKE A USEFUL FRIEND OF YOUR COMMISSION MAN."**—Never give him occasion to find fault.

Send none but first class produce as such; if you have second class, keep it separate and mark it accordingly.

Select with care and do not be tempted to mix the grades for the sake of increasing the bulk of the shipment.

Pay the strictest attention to packing—as to filliez your barrel or case so as to avoid shaking.

Do not use second hand packages, or soiled ones; customers often form an estimate of the quality of the contents by the exterior; it pays to use new, clean, attractive packages.

Be punctual in all your dealings with your commission man; or you cannot expect punctuality on his part.

Gain, and keep his confidence by fair dealing and it will be to his interest to place your goods on the best market.

If there is a good understanding between you, do not be induced to change by the offer of better terms by a firm you have not tried.

**PRESIDENT WOOD OF POUGHKEEPSIE ON THE NEED FOR HORTICULTURAL ASSOCIATIONS.**

**Experience teaches—Agri. and hort. synonymous terms—Knowledge required—Markets.**

At the Poughkeepsie meeting of the Hudson Valley Society, President Wood spoke on the need of this, and of course similar associations, and his address was so full of practical suggestions that we copy that part of it which is of general interest.

"After centuries of experience, why is there need of agricultural and horticultural societies? Why do we not know it all? First, because the work has changed. Once it was "ager"—the field, with one crop; "hortus"—the garden, with many crops in one enclosure. To-day the division is broken down, and every field has become a garden. Second, we have not only to grow the crops but to meet a bewildering list of new varieties and decide what to choose and what to reject. Thirdly, insect foes and plant diseases have multiplied, and the higher the character of the fruit, the greater the danger from disease. We need a broad scope of knowledge, must bring to our aid the chemist and the entomologist, and use every means at our command. The 55 experiment stations in this country, the 350 throughout the world, are constantly making new discoveries, rectifying old ideas and bringing to light the facts that we need in our work. Once scientific men denied that plants had power to take nitrogen from the air. Till experiments at Halle with seed sown in washed and heated sand, watered with distilled water, and fed with weighed food, showed the grown plants to contain three or four times as much nitrogen as had been furnished them. At a station in Germany the speaker had seen trees grown in tubs, with food ration, 36 to 40 feet high, and perfect in every respect. Through bulletins and the agricultural press, this information is widely spread, but something more is needed—the face-to-face converse of cultivators and experimenters, in which obscurities in print are cleared up, difficulties stated and explained in a few minutes' time. One such talk was better than a year's reading. (1)

Fourth, the question of sale of fruits and flowers. Never were the needs and difficulties greater than now. Once the markets sought the producer; now we must seek the consumer and capture him if we can. Products must be made attractive, packages of the right size to suit certain markets. We have much to learn of the value of united action in the example of California, which has captured eastern markets with showy fruit and attractive packing. But we need not fear this avalanche of California fruit; something beside beauty is required—quality, high flavour, long-keeping, which eastern fruits possess. People will learn these facts in time, decide in favor of our fruit and our western competitors will not long hold the market. Fifth, this society must deal with the question of transport-

(1) Hence the advantage of lecturing.—G. M.

ation. One or two men can have little influence with railroad companies, but let a committee from such an organization approach them, it will be listened to and action taken. It is what is back of you that counts. Sixth, commission houses will receive attention. There are good ones and bad ones, but the individual grower cannot always discriminate; a committee of this society can obtain the facts which will protect its members from designing dealers and increase the business of honest houses." (2)

**A NORTHERN EXPOSURE FOR ORCHARDS.**

**Why it is the best in cold climates.**

**The Thomas a Didymus—Facts corroborated by experts—Scientific reasons.**

It is very difficult to make people who only look upon the question superficially, believe that trees are less likely to suffer from severe frosts on a northern exposure.

Such, however, is unquestionably the fact and one on which all scientific Orchardists are agreed. It is, however, no wonder that the uninitiated should be hard to convince, it is so natural to suppose that the warm, genial rays of the summer sun are the most conducive to growth and thorough ripening of fruit. And so they would be if it were not that they are too strong in the spring, and then do the mischief by the too suddenly thawing the frozen parts.

Prof. Craig, of Ottawa, in his evidence before a Committee of the House of Commons, Session 1896, says:—

"In planting an Orchard, I should advise a northern inclination. . . Not only the trees that we plant, but the trees that nature plants are healthier, and longer lived when growing on northern than on southern slopes. The spring sun heats upon the trees, starts the sap, and this may be followed by a severe frost. . . In most cases the northern slope furnishes the most equable climatic conditions, which are the most favourable for long lived apple trees.

At the New-Jersey State convention, held last January, Prof. E. R. Voochees of the New-Jersey Experimental Station, stated that "Orchards with a northern exposure give the best results, as they do not begin to grow so early in the spring, and thus become subject to later low temperature.

The fact of a northern exposure being the best is well confirmed, but for the purpose of still further convincing the skeptic let us enquire what are the scientific reasons, why it should be so. All organic matter, subjected to extreme cold suffers a partial disintegration of parts, as a microscopical examination will demonstrate, but, strange as it may appear, these parts, re-unite and resume their normal condition if the warm temperature is gradually restored, but if heat is suddenly brought to bear upon them, the separation will continue and destruction will be the result, hence the sun shining suddenly upon a frozen tree will inevitably kill it, whereas if the thawing was done by the gradual warming of the atmosphere, it would be safe or at least much more likely to be so.

(2) The above should be carefully noted and acted upon by Canadian farmers.—G. M.

**GARDEN AND FOREST.**

**Vegetable Physiology—Effects of cold upon organs of plants.**

Prof. G. L. Goodale, in an article on principles of Physiological Botany, as applied to Horticulture and Forestry, thus treats this subjects:—

Freezing, followed by rapid thawing, may be numbered among the most troublesome of the mechanical injuries to plants. It is well known that many species of plants in our climate are capable of being frozen and rapidly thawed many times in a single season without suffering any apparent injury, whereas there are tender species of exotics which are irreparably injured by being subjected to a temperature near, but not below, freezing. The difference between sudden and slow thawing of a frozen part can be seen by a simple experiment upon living plant-hairs placed for examination under a microscope. If the work is done with sufficient care, the protoplasm in the plant-cells can be completely frozen, and a separation of the watery parts of the living matter from its more solid constituents can be produced. This can be followed by a thawing so slow, and a repair so perfect, that the protoplasm will again assume its former character, and, when the proper temperature is reached, the motion which belongs to it normally is seen to begin again. Now, in certain instances, the freezing injures the cell-walls and the delicate protoplasmic lining, whereas in others the walls are not apparently harmed in any way. In the case of woody plants there is reason to believe that the water in some of the parts beneath is not frozen even when subjected to an extremely low temperature, but the subject has not yet been thoroughly examined under conditions of careful experiment. In such an unusual season as our present winter has been at the North, it is evident that harm results from the freezing which is sure to follow the partial starting of buds in mid-winter. Such injuries come under the general head of what is known as winter-killing, but there are others which are more obscure and are not easily explained in the same way. A few of them, for instance the killing of evergreens in some winters, and their complete immunity in others, can be understood upon the view that the process of evaporation of water from the leaves goes on even in cold days in winter, when from the cold ground little or no water can be supplied to the roots to take its place. But there are still some instances of the sort which cannot be yet understood.

**PACKING APPLES.**

**Outward appearance—No old barrels—Public confidence—Family packing—Grading—Boxes—Correspondence solicited.**

Packing fruit, especially for exportation, should be more carefully attended to.

Manufacturers are aware of the importance, in a business point of view, of the outward appearance of the packages containing their wares, and are so careful to make them attractive that they spend money on them liberally, knowing that it will pay by increasing

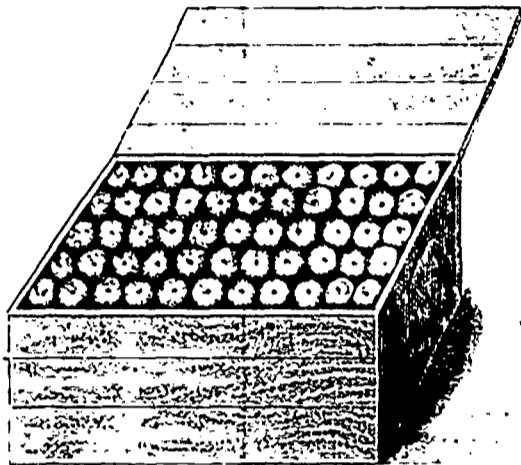
sales; unfortunately many of our fruit growers are careless in this respect, supposing that it matters little as to the way in which their productions are put on the market, thus they do not give the commission men a chance to show them to the best advantage, and so get the best ruling price.

To use old, or soiled barrels or cases is a mistaken economy; if they are new, clean, and well made, the impression is that they contain something which the vendor thinks is worth taking care of; and first impressions are half the battle in effecting a sale.

It should ever be the aim of an Orchardist to get a good reputation for the quality of his fruit, and keep it by the

ed, bruised, or imperfect apples should be strictly excluded, nor is it well to mix the small and larger ones together. Uniformity of size is desirable, and to attempt to put the small ones in the middle of the package is unfair. Do not be tempted to put any inferior specimens in these first and second class grades; if you have such sell them for what they are or not at all. Every box should be branded with the name of the variety it contains, its quality, and the address of the grower; and this should be a guarantee to the purchaser.

Boxes for apples could be made of half inch boards, planed on one side, of an oblong shape, and if a post  $\frac{3}{4}$  inch square is placed in each corner, and a 2



most assiduous attention, in selection of grades and careful handling and packing.

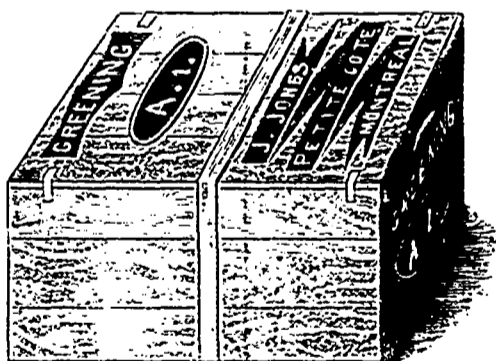
Let him gain the confidence of the public by an uninterrupted course of pains taking and honesty, and he will always find a market, but one inferior, badly packed, or misrepresented shipment will lose him this confidence, and seriously injure the trade in general. The old saying is: "One scabby sheep mars the whole flock."

If apples were packed in more convenient quantities it would be an advantage to the retail trade; the merchant would have less difficulty in making sales, the retail customers would be accommodated, and the grower obtain a

by  $\frac{3}{4}$  inch cross piece or band placed in the middle of the sides and bottom of the box, it will be sufficiently strong to stand the pressing, necessary to prevent shaking or rattling; when the top is put on the fruit will be a solid mass, and turn out in good condition. (see figures—).

If some enterprising Orchardist will adopt such a method, there is no doubt but that he would secure a good market for his fruit, as a special sample, and would be setting an example to others which, if followed, would have a most salutary effect upon our export trade.

The above is offered as a suggestion; correspondence on this important subject will be acceptable.



better price.

Many a family who would not know how to dispose of a barrel, would take half that quantity, or a bushel at once, if offered to him in the original package as received from the grower.

And if these smaller parcels were right angled, instead of round they would in many respects be more convenient, taking up less space in storage than barrels and consequently should cost less for freight.

Warehousemen and wharf hands are very expert in handling barrels, but would soon be equally so with square boxes or crates.

Grading the fruit is a very important matter; the very best should be selected and marked (A. 1), then the next size marked (No. 2), from these all spott-

**PEAR BLIGHT.**

**Its cause and how to battle with it.**

"The Present Status of Pear Blight and the Means of Combating It" was discussed by H. E. VAN DEMAN, formerly Chief of the Division of Pomology in the U. S. Department of Agriculture. He stated that, according to M. M. B. Waite of the same department, the most advanced information on the subject is that, by united effort, the pear blight, apple and quince twig blight, which are all caused by the same germ, can be held in check to a large degree. The source of infection every spring lies in the more tender and later growing branches, in which the disease was arrested

by the approach of winter the fall before. Here it remains dormant until the warm weather of spring starts it into action again. The poisoned juice soon begins to exude from the affected part again, and the insects carry it on their feet to the tender floral organs, which soon also become diseased and furnish additional means of infection, until they die. Whole trees are in this way sometimes prevented from bearing. Usually the disease does not become thoroughly active until the warmer days of June when temperature and moisture are just right for its propagation; then it attacks the tender shoots, and we say, "The blight has struck our trees."

The only means of fighting it, so far as we now know, is to cut out and burn all affected parts. When winter comes, there are very few places in the tree where the germs are alive—nature having healed or kept back the disease from any advance beyond where the tissues are dead. There are no live germs in the dead wood or bark. But it is safe and wise to cut back to clear, sound wood, and moisten the top of the stump with carbonic acid, to prevent any germs from remaining or being left on it from the saw or knife. The inner bark and wood are of a brownish color where affected. It is well to cut below where there is any sign of disease, to make sure of having it all. Then burn all brush, although there can be no lurking contagion after the diseased branches are really dead and dry.

**PRUNING III.**

**Neglected Orchards—Fertilize before pruning—The Dendroscope—Judgement required—Tools—Keep them bright and sharp close—Clean cuts—A necessity.**

When orchards have been neglected, and the trees have grown into a ball shape; the branches too close together, and some of them having outgrown the others, a method of pruning can be

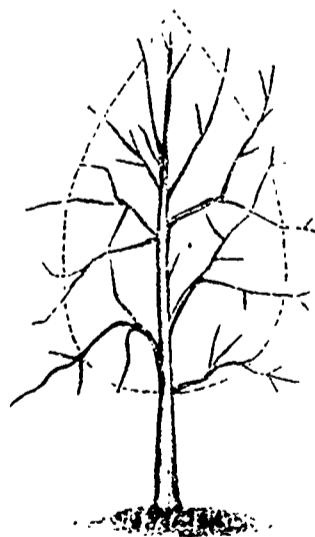
their vigour: this can only be done by means of their roots. If the trees are planted on sod, and there is a heavy growth of grass under them, this should be ploughed in, and several crops of potatoes, or some other hoed crop taken off; then the land may be top-dressed with a heavy coating of farm yard manure. A trench may be dug with advantage all round each tree, eight or ten feet from the stem, say, about two feet wide, and the same depth, into this place some well rotted barn yard manure or compost with about  $\frac{1}{2}$  bushel of wood-ashes per tree, and the roots which have been cut off in digging the trench will form new fibres, and will absorb the fertilizers thus applied.

The enhanced vigor of the tree will be apparent by its longer and more robust summer shoots; and now the requisite pruning can be done with better results than when it was not in a thriving condition; healing of the wounds will be more certain and rapid, and the desired end, namely, to cause the tree to yield more abundant and excellent crops of fruit, will be more readily attained.

To guide the operator in his work as to the eventual shape of the tree, a simple instrument called a Dendroscope will be found useful. This can easily be made, thus: cut a hole in a small piece of card-board, describing the outline of the tree, then by standing at a distance away from it, and looking through the hole, an idea will be formed of the shape the tree will be, and this can be borne in mind during the operation of pruning.

The accompanying figures will more explicitly show my meaning; when the tree is of an upright habit of growth No. 1, can be used when spreading, No.

To do this heavy pruning successfully, considerable judgment is required. It is not advisable, as before stated, to do all the work in one season, but to extend it over several, only removing some of the prominently offensive branches each year, until the whole are taken away, the tree will not then receive a check to its vitality by a too sudden re-



No. 1.—Tree before pruning desired outline as seen through Dendroscope represented by dotted line.

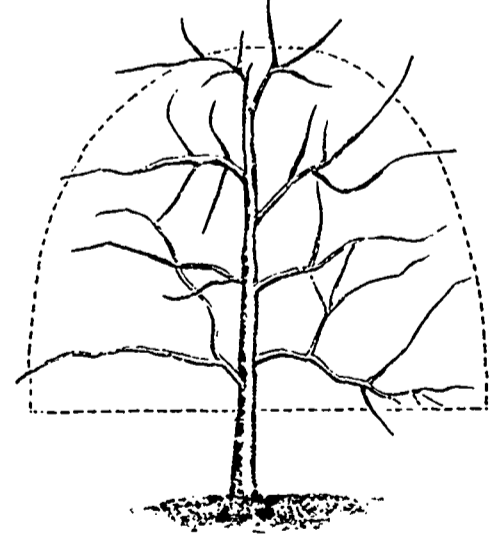


Diagram No. 2.

adopted which will, in some degree, repair the damage caused by such neglect, although they never can be made equal to trees which have been carefully and systematically pruned.

Before any attempt is made to improve old trees by pruning, it is necessary that they should be put into a vigorous condition by good cultivation, if this part of their culture has also been neglected; for heavy pruning will rather tend to check, than to increase

removal of some of its organs, and its healthy condition will be much more likely to be preserved.

The first year the work should be begun at the top, and by thinning out some of the branches which cross each other in the middle of the tree which have prevented the free circulation of light and air; the next year other branches which are not of place should be removed, and the third year the final heavy pruning can be made, for by this

time the tree will be well renovated as to shape and fruitfulness.

For this heavy pruning different tools will be required to those for the light annual operation on young trees. A "pruning saw" is necessary for the amputation of thick branches, and it should always be kept sharp and bright so as to make a clear cut. A two edged saw, with one side made to cut when drawn and the other when thrust will also be found very serviceable; a saw



a—Badly pruned—Stump left on to decay and rot the heart of the tree.

with a long handle may occasionally be useful but is often unsatisfactory because the workman cannot hold it so firmly in hand, and it is therefore likely to break or become twisted. Pruning shears are very useful if well, and properly made, and skillfully used, and it is surprising how large a branch can be



b—Properly pruned, branch represented by dotted lines taken off evenly with trunk.

cut with them, and they may be advantageously attached to long handles which will enable the workman to reach branches, high up in the tree, and so placed as to prevent the working of the saw. These with a good pruning

cut the rough edges in the bark and wood, which are left by the saw or shears, and which should be made perfectly smooth to insure prompt healing of the cut.

Do not think it is a waste of time to keep all tools clean and sharp, with them, in good order the work can be executed more expeditiously, pleasantly, and effectively.

The most important matter, and one that the uninitiated do not understand, in the pruning of large trees, is the manner in which large branches are cut off; there is a feeling on the part of many that we injure the tree by cutting a branch off too close to the stem, or thicker limb out of which it grows, when the very reverse is the case; all such should be cut quite even with the parent stem or limb so that when healed over the wound will be scarcely perceptible. If a spur or stump is left on it will decay, and this decay will extend to the heart of the tree, but if taken off smoothly and evenly no decay will occur—see fig. a. and b

**A ROSE FARM UNDER GLASS.**

The magnitude of the trade in cut flowers, especially roses, in the American cities, can be partly estimated by a visit to the Waban Rose Conservatories, near Boston, Mass. This establishment was started by Mr. E. M. Wood, the present proprietor, in 1870, and has been under the management of Mr. Alexander Montgomery for nearly 20 years, during which time, it has become one of the largest, if not the largest, of the kind in the United States, and we question whether, for the production of cut roses exclusively, it is excelled in any part of the world. What is more extraordinary is, that the whole product is disposed of to the Boston florists and retailed by them.

The houses, 33 in number, stand over rather more than 3 acres of ground, and vary in lengths from 100 to 355 feet; they are all heated by steam, from three boilers, 450 horse-power. Many thousands of feet of steam pipe are used, and all the main pipes are duplicated, in case of accident, which in cold weather would be most disastrous.

Water is laid on in every house, so that it can be applied with a hose, hence, no carrying, or hand-syringing is necessary.

Liquid manure is applied frequently in the same way; the liquid is mixed in the boiler-room and then forced by

while the most tender foliage is not injured, neither are the delicate tints of the flowers effaced; and the disagreeable, nauseous odor of the vapor is only perceptible for a very short time.

With all these appliances it will be evident that the culture of tender roses is carried on systematically and economically, and, notwithstanding the fact that only one man is employed to every 300 feet of length of house, the most exact order and neatness characterize every part of the establishment.

The roses are planted on shallow-benches, the earth being not more than six inches deep, their vitality being kept up by the liquid manure and state of the atmosphere in the house, so that the energy of growth can be regulated to a nicety, according to circumstances, and the will of the superintendent. It is very interesting to note how every detail is arranged so that the culture is reduced to a science which can be carried into practice with the utmost precision and certainty of seasonable and profitable results.

By the courtesy of the superintendent, we were enabled to gather a few highly interesting statistics. The flowers cut average from 2,000 to 10,000 a day, they are cut by each man, who has charge of a certain section, twice a day, and placed in refrigerators in the order of dates of cutting. At mid-night, the packers commence selecting, and packing them for market, completing their work by 5.30 a. m., when the salesmen come and take them by train to their customers, in Boston, where they are met by a delivery wagon, and are distributed as required. The salesmen know the quality wanted to suit the trade of each; some taking none but the very choicest, for which they are content to pay an extra price.

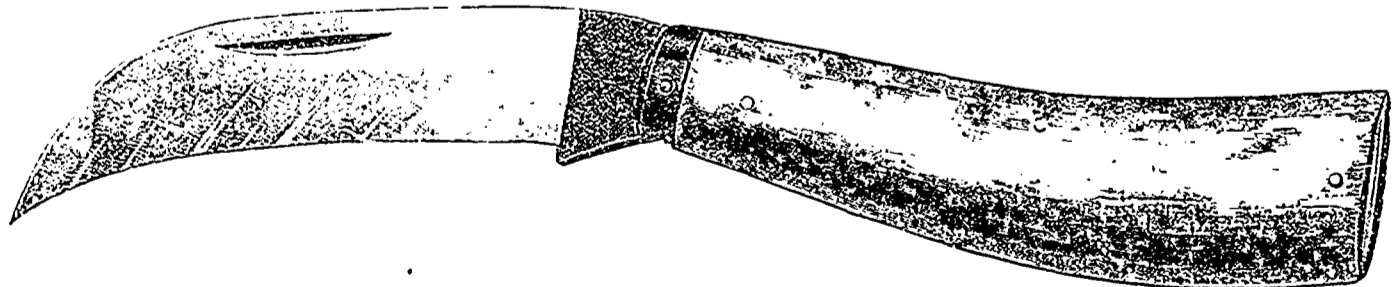
There is never any difficulty about disposing of flowers of good quality, although, of course, the demand varies with the season, and prices range according to it,—the average price is from two to six dollars a dozen, while at Christmas, and New Year's, "American beauties," sometimes go up to twelve dollars a doz. Fashion changes in the demand for roses, as in everything else; some years ago, the Marshal Niel was all the rage as a yellow tea-rose, and the General Jacqueminot as a crimson hybrid-perpetual; but now both are entirely discarded and the varieties almost exclusively wanted are American Beauty, The Bride, Bridesmaid, and Meteor.

It perhaps may be not quite correct

and when we consider that there are scores of minor concerns adding their quota to the immense supply demanded by the increased taste for them.

**HOPEDALE.**

Is a beautiful town of Massachusetts, delightfully situated in a fertile valley near Milford; about 30 miles from Boston and 18 from Worcester. Here are the extensive workshops of the Draper Manufacturing Company, which gives employment, when times are good, to a great many people. The whole of the township belongs to the firm and it is made interesting from a horticultural point of view by the fact that the proprietors and managers, beside having very fine gardens themselves, encourage a taste for gardening among their workmen and tenants, by offering a number of premiums for the best gardens, the result of which is, that all are well cropped and clear of weeds, while the lawns which embellish every dwelling are kept carefully cut and trimmed, and are pictures of neatness and order. One point, however, did not quite suit my old country, exclusive taste, which is, that there are no fences, either next the highway or to divide one garden from the other. It is the outcome of the Democratic or Socialistic idea, but opposed to that which suggests, that every man's house is his castle, and which, both for appearance and comfort I prefer. However, in another respect, the plan is satisfactory, for unlike most centres of manufacture, there are no dirty spots, no disorder, or anything to offend the most fastidious, and the whole place looks like a gentleman's well kept pleasure ground. Every one seems to take pride in his lot; the roads are kept in the best possible condition, well formed, thoroughly macadamised, and with paved gutters and concrete side-walks. Every house is abundantly supplied with filtered water, the streets are lighted by electricity; there is an efficient fire-brigade and every convenience as to churches, schools and conveyance. There is an half-hourly service of electric cars, which carry passengers, in about an hour, to South Framingham, 14 1/4 miles for 15c. Hopedale is a delighted place of residence, and it is pleasant to see the pride which every one seems to take in keeping it such a picture of neatness and order. The town and its surroundings must have a beneficial effect upon the health



knife are all the tools, that are required. Some prefer one shaped knife, some another, but to my mind the one of the size and shape below is the most useful for general purposes.

Be particular in selecting a pruning knife. (Roger's are the best). See that the handle is good buck horn, not too rough, but sufficiently so to enable you to get a good firm grip on it. The use of the pruning knife is to cut off all branches which are not too large, (and an expert can cut a very thick one), and to

means of steam pipes into every house. Fumigating, (or it can scarcely be called such, vaporizing would be a better term) is done, once a week, somewhat in the same manner as manuring; the tobacco is placed in a barrel in the boiler-room, steamed, and the vapor arising from it is forced by steam-power into the various houses. Smoke is no longer used, as it is found that vapor is much more effective for the destruction of insect pests, particularly the aphides, which are the rose grower's bane.

to say that no other flowers are grown here but roses, the only exception is the Chrysanthemum, which is grown to fill up the beds during the summer and fall on which the hybrid perpetual roses will be planted for winter and spring blooming; there are a good many thousands of them, and they fetch in their season from six to twelve dollars a dozen blooms.

The sums expended for cut flowers, in Boston alone, must be very considerable, judging from what is done here,

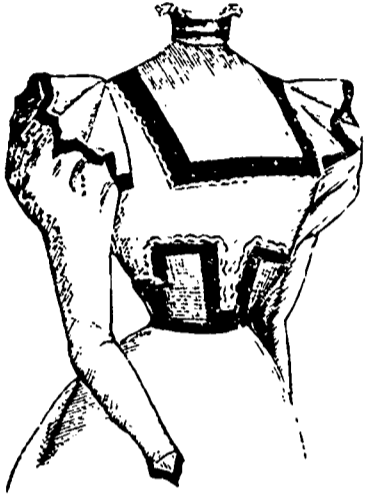
and morals of the population, and it furnishes an object-lesson well worth copying by many a Canadian manufacturing corporation, and by many a Municipal Council.

## The Household.

**AMATEUR DRESS-MAKER.**—The illustration is to show what can be done with a waist that has become pretty well faded by constant wear, to freshen it up a little.

First, search the piece-bag to find something suitable to do it with, for I need not say it will not pay to buy new material to do this.

Having found the best and most suitable in colour and fabric, begin by preparing the old waist, and be very careful in doing this; never cut out till you measure well and see that what you have will fill up the vacant space. Should the stuff run short, it will be quite easy to cut out to suit this. The



space or front might be cut round at the corners, but should you have to do this, the belt corners will have to be cut round to match.

Carefully tack well round the part you are cutting away, so as to keep the waist part in place during the making of the lining in, the part cut out must be used as a pattern. Cut out a new lining from it, and allow about one quarter of an inch for sewing to the waist, gathered if it is of a soft material; silk or velvet could be nearly plain; sew firmly on to the waist and cover the seam with ribbon velvet, or black silk, on the cross.

The belt is fastened to the waist, but this part need not be cut out, as it is intended more to cover up a faded part, than to act as a belt.

The waist shown opens up the back, and, notice, is finished off at the bottom with a band of velvet.

This freshening up of an old waist will well repay the amateur, but will scarcely pay to send to the dress-maker.

**WHAT CHILDREN MIGHT WEAR.**—Few materials will stand the wear and tear of children better than velvet, and it certainly is most becoming to young people, as it wants no trimming, and there is very little work in the making. It can be bought in almost any colour, but, just at present, the favourites seem to be black, brown, and dark green. For very little children, a brighter colour might be chosen, but, as a rule, the quieter colours look best. It can always be brightened up with a pretty ribbon and lace collar, so fashionable just at this season of the year.

**RECIPES.—THE USES OF SALT.**—Salt and water will sometimes revive a person when unconscious from a hurt. For poisoning with alcohol, an emetic of warm water and salt should be frequently given. A teaspoonful of salt in a glass of water is a cure, in many cases, for stomach trouble, relieving colic, and helping digestion.

A bag filled with salt and heated, is a great comfort to any one suffering from neuralgia. There is nothing more restful to tired eyes than a bath of warm salt and water. If the head be washed occasionally with salt and water, it will lessen the falling out of the hair. Salt added to the bath will be found almost as invigorating as a dip in the sea.

If the carpet be sprinkled with salt before sweeping, it will be found that little dust will arise, and the carpet be wonderfully brightened. Salt thrown on burning soot will soon extinguish the flames. If it be sprinkled on the stove when the kettle has boiled over, it will prevent all disagreeable odors. If sprinkled on the coals when meat is to be broiled, it will make the fire clear and bright.

To remove egg stains from spoons, rub with moist salt. If straw matting be washed with salt and water it will look like new. These are some of the very numerous ways in which salt is an aid to us. It is so common that it is within the power of every one to keep it for emergencies, as well as for cooking.

**SWIFT'S ADVICE TO HIS COOK.**—Dean Swift had a shoulder of mutton brought up for his dinner, too much done. He sent for the cook, and told him to take the mutton down, and do it less. "Please your honor, I cannot do it less," said the cook. "But," said the Dean, "if it had not been done enough you could have cooked it more, could you not?" "Oh, yes! very easily." "Why, then," said the Dean, "for the future, when you commit a fault, let it be such a one as can be mended."

**TESTING THE OVEN FOR CAKE.**—Miss Parloa gives the following directions for testing the oven in cake baking: "For sponge cake put a piece of paper in the oven, close the door, and open it in five minutes. If the paper is a rich yellow, the oven is right; but if it is a light yellow the oven is too cool; if a dark brown, it is too hot. For pound cake the oven should be just hot enough to color light brown. Cup cakes require an oven of about the same temperature. All thin-rolled cakes require a hotter oven so that the paper should turn a dark brown in five minutes. The length of time required for baking certain cakes will vary with their thickness or the size of the pan in which they are baked."

**PASTE THAT WILL KEEP A YEAR.**—Dissolve a teaspoonful of alum in a quart of warm water. When cold, stir in flour enough to give it the consistency of thick cream, being careful to beat up all the lumps. Throw in half a dozen cloves and stir in as much powdered resin as will stand on a penny. Pour the mixture into a teacupful of boiling water, stirring well all the time. Let it remain on the stove a few minutes and it will be of the consistency of mush. Pour it into an earthen or china vessel; let it cool; cover it and put in a cool place. When needed for use soften a portion with warm water. It will last a year, and is better than gum, as it does not gloss the paper and can be written upon.

**FRYING FAT.**—Excellent fat for frying cakes or for shortening may be made as follows:—

Take ten pounds of fresh sweet suet; cut in small pieces, put into a dinner pot which will hold well the ten pounds. Put in a pint of water, and after the first hour stir frequently. It takes

about three hours with a good heat to render it. Drain through a coarse muslin, and if the suet is good it will require but little squeezing and leave few scraps. Put to cool in pails or jars.

When the kitchen is downstairs the odor of boiling cabbage or onion will sometimes make itself disagreeably prominent all over the house. This can be avoided by putting a few pieces of charcoal into the pot with the vegetables.

Never cover hot meats or soups when setting away until thoroughly chilled. If there is no escape for the hot air they will inevitably spoil.

## Swine.

### ONE LITTER OF PIGS, OR TWO?

It requires pretty close work to get two litters strictly within a year. We can do better by drawing about three weeks on the succeeding year. Count this way for safety and to make sure work, and at the same time not wreck the producing strength of the sow. She carries her pigs 16 weeks, they should suck at least 8 weeks, and the sow should rest 3 weeks before being bred. This takes 27 weeks; and it is safer to count on three or four days more, as it may require that much more time to tend her in heat after weaning the pigs. If the sow is well fed, we expect her to be in heat three days after the pigs are weaned, unless she has been in heat a few days before, in which case she will be in heat at the regular time. This may cut short the regular prescribed time three weeks, and bring the time of weaning the second litter within the two years.

This outline will work for a time, but can hardly be kept up year after year. In the course of two or three years, if bred to produce spring and fall litters, the time for one is very apt to be lost in the effort to bring the pigs in season. As to this steady work being very hard on the sow, it depends very much on how she is cared for. In most cases, with us, the teeth wear out before the reproductive powers fall. The life of the teeth can be prolonged by feeding more grass and mill products, and not compelling the sows to eat so much corn that is so deficient in bone-forming material.

A sow cannot do profitable work for her owner, producing as near two litters a year as is possible, without proper feeding. She must be kept in high flesh, and not allowed to get "snake poor" while suckling, otherwise the quality of the pigs produced will not be satisfactory. We believe in working the machine to its full capacity for six or seven years, and then we have only one lot of sows to kill, or dispose of at a reduced price. If a sow produces but one litter of pigs and is then fattened, she must be sold at "sow price."

We do not like the idea of having the pigs come the last of July or the first of August. We prefer to risk February or March, with its cold, rather than the possible heat. We have sows due to farrow in August, and we are doubtful as regards results; 28 shotes, lusty, strong fellows, farrowed the last two or three days of January and the 7th of February, have done as well as any that we have ever raised that came later, when the weather was warmer. They were ready for the first tender pasture of the spring season, and will be ready for the highest price between the summer and winter packing season; they will not have to go begging for a buyer because they are too large for the

market, and, besides, they will be sold at the most profitable weight.

With us a pig kept over winter must necessarily cost a little more than in summer, for we expect him to grow about as fast as those kept during the summer. For years, here, the June market has been poor. Last spring, early in April, we sold 140 pound pigs at an advance of 35 cts over the shipping price, and they were in due, shipping order, because the buyer—a shipper and feeder—wanted something fancy to follow his cattle. The number a man has to sell, here, makes no particular difference in the price the shippers will pay.

We are in doubt whether sows producing only one litter a year will, during a term of years, average a larger number per litter than those producing two litters. If the one litter-per-year sow loses a litter or a part of one, the loss counts too heavy; and more than this, we do not believe that the pigs of one litter will be of any better quality than those of the sows producing two litters.

Let us consider the cost of keeping the sows, as this must be charged against the pigs. It will cost from two to three cents a day to keep a sow properly. Say we take the lower figure, and we have \$7.20 as cost of a litter when first counted. If the one litter is to be larger in number than if two are produced, there should be at least eight of them, which have cost 90 cents each at first sight. With two litters a year, as outlined above, my sows have nearly reached an average of eight per litter; but to be sure about the matter, we will count 14 pigs to the sow per year. This makes the pigs cost at first sight less than 52 cents each. Possibly the one litter-a-year advocates may say that the pigs have cost nothing, as the sow is constantly growing towards market. We have a friend who works it out this way, breeding 20 sows each year, and has them farrow in June, when they require but little care, and he believes they do well, as they save on an average, one year with another, four pigs each. The sows produce but one litter, and are fattened for market and sold at not less than 16 months old. Their produce is sold at about one year old, at 300 pounds weight. Those four pigs have retained the sows on the farm four months longer than they would otherwise have been kept, and we cannot see it any other way than that they have cost something at first sight. By Mr. C's plan the hogs are kept too long, and must be kept over winter, making them too old for the greatest profit when sold; and besides this, the longer they are kept the greater the risk from disease. This is also enhanced by the increased number of brood sows kept constantly on the farm. As a rule breeders do not expect the first litter from a sow to be as good as the succeeding ones, and on this point the old sow stands first.

After our experience the past winter with pigs, we have no fear of cold weather, but feel that it will be to our advantage to start a part of the pigs grown in the future, in the winter. We will not waste much sympathy on the sows in the fear of working them too hard, but will expend it in the direction of more and better feed, and encourage them to do the best they possibly can. We would soon tire of the pig business if we had to keep a sow a whole year and only had the pleasure of counting one litter. The work is too slow for the times and the market.—Ohio Farmer.

**Special Notices.**

**A Real Advantage to the Butter Maker.**

Under date of Dec. 8th, 1896, Messrs S. N. Seeds & Son, of Princeton, Ont., say: "During the hot weather of last summer a number of our customers troubled with soft butter found that when they used Herbageum for their cows on the grass, the butter was not only hard but better." The following is a brief summary of a letter from Mr. J. C. McKay, of McKay Bros., Georgetown, Ont.: "A thirteen month test with my cow has satisfied me of the value of Herbageum. Previous to its use she would frequently get off her feed, since using it there has been no trouble. We fed her meal with Herbageum when on the grass as well as when stabled. We used daily two quarts of milk and all the cream we required, besides which in the 7 1/2 months, from May 1 to not later than Dec. 15, we made 210 lbs of butter. If all the milk had been used for butter the yield would have been fully 300 lbs. for 230 days, which was fully one-third better than the preceding year—a gain of about 70 lbs. of butter at a cost of \$2.50 for Herbageum, as in the thirteen months we only used 20 lbs., feeding about half a tablespoonful twice daily."

**CONSUMPTION CURED.**

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

W. A. NOYES, 820 Powers' Block, Rochester, N. Y.

The Rife Hydraulic Engine Co.,  
Utica, N. Y., Sept. 9th, 1895.

DEAR SIRS:—In answer to your letter of August 17th I have to say that your No. 25 Ram is placed at my Summer House in Alder Creek and furnishes an abundant supply.

It is doing wonderful work, driving through 900 feet of pipe to an elevation of 130 feet above the ram, with a fall of only 7 1/2 feet.

I am more than pleased.  
Yours respectfully,  
A. G. BROWER,  
Pres't. Utica Water Works Co.

**Purest and Best**



Is used by the leading Creameries and Cheese Factories, and is also used in the Government Experimental Stations in preference to any other brand.

For sale by all Wholesale Grocers.

THE WINDSOR SALT CO., LIMITED  
WINDSOR, ONT.

1864. HILLHURST FARM. 1897.

**HACKNEY HORSES.**

Shorthorn and Aberdeen Angus Cattle, Shropshire and Dorset-Horn Sheep.

M. H. COCHRANE,  
Hillhurst Station, P. Q.

**Ayrshires;** I offer for sale some choice stock, all first class Breeding (Registered)—One 2 year old Bull, one 4 year old Bull, and 6 Cows. All offered at moderate prices.

J. A. LESCARBEAU, St-Stanislas,  
Comté Champlain, Que.



**Family Knitter**

Will do all knitting required in a family, home spun or factory yarn. **SIMPLEST KNITTER** on the market.

We guarantee every machine to do good work.  
Agents wanted.  
Write for particulars.

Price, \$8.00 Dundas Knitting Mach'ne Co.,  
Dundas, Ont.

**A Weak Back**

Is womankind's most common affliction, and especially among our American ladies has this become prevalent to a marked degree. Weak backs are more often the result of female irregularities than from any other cause. To reach the cause, internal not external treatment is necessary.

**DR. CODERRE'S  
... RED PILLS**

**- FOR -  
PALE AND  
WEAK WOMEN**

Act upon the system in such a manner that the patient in a very short time realizes a healthful change, indicated by a sense of increasing strength, the pain in the back subsides, the eye becomes bright, the complexion is restored to a healthy color, and in place of the once hopeless invalid we have a robust being. These results are being accomplished daily.

50c Per Box, or  
6 Boxes for \$2.50.

Dr. Coderre's Red Pills  
are sold by all druggists.

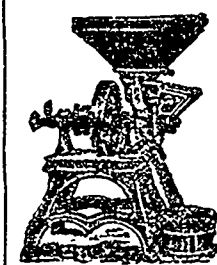
Franco American Chemical Co.,

Medical Dept. P. O. Box 2306,  
Montreal.

**POULTRY**

**LIGHT BRAHMAS.**—Young stock for sale similar to those shown at Montreal Exhibition this year where I took five first and two second prizes. Also White Wyandottes and Barred Plymouth-rocks for sale.  
E. L. GNAEDINGER, Montreal.

**Black Minorcas, Silver-Grey, White and Golden Wyandottes,** several fine young birds of the above favorite breeds for sale.  
GEO. H. MUIR, Bougie P. Q., Que  
Côte St-Laurent, near Montreal



**THE LITTLE GIANT  
GRINDER.**

Cheapest, Simplest and Best  
on the Market.

Write for prices &c.

A. McMartin & Co.,  
14 St. George St.,  
Montreal.

We also manufacture  
Corn Cob Crushers and  
Grinders, Wood and Steel  
Windmills, and Pumps of every description

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Isaleigh Grange Farm,**

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Six very choice Ayrshire  
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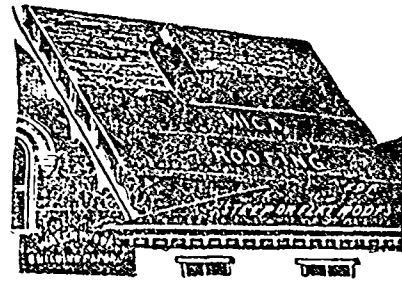
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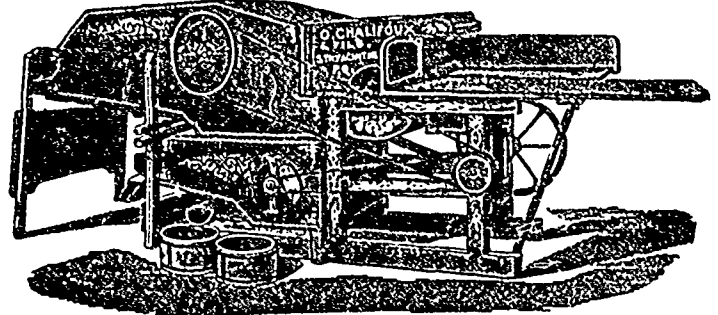
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The grain Threshing Machine, the most improved as also the most complete and up to date; for 1 or 2 horses—The Dederick Hay Press, the simplest and strongest—The Combination sawing-machine: cross-cut and circular, both actions on the one frame—The Chaff-cutting machine, etc., etc.—Please apply for price-list and catalogue

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Reliable agents w  
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**Vibrating Threshing Machine for 1, 2 or 3 Horses. Canvass Separator.** We have made great improvements in our Vibrating Canvass Separator. It will pay you to ask for our prices, and see our new machine before ordering. Don't forget our Improved Hay Press "La Canadienne," for 1896, which is better than the best as proved in 1895. Responsible Agents only wanted.

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**FOR SALE.**—Ayrshires of the finest quality, all  
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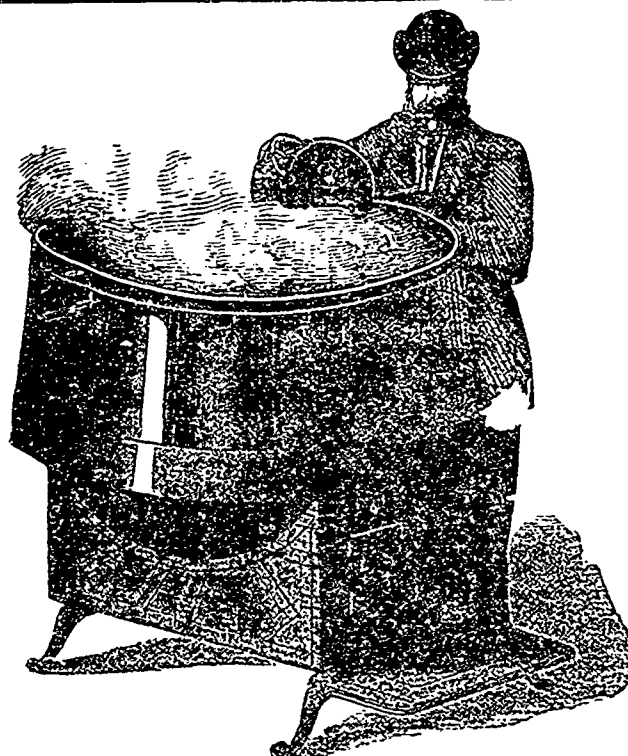
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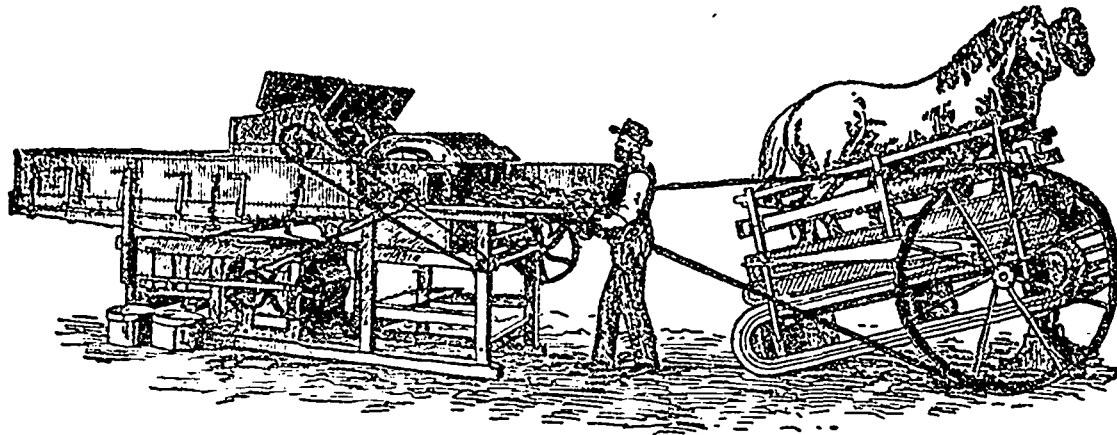
Head Office,  
LONDON, ONT.





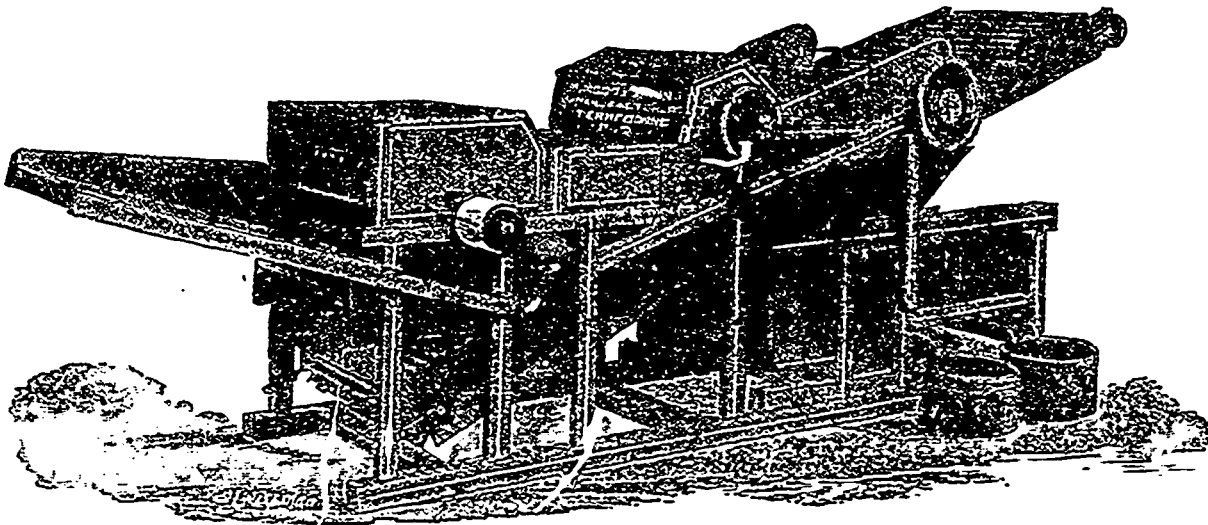
# Moody's Labor Saving Farm Machinery

## Moody's Patent Threshing Machine



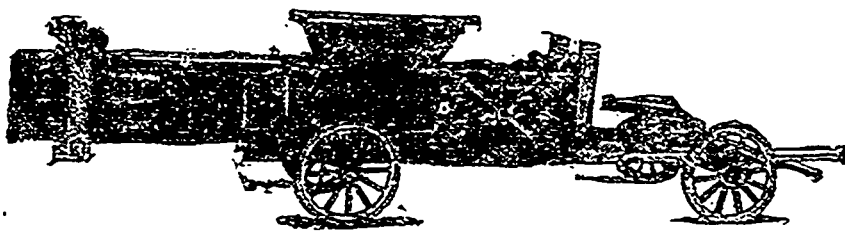
Like the "one horse shay" our Threshing Machine is built so that every part is alike of first quality. Examine the belts in our machine, their quality will speak for itself, and the machine is of the same quality as the belts. We supply wider powers than ordinary where purchaser's horses are over 1200 lbs each and do not make any extra charge.

## Pitts' Threshing Machine



We manufacture our undershot thresher in four styles, 1st as shown in the cut; 2nd as in cut but with the addition of tailing elevator to carry tailings back to the feeding table. 3rd as in cut except that the grain falls into three boxes instead of measures and in this style we are able to separate the grains as is specially asked for in some parts of the Province. 4th We also manufacture the old style undershot thresher with only one long sieve in cleaner shoe.

With all these threshers we supply our celebrated tread power with double gears, and of widths to suit customers' horses.



## Full Circle Steel Hay Press

This is how our press looks when telescoped ready for the road. A comfortable load for 2 horses can be set ready for work in a few minutes.

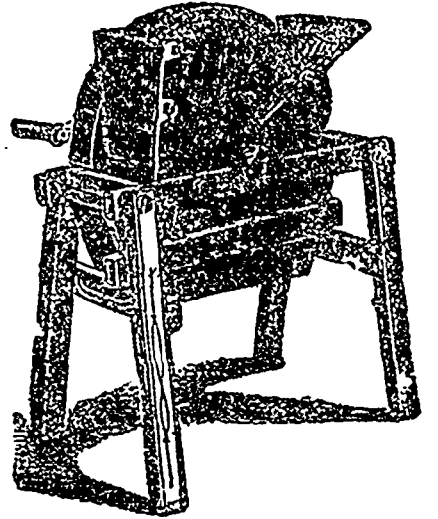
We are sole agents in the Province of Quebec for Wilkinson Ploughs. - The best plow manufactured. In buying this quality of plow you are always sure of getting the best quality of mouldboard. There are 21 different styles, to suit every need. We also keep a full stock of Wilkinson Plows repairs. See our local agents.

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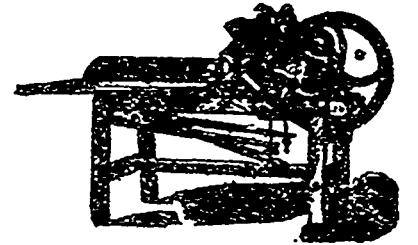
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A perfect Machine adjustable for all sizes of cobs.

## FEED CUTTER



Our Feed Cutter is the best and we are ready to prove it to you if you will give us an opportunity. It does not matter if it is a small size you want or whether it is a machine to cut 10 tons per hour. We have them both. See our local agent.

James Johnston's . . . .

## Ayrshires

Several choice Bull calves from this Prize Winning Herd for sale at low prices.

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## Pedigreed Leicester sheep

Choice Ram Lambs, and Yearling Rams of good Blood and Quality.

We have only a few but they are grand animals. We will offer at every moderate price.

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Canada's best the "Heater White Swine. First prize and diploma beautiful pigs for sale. E. & J. MacLAFAY, Castlebar, P. O., P. Q.

AYRSHIRES. Two choice Heifer Calves for sale. GEO. H. MUIR, Route P. O. Que., Cote St. Laurent, near Montreal.

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