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THE ILLUSTRATED JOURNAL OF AGRICULTURE

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PARCEL-POST.

In the Journal d'Agriculture, No. 1, Vol. 3, we made a suggestion on the subject of the parcel-post, which we think worth while repeating, now that we are on the eve of another meeting of the Federal Parliament.

In our former article we asked our legislators to beseech the Federal Government to change the postal arrangements, so that every parcel, not exceeding in weight and volume those which are allowed to pass now, should be allowed to pass at a more moderate rate than that at present charged.

To day, all printed matter, books, magazines, samples of all sorts of goods, &c., can be sent by the mails in parcels open at both ends, and not exceeding 4 or 5 pounds in weight, 2 feet in length, by one foot in breadth and thickness, at the rate of one cent per four ounces, or four cents a pound. In addition, parcels, which although they are closed can easily be opened, containing bulbs, grafts, cuttings, &c., can go at the same rate, provided they do not exceed the weight of 4 lbs. All we now ask is, the modification of the regulation which imposes a rate of 6 cents per four ounces on all closed parcels, so that they should, in future, only pay the same rate as those mentioned above.

We should like, too, to see it made lawful that all matters not corrosive, explosive, or inflammable, might be sent by post at the above rates; and that glass and liquids should be removed from the list of forbidden articles. We understand, of course, that glass is forbidden, lest bottles might break and the liquid contained be spilled. It seems to us, that to obviate these dangers it would only be necessary to order that all glass, with its liquid contents, should be packed in such a manner that the other contents of the mail-bags could not be injured if the glass were to break, and the liquid be spilled. What danger could there be, if every bottle were enclosed in a wooden or tin case, hermetically sealed, and thus rendered incapable of communicating with anything around it? If the glass did break when thus packed, the sender would be the only loser.

If this suggestion be accepted by Government, a large revenue might be derived from the change, and a great benefit would be conferred on a large class of persons who

are not in a position to pay 24 cents a pound for the carriage of many things which they want, and which at the same time they cannot, at certain seasons of the year, get from town by any other means; in which position, during two-thirds of the year, the inhabitants of Gaspé and of the Saguenay find themselves.

If we consider that the Government system of transport is already organised, and that the carriage of these parcels at the rate we have mentioned would amount to \$80 per ton; we shall easily see that the affair can be easily managed, and a good profit realised. It is more than probable, that there would be one hundred times as many parcels to be carried at four cents a pound, as there are at present at twenty-four cents or at the enormous cost of \$480 a ton!

In Germany, the Government carries by the mails not only ordinary parcels, but even fresh butter, packed so as not to damage the other contents of the bags: the charge is a mere trifle. Again, the postal convention which met at Paris came to an agreement to carry, from one country to another, all parcels weighing 6½ lbs, and measuring 8 inches cube, for 50 centimes; about 10 cents. If they find it profitable to carry parcels of that size and weight at the above mentioned rate, still more might our Government accept our suggestion, without dread of making a losing speculation.

Almost all the members both of the federal and local chambers read the Journal of Agriculture; and we trust that they will study this question, and make it their business to bring about the change as soon as possible, that their constituents may reap the benefit from it which it is calculated to afford them. For, in truth, it is the farmers who will profit the most by the alteration, and, no doubt, when once the Government is convinced that, by following out our hint, it will do every body a service, augmenting at the same time the revenues of the Post-Office, it will hasten to modify its regulations.

We hope, too, that the Press will apply themselves to this question, which is a very important one for all.

DRAINING.

From what I have said as to the way in which water gets into the drains, it will be evident that to cover the conduit, whether it be of pipes, stones or bushes, with a mass of porous material, will be time and labour wasted. The more thoroughly the duct is closed above, the less likely is it to admit extraneous matters, such as sand and mud. My own practice, copied from the example of Mr. Parkes, the best draining engineer of his day, has always been to use a reasonably small conduit (condensed or tightly packed streams always run faster than free, broad streams); and to have the first layer of earth over the duct as firmly trodden down as possible. I give six inches by four inches as the size of the bush drain.—9 inches by six, for broken stones—because the materials will become compressed, in the first case, by the superincumbent weight of earth; and in the second,

the return of the soil into the drains, however well managed, will always, more or less fill up the interstices of the stones. In pipe drainage, we always used $1\frac{1}{2}$ inch—Parkes used 1 inch, but at that size our clay would not stand drying without warping—and I hear from friends in England, that $1\frac{1}{2}$ pipes I laid in 1849 are acting perfectly now. It may seem curious to some, how so small a duct can run off a heavy fall of rain in 24 hours, as it ought to do. I cannot carry in my head the exact figures, but I remember well that the conclusion arrived at by Morton, inspector of drainage for the government loans, was, that a pipe the size of a lady's thimble, kept perfectly clear, was sufficient to bear off all the rain that ever fell in England on an acre of land during 24 hours. The object is, not to carry the water off with a rush, for that would, besides running the risk of choking the duct, draw along many of the most valuable parts of the soil; but to allow the water to sink gently and placidly through the ground, as the water acts in an ordinary domestic filter.

As to the fall to be observed in drains in ordinary fields in this province, any one who can make a ditch can be trusted to make a drain. I cannot help saying, that throughout the French country the ditches are admirably made; and if the people in the Eastern Townships would take a lesson from the *habitants* in this art, they would be none the worse for it. In a loamy soil on gravel, and in a black peaty soil, I have often seen a field of 10 acres dried completely by a four feet ditch at each side.

Where, however, there is a doubt about the level of the bottom of a drain, a few pints of water thrown gently in will often decide the question—where springs exist, their own flow will settle the doubt. The uniformity of the fall can be tested, if thought worth while, by three levelling staves, two of which should be about 2 feet high, and the other extending, with cross-heads 9 inches long. One staff is held perpendicularly at each end of the drain, and the extending one is adjusted and moved up the drain; the head drainer, or manager, can easily see from one end whether the fall has been equally followed, or not. But in practice, these accurate measures will seldom be found necessary; besides, I object *in toto* to a foot being set in the bottom of a drain, unless it is absolutely necessary. Some people are of opinion that the whole length of each drain should be bottomed out before the pipes or other ducts are laid. This is, doubtless, a correct practice during summer, or in dry weather; but when the land is full of moisture, I prefer placing the ducts and filling in, bit by bit, as the drain is dug; and for this reason—the caving in of the earth may, and most likely will, displace the sides of the drain, and it will have to be re-bottomed out—always a troublesome and annoying job, and very likely to be carelessly executed, unless the supervision be much more efficient than it usually is.

Stone drains are so expensive, on account of their necessary width, and the quantity of material required, cartage, &c., that I do not suppose many people will make them. Pipes are, after all, the cheapest in the long run. The only awkward part of the matter is, that they have to be paid for with cash. The price here has always seemed to me extravagantly high, considering that the principal makers were in the enjoyment of an annual "grant in aid" from the Quebec government. I allow that the pipes were well made; but they were twice as heavy as they need be; and that is a matter for consideration when the carriage by rail and road has to be paid for 40 or 50 miles. In Kent, England, within 15 miles of London, the price I used to pay for $1\frac{1}{2}$ inch, of good quality, was \$4 per thousand; and a horse drew, in a cart, a thousand with ease; and good one inch pipes, in Essex, were only \$3 a thousand.

In bottoming-out stone drains, the width should be greater

than for bushes—9 inches, perhaps, would not be too much—and this on account of the difficulty of packing the material. The stones should be as round as possible, and the larger ones should be at the bottom. None more than 4 inches in diameter should be used; they should be rammed down firmly with a peavie's rammer; and some of the smallest should be reserved for the top, to be finished off at last, like the bush drains, with clay, and the firmest part of the subsoil returned first, and well tramped down. A very costly job, and one that I should be sorry to recommend any one to undertake. The same may be said of those ducts of built up stones that I have seen in one or two places in the Province. They take an immense time to make, and, unless they are four square, i. e. with a bottom as well as sides and top, the earth soon rises into them from pressure at the sides, and they are closed for ever.

The drains for pipes are to be opened out as far as the fourth spit, about 36 inches, precisely as the bush-drains, but here advantage can be taken of the *semi-cylindrical tool*, which, being fifteen inches long, enables us to take out a very deep draw for the last one. Generally speaking, the foot need not touch the tool; a side thrust by the hands will be sufficient, unless the ground be very hard and dry, in which case the tramp-pick should precede it. The bottom must be cleared of crumbs by the *semi-cylindrical draw-scoop*, the drainer standing on the fourth spit, and clearing the bottom, as far as he can reach, of the remains of dirt &c., left by the long spade; so that he never sets his foot on the cleared drain at all, but works backwards with his face towards the mouth of the drain, yard by yard, and leaves himself only the pipes to lay and the earth to return. Should any small pebbles be found at the bottom, they must be got out of the way, that the pipes may be well and truly laid; for the slightest crookedness in the conduit forms a dam in no time, and will very likely cause an accumulation of silt fatal to the continuity of the duct. Never allow a drain to be diverted from its straight course. If a rock or large boulder intervene, blow it up—get rid of it some how or other, and pay particular attention to laying the duct in its former site, as the earth is sure to be more tender there, and the pipes will very likely sink and become useless.

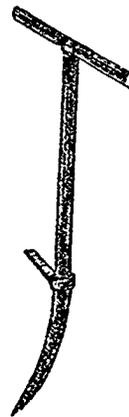


Fig. 1—Tramp-pick.



Fig. 2—Semi-cylindrical spade.

We now proceed to lay the pipes. If the draw-scoop has been properly handled, the bottom of the drain will form a semi cylinder, and the job will be easy enough: the layer, who should be the honestest workman to be found; one who will refuse to place a single pipe in an unfit bottom, should have all the pipes laid ready for him along the side of the drain: straddling across it, with his face to the outfall, he threadles a pipe on his *pipe-layer*, places it gently in its site,

and adjusts it with care as closely as possible to its neighbour ; and so on, as far as the drain is bottomed out.

All this, difficult as it is to describe in words, is easy to understand when once it has been seen in operation ; and with four men, the whole affair goes on like clock-work, after the first few rods have been opened. It will answer no one's purpose to set a single hand at this work. The supervision must be constant, and the more rapidly the business is carried on the less likely is the superintendent to go sleep over it.

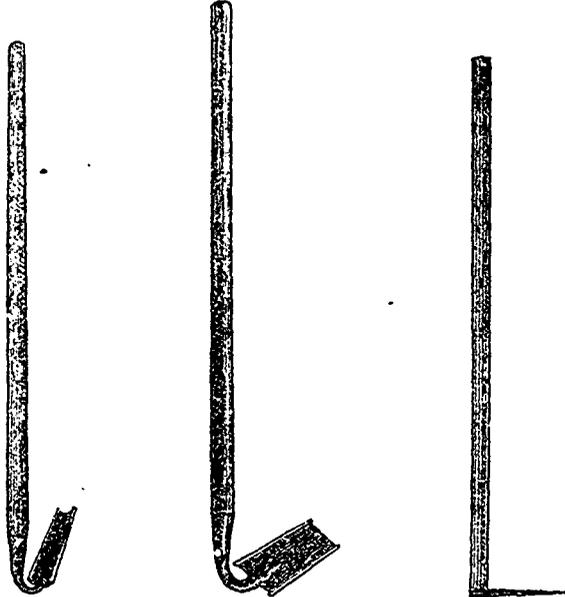


Fig. 3—Draw-scoop. Fig. 4—Broadscoop. Fig. 5—Pipe-layer.

Up to the present time we have been sailing along with ease. We have met with no obstacles, except a stone or two, or a piece of hard-pan. The tramp-pick or the ordinary one, or perhaps a blast, have soon rid us of these enemies. But a danger now heaves in sight—a foe indeed ; but convertible with care into a friend—I mean a *running sand*. Its enmity is displayed in an overwhelming desire to choke the pipes ; but, if properly treated, it may be balked of its aim ; and as its presence always denotes a vein of *shattery* soil, it will admit of the drains being placed at wider intervals than where the soil is of the usual homogeneous texture. I do not mean that I like quick-sands. By no means ; but they are not so terrible as they are usually thought to be ; and I would treat them, when met with, in some such manner as this :

Before laying the pipes, make the bottom a little wider, say two inches, than usual, and lay on it narrow lengths of half-inch boards : place the pipes on the boards, which should be no longer than four feet, and fill up the interval between the pipes and the sides of the drain with the stiffest clay you can find, jamming it in with any handy tool as hard as possible, but taking all pains to keep the pipes straight. To do this well is a difficult job, for not a foot must be set in the drain. Two men will manage better than one ; the first to hold the pipes steady, at the junction of each pair, with the pipe-layer ; the other to drop the clay into its place. The pipes should be covered with a thick coat of the stiffest of the soil, the whole should be well trodden down, and when the drain is three parts filled, one wheel of a heavy laden cart might be run up and down it—if the wheels are too narrow, a sort of *shoe*, or second tire, made of any pliant material, such as bark, might be added—anything and everything should be tried to consolidate the earth. It is a troublesome,

laborious job, is draining a running sand, but few things pay better when well done.

I am afraid this is a very desultory article ; but the fact is, that as I am describing what I have done years ago, I am obliged to jot down things as they occur to my mind ; and I find that although my memory is a pretty good servant, it is rather irregular in its action.

Note—when a certain length of drain has been laid, before continuing work in the upper portion a strainer (a bunch of hay or straw) should be placed across the mouth of the last pipe, to prevent any silt from making its way into it ; if the soil is quite dry at the time, this precaution will not be requisite, but it is as well to make a practice of it, and then it will never be forgotten when really necessary.

The most wonderful instance I ever saw of converting an enemy into a friend, from an agricultural point of view, was at Lord Hatherton's, Teddisley Manor, Staffordshire. Above the farm-buildings lay about 70 acres of bog, full of reeds and other water-plants, and affording shelter to lots of wild-ducks and snipe. This was drained, and the springs were so copious that, being led to the yards, they drove an overshot wheel (12 horse power), which did all the threshing, grinding, chaffcutting, and sawing for 1200 acres of land ; and having performed these duties, it ran off into the brook in the valley, irrigating, on its load, 15 acres of meadow, the yearly produce of which was worth at least £12 (\$60) an acre. Unfortunately, I forget the name of the planner of this great work. He deserved immortality.

I have not laid down any hard and fast rules for the distance between the drains. It would be absurd to attempt it, without a trial, or experimental, drain in each field to be drained. I have never seen, however, any land here where I should fear to allow 40 feet between the drains if they are to be 4 feet, or so, deep. Our heaviest clays in England were dried at 33 feet intervals, and there is nothing like them here. If *pockets* of gravel or sand occur, the distance may

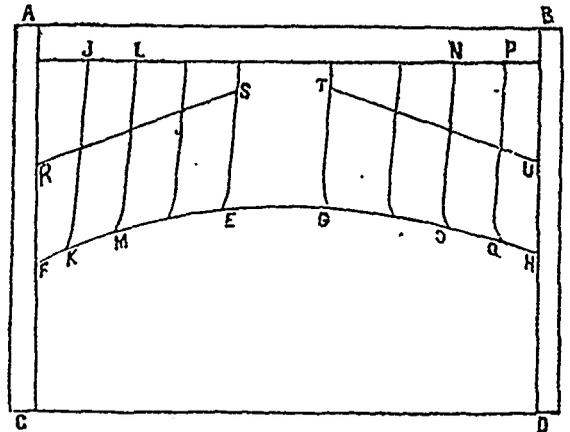


Fig. 6.

be safely 50 feet ; and where the whole subsoil is broken, drains sunk 5 feet, or perhaps 6 feet, in the last few rods at the top of the incline, may be expected to answer well at from 60 to 90 feet. Remember that, as I said before, the wet spots on a slope are not the sites of the springs. They lie higher up ; so there is no good in wasting money by placing the drains deep at their lower end ; out of the reach of frost, is all that is necessary. Fig. 6 is an engraving of a field, all in one plane, with a fall from *a b* to *c d*. The outburst of the springs is along the lines *r s*, *t u* ; and *e f*, *g h* ; are the main drains emptying into the ditches *a c* and *b d* ; *j k*, *l m*, &c., are the drains running deeply into the ground.

above the outburst. A really deep out here may drain acres, but of course a large conduit will be required to carry off the water. Any one can see with half an eye, that in this harp-fashion of placing the drains they must out into the site of the springs—they can't avoid it.

In the case of a hollow spot with a fall in the upper part inclining on each side to the centre of the hollow, the main should run up the hollow, and the small drains still down the greatest fall—like what is called by ladies "herring-

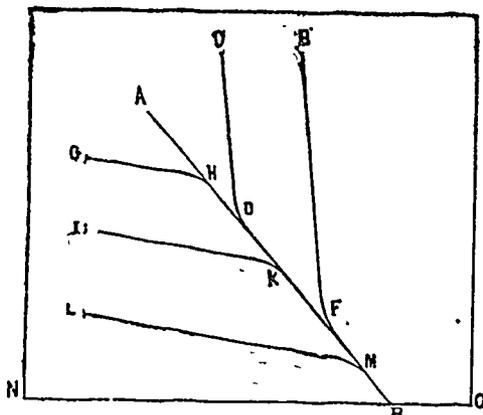


Fig. 7.

bone" fashion—see fig. 7, where *no* is the open ditch, into which the main *a b* empties, and *c d, e f &c.*, the small drains running up and down the greatest fall in the direction of *c d, g h*. The part of the main next the ditch being the recipient of all the water should be of a safe size, the higher up we go the smaller may be the conduit. As drains should never be more than 200 yards long, if the small drain pipes be 1½ inches the main should be 2½ inches, for ordinary work, at the ditch, and 2 inches for the upper part—*i. e.* in fig. 1, *m* to *f* 2½ inches, and from *e* to *m* 2 inches—but the economy is hardly worth the trouble, except on a large scale.

And now we come to the cost of the work: and a difficult thing to calculate it is. If it is to be done by the rod, there is no fear of the men opening the top spit too wide; but if by the day, they will, for the sake of a trifling convenience, move many an unnecessary cubic yard of earth.

What adds so much to the expense here is, that we have no gangs accustomed to the work. Good spadesmen there are, I dare say, here and there, but draining tools of the proper sort are unknown to them, and without these, no economical operations can be conducted. I recollect perfectly the cost in England, and the number of rods (16½ feet) a gang of four men did in a day. From these data we may arrive at something like a conclusion, as to what the cost should be in this country. Day wages being 14s, or \$3.50, a week, the men expected to earn 18s, or \$4.50, in the same time at draining. Season of the year, winter, — 8 hours a day. In clay soil, with little pick-work required, they dug, laid, the pipes, and filled in, 6 rods of drains, each, per day. This at 6d (12cts), gave them just the 3s that satisfied them. Such land required 4 feet drains, 40 feet apart, and 1100 inch and a quarter pipes served for the 64 rods of drains wanted—some are sure to be broken. So we have:

64 rods of drains at 6d (12 cts) per rod..... \$7 68
 1100 pipes at 16s (\$4) per thousand..... 4 40

\$12 08

as the whole expense of draining an acre of land except the carriage of the pipes, which, as the kiln was with 1½ miles of my farm, was a mere trifle. Where the land was stony, or

rather, gravelly, the price for digging was higher, but the distance between the drains, which was sometimes 60 feet, made up for the extra cost per rod. I have paid as much as 20 cts, where the pick was much used.

Here, taking one soil with another, when the men got accustomed to the work, I think 20 cts a rod should do it, and 60 rods ought to be enough, per acre. Thus, we have:

60 rods of drains at 20 cts \$12 00
 950 pipes (13 inches in length here) at \$8
 per thousand, and breakage..... 7 60

\$19 60

Cartage, of course, additional: a heavy charge, as 1000 of these pipes would be a two horse load—to say nothing of railroad charges. But make the total \$22, and it is not much for an acre of land well drained. If this promising French company really lends money on mortgage at 6 0/0, I cannot conceive any so profitable investment for a farmer as borrowing enough to drain all the land on his farm that wants it. The yearly interest will be only \$1.32 an acre—as to the profit, it may safely be put down as thrice that sum.

If my experience be thought worth anything, I shall always be happy to give any advice, or to answer any questions, either in the journal or by letter as may be preferred; gratuitously of course. I saw so many thousand acres of land, during my tour through the Townships this summer, and in the French country at other times, perishing for want of draining, that I could not help thinking that for the neglect of this, the most profitable of all improvements, the educated part of the community were sorely to blame; since it is to them that our less enlightened population look to lead them into new ways, and shew them how to unite *theory with practice*.

That drainage does actually raise the temperature of the soil, may be shewn by the following experiments made at Clarendon Park, Hampshire, England. The soil is a heavy clay—*impervious* they used to call it, before drainage proved the contrary. Here, the temperature was raised 15° F. by drains 4½ feet deep. The register seems to have been kept very accurately; and it proves that not only was the summer and autumn heat of the soil greater, but the increased temperature was preserved for a long time—through the winter, in fact. March, 1850, was a peculiar month for the South of England: for seven nights out of the first eighteen, the mercury sank to 26° F. yet the following table shows a greater degree of heat, at one and two feet under the surface, than for several years previously in the same month, by 1.17 degrees at one foot, and 1.44 at two feet.

	1 foot deep.	2 feet deep.
Mean of March, 1838..	41°48	41°46
" " 1839	41°46	41°93
" " 1840	39°24	41°71
" " 1844.....	41°55	42°14
" " 1845.....	37°79	38°37
" " 1846.....	44°47	45°55
" " 1847.....	40°22	41°03
" of these years.....	41°16	41°74
" of first 18 days March 1850.....	42°33	43°18

The land was drained in the autumn of 1848.

Draining Apophthegms.

Go straight through springs from below the outburst, deepening as you rise the slope.

Depth will more than compensate for distance.

How many cubic yards can be drained for a dollar, is the point.

All water should enter the drains from below.

Never lay drains near trees; particularly Ash or Elm, for fear the roots should choke the pipes.

Keep your ditches clear, and the mouth of the main open—your drains will, then, last a lifetime.

The narrower the drain, the less earth to be moved.

Divide the earth thrown out between both sides of the drain—less danger of caving-in from pressure.

Water will enter clay-pipes through the pores, as well as between the joints—proof: soak one in water for 24 hours; it will weigh more than when dry.

Air follows water as it sinks through to the drains: in spring, the air is warmer than the subsoil: evaporation produces cold: drainage prevents evaporation; therefore, drainage increases temperature, and supplies fresh air to the subsoil.

Drainage by unskilled workman, with improper tools, will cost from 50 0/0 to 100 0/0 more than it ought to cost.

"Drainage is the most important, the most judicious, the most remunerative, of all land improvements." Lord Stair.

If the main has to receive water from both sides, the small drains should never enter it opposite each other—they should meet the main at an acute angle; thus avoiding, blocking back the water and washing down the sediment, which would prefer subsiding and choking the pipes.

Drain one acre perfectly rather than two partially.

Plough as deeply as possible two years *after* drainage.

Clays once dried and pulverised will be loath to cohere again—a brick won't, if broken.

White Grapes.

The Fruit Grower's Association of Abbotsford had upon their Exhibition Tables 27 varieties of White Grapes alone. Among them are the most refined and most delicate flavored of our outdoor grapes; yet many of them are also the most delicate in constitution, and such as are successful only in certain localities, and in the hands of careful cultivators.

At the last meeting of the American Pomological Society, the great international fruit society, the most marked advance in any fruit was that in the white grape of native parentage: that is white grapes of which the leaf is large and thick, and woolly on the under side, the pure off spring of the *Labrusca* or Fox grapes species. It was then felt that white grapes could be grown throughout the country generally.

Our descriptions may seem tediously minute. We could not be more brief and say what was needed.

This is in fact a descriptive catalogue of our best white Grapes. It is as unreadable as a page of dictionary. A page of dictionary, however, may be interesting to a philologist, and in the same way, we hope that there are those, who, while wading through this, will lighten the task by propagating thoughts about good grapes which may bear fruit in the near future.

NIAGARA—This is a grape of great promise. It is a seedling of Concord and a small sweet grape but little known named the *Cassidy*. We are told by disinterested parties, who have seen the vine, that it is large and leathery in leaf, and very vigorous in growth, and that it ripens its wood well; in fact that the vine is equal to its parent the Concord, than which we have no better.

The bunch is of good size, and quite compact, and the berry holds well to the bunch, which is important. The quality has been variously stated, and sometimes over-rated. Mr. J. J. Thomas states that in quality, "it appears to be intermediate between the Hartford and Concord on the one hand, and the Croton and Duchess on the other." This opinion coincides exactly with our own. The skin is tough,

the pulp soft. It is sweet and juicy, and of good flavor, with a little of that peculiar muskiness or foxiness, which shows its native origin. We are told by a friend who has more than one year compared the growing vines side by side with Hartford, that it is eatable rather earlier, and ripens with that early variety. Hence its great promise of usefulness to us in the North. Mr. C. L. Hoag, of Lockport, N. Y., owns this variety. It has not yet been put upon the market, but we hope that when it is, it will have an immediate trial in different parts of this province.

POCKLINGTON is a seedling of Concord grown by Mr. John Pocklington, Sandy Hill, Washington Co., N. Y. It was sent by Stone and Wellington, of Toronto, who have control of it. The vine is said by independent sources to be strong in growth, and to have very large leaves of heavy texture. The leaves of the young vines we have seen are thick and leathery, and show its good parentage in this respect.

In bunch it is large, or very large; in berry large, round, and a pale yellow. It holds pretty well to the bunch, but not as well as Niagara. The skin is thin, with slight pulp; pulp tough, but not acid. In flavor sweet and quite luscious, with slight muskiness or foxiness. It is said that when fully ripe, the pulp disappears, and it becomes sweet to the very seeds. In quality it is stated by Messrs. Stone and Wellington to be "fully equal to Concord at its best." As we tasted it upon our Exhibition tables it was superior to any Concord we have grown here. Superior to that sent to the Montreal Market from Ontario. Ontario Pocklington we may expect to be fully equal to Ontario Concord and Quebec-grown Pocklington equal to our Quebec Concord. It is a fine grape but should be grown only where Concord has proved a success.

PRENTISS.—This fine grape originated with Mr. J. W. Prentiss, of Pultney, Steuben Co., N. Y. About 15 years ago, Mr. Prentiss sowed some seed of the *Isabella*, from which came a number of seedlings of which this was one. We are told by a friend that the vine is as healthy, and the leaf as thick as its parent the *Isabella*. It is, as is well known, a very heavy bearer, in fact, the bunches need to be thinned somewhat as it inclines to over bear.

The bunch and berry are of good size, in color a whitish, or yellowish, green. In flavor, as has been said, very like *Rebecca*, and without any of that muskiness or foxiness so common in the native grapes. It ripens with the Concord, but would bear being picked a little before ripe better than the Concord. We see in the October number of the Horticulturist, that interesting monthly, which is sent by the Fruit Grower's Association of Ontario to all its members, that this grape has been exhibited at the meeting of the Western New York Hort. Soc. on 22nd Jan., in perfect condition, which speaks well for its keeping qualities. It appears to us, too, to be a grape that will ship well.

Mr. T. S. Hubbard Fredonia, N. Y., owns this vine; and has this fall, for the first time, offered it for sale. It ripens, as we said, with the Concord, and we hope it will be tried by those whose gardens have proved the Concord to be a fairly-sure ripener.

DUCHESS is a delicious grape. It was sent by its originator, Mr. A. J. Caywood, Marlborough, Ulster Co., N. Y., and must be mentioned here, although by some delay in transit, it did not arrive until after our Exhibition. A cut and also some notes on this grape appeared in the June number of this Journal, and are mainly correct, except as to time of ripening. It is the offspring of a white seedling of the Concord crossed with Delaware.

The bunch is long, and shouldered on one side, the berry medium only. In color greenish at first, and when fully ripe a golden amber. The skin is thin, the flesh firm, and fleshy

rather than juicy, sweet and luscious. Mr. Caywood sent us one bunch which had been out on September 1st, and had been expressed to Sacramento, thence to Detroit, New-York, and Marlborough, before coming here. The berry was slightly shrivelled, but not at all injured by carriage, and, though quite green in color, had yet become sweet and good. This bunch was slightly more shrivelled. It had been kept in a warm room, too, when it was again examined in committee on Oct. 9th, and was finally eaten up on Nov. 1st. This shows that if picked before ripe it yet becomes good. This is important for a late grape. The Duchess was well tested at our committee meetings. Of the 79 varieties which passed before these meetings, it and Allen's Hybrid, were the most delicate and refined in flavour; though it is only fair to say that Dempsey No. 25, Chasselas of Aylmer, and Chasselas of Mr. Robert Wood, were not ripe enough to judge. At our large social committee meeting, when 50 were present, the question was, whether Duchess or Allen's Hybrid bore the palm. Two thirds said Duchess. In the June number of the Journal it was stated that the Duchess ripened with the Delaware. Would that it did. Mr. Caywood however writes that it ripens with him with the Concord, from Sept. 1st to Sept. 15th. This limits its area of cultivation here. Yet where the Concord ripens fairly this should be tried and, it is well worthy of a warm corner.

LADY WASHINGTON, though expected from Mr. Jas. H. Ricketts the well known hybridist, was for some cause not sent to our Exhibition; yet it must be mentioned here, as it was of all grapes the one whose absence from our fruit committee meetings was the most regretted.

It is a cross between Concord and Allen's Hybrid, a good grower, and shows its Concord parentage in its thick leaf. The bunch is large, and the berry of fine quality. It ripens with the Concord, and we hope will be tried in such places as ripen that variety.

DEMPSEY No. 25.—This is a seedling of Mr. P. C. Dempsey, of Albury, Ontario, who is well known as a grape hybridist. It is, strange to say, from Hartford Prolific fertilized with Black Hamburg. Mr. Dempsey tells us that he raised 26 plants from this cross, and that two thirds of them are white. The seed that produced this grape may even have been out of the same berry that produced the Burnet. It is a largish, thin skinned, juicy grape, not quite ripe enough to test its quality. Mr. Dempsey thinks it is a little late for us; but thinks its quality well worthy of a corner in a cold vinery. A few very favorable places, like Aylmer and Clarenceville, might do it. In fact at the latter place it is already in Mr. Patison's hands; and its fitness for such a locality will be known ere long.

SARANAO is a seedling by Mr. Bailey. It is a very delicious little grape. It has a poor little bunch, but is pulpless, luscious, and in flavor hard to surpass.

PALMER'S SEEDLING No. 1, 2 & 3.—These were brought by Mr. Bailey to the Exhibition of the Montreal Hort. Soc. They are chance seedlings (probably of the Rebecca) grown by Mr. Charles E. Palmer, of Plattsburg, N. Y. They were picked on 13th Sept., and before ripe. They were then crude and sour; yet since then, have become sweet and good, and quite eatable even up to this 16th day of November. No. 1 is largish in bunch and berry. Skin thick and green: juicy, free from pulp; sweet and good, and ripens, says Mr. Palmer, with Delaware. No. 3 smaller in bunch, nearly as large in berry, thinner in skin, yellowish, but little pulp: sweet, and probably rich, and ripens with the above. No. 2 is a little later in ripening, and therefore of less value where earliness is so important. It is a compact little bunch with small berry; now sweet and good, and showing signs of being a good

keeper. These are really grapes of good quality, and worthy of trial.

Of older varieties :

MARTHA was sent by Ellwanger and Barry, of Rochester, and by Mr. Bailey. We do not know of its having been grown in this province, except at Hull and Aylmer. It is a seedling of Concord, and shows the vigor of vine of its parent. It is of good fair quality, but at Aylmer, proved but a medium bearer. It ripens a little before Concord, and it is probable that we shall find varieties which for earliness and quality will surpass it.

REBECCA was exhibited from Rochester, Plattsburg and Montreal. In Montreal it has been long grown, but in a very limited way. It is a very good grape, but of slender habit of growth, and quite a light bearer. It ripens a little before Concord, and repays good care and culture.

CROTON is said to be a hybrid of Delaware and Golden Chasselas, and was sent by Mr. H. S. Lomas, Point St. Charles. It is Mr. Lomas's favorite grape, has ripened well for a series of years, and borne very heavy crops. It has been subject to mildew, which has been kept in check by sulphur. On higher land, it would be less likely to suffer from this cause. With Mr. John Stuart, of Rockburn, Huntingdon County, Croton has been a success, and he does not mention mildew on his upland. It is a grape of fine quality. It ripens early, and is worthy of trial in elevated gardens.

ALLEN'S HYBRID is a hybrid between some native and some European grape. Though a grape of the highest quality, yet its culture has been given up in U. S. on account of its tendency to mildew. We have however known this grape in Montreal for many years, bearing its light crop of delicious fruit without a single failure. Farther South, it is also found too tender to stand the winter; but where winter covering is necessary, this is but little against it. Our uplands seem unusually free from mildew; and this grape may still be recommended to careful cultivators in suitable situations.

European Varieties.

Fuller, in his carefully written work "The Grape Cultivist", says, that after over a century of unsuccessful attempts to grow the European grape in open air in this country, pomologists turned their attention to the improvement of the native species of vine. Hussman, too, in his work just published, "American Grape Growing", speaks of the European vine as generally unsuccessful East of the Rocky Mountains, and says farther, that the European species is of interest to our grape growers, chiefly on account of the hybrids which have been produced between it and our own native vines. Some well known grape growers go so far as to condemn hybridizing our native with the European vine; saying, that by so doing we only enfeeble it, and render it subject to disease.

The verdict of the American Horticultural press of the Atlantic and Middle States is, that the European vine is generally unsuccessful, only exceptionally is it a success. Of this exceptional success, we in the Province of Quebec have had our full fair share; and we have certain localities where the foreign vine has been such a success, and that for a long term of years, as to warrant their still being planted in like situations. They are not the grapes for beginners. Some, fortunately not all, are subject to mildew, even on good elevation, and need to have this kept in check by sulphur; all are more subject to thrip than the native vine, and should the dreaded Phylloxera, which has worked such wholesale destruction in the vineyards of France and California, visit our shores, then we must give up the European vine altogether, or else engraft it on native roots.

CHASSELAS (of Aylmer).—It is at Aylmer that this grape has been most largely tested. Like many of these foreign vines it comes to us without a name: Chasselas is but the name of the type. Its name should be identified either with Aylmer or with its importer. It was imported by the late Denis Benjamin Papineau; some think as early as 1840; and first grown by him at Papineauville, on the Ottawa. Thanks to our kind friends at Aylmer, we had four bunches of it upon our Exhibition tables. These were large, or very large, long, and though not shouldered, of large diameter. We were told that they did not approach the bunches grown by them the year previous. The berry is above medium, roundish, or very slightly oval, and holds well to the bunch. The flesh is moderately firm, juicy, and without pulp. It was picked before ripe, but afterwards became sweet and somewhat rich, but how much richer than Sweetwater is what we specially wished to know, and had no opportunity to determine accurately.

This is the most largely tested of the white European varieties, except the Sweetwater. In some gardens, it has been a decided success, in others, subject to mildew. Aylmer is remarkably free from late-spring and early-fall frosts; yet we think that the foreign vine, as a rule, will be found to be more free from mildew where untimely frosts are kept off by elevation, than where they are averted by the near presence of large bodies of water.

ST. SULPICE (So called) is another fine grape. It was long ago imported by the Seminary of St. Sulpice, and has been grown in fair quantity in their singularly sheltered garden in Notre Dame street. It has no name, but must have one, and we venture to name it after its importers, as has been done in similar cases before. This was not upon our show tables, yet it must, for its merits, be mentioned here. It is a large oval grape, yellowish when fully ripe. As to quality we did not taste it. A bunch was to have been kept for us, and by some mistake it was overlooked. It is however their favorite grape, so Signor Archetto—the gardener, tells us; and so it seems, for it was picked on 15th Sept., and all eaten at once in preference to others. This seems earlier than the Chasselas of Aylmer, or that grown by Mr. Robert Wood, and is one of the most worthy of trial.

CHASSELAS DE FONTAINEBLEAU.—Another of this type is that grown by Mr. Robert Wood, formerly in de Bleury street, and more lately in Sherbrooke street, Montreal. Mr. Wood has fruited it for 15 years without failure, and has had as many as 10 bushels of it in a single season. In his opinion it is the most delicious grape grown; but it has a strong tendency to mildew even upon upland, which has to be overcome by dusting with dry sulphur about 3 times during the season. The bunch is large and shouldered, berry round, and agrees exactly with the description of the Chasselas de Fontainebleau, as given by Downing; very like, too, that from the Collège de Montréal, under that name. We regret that it was not quite ripe enough to enable us to testify to its high quality.

SWEETWATER has been grown to a fair extent in many places, and for a very long time; and when thrip has not been troublesome, and when it has had fair care, has produced pretty good crops, which in most localities ripen well. There are, however, several varieties under this name: several showing quite distinctive marks were upon our Exhibition tables, and proved this clearly.

IMPROVED SWEETWATER (so called) just like Sweetwater; though perhaps a shade larger in bunch and berry, but with a slight Muscat flavor. A decided improvement—growing in a garden in Montreal.

BONNE DAME DE VIGNALA, or No. 6, was imported in 1877 by the Collège de Montréal. And here let us say, that

the College has nobly entered the field as experimentalists. They have imported about 70 varieties from Italy, and the success of these vines after three years under the care of their skilful gardener, Sig. Garello, is most encouraging. We do, however, wish that the native vine had received a larger share of their attention. This No. 6, is largish in bunch and shouldered, and in berry, largish and semi-oval. It is a yellowish green and slightly veined, and holds pretty well to the bunch, as all these European grapes are apt to do. It is slightly firmer in flesh, and is richer in flavor than Sweetwater. It ripens on their warm Southern exposure from 20th Aug. to 1st Sept.; and on account of its earliness, is one of the most promising of its class.

PERLE DE VENISE No. 11 is largish in berry, large in bunch, and in character much like the above. A fine grape, but ripens 10 days later than the above.

Chasselas de Fontainebleau, of the College, is very like that grown by Mr. Robert Wood, and perhaps the same. Had both been fully ripe, we could have formed an opinion as to their identity or otherwise. This ripens with the Perle de Venise.

ST. MARIE D'ITALIE is a medium sized grape which ripens soon after No. 6. In quality rich, and decidedly good.

BLANC D'AMBRE No. 9 is another which specially drew our attention. It is good in size and quality and said by Sig. Garello to be a good keeper.

—In the gardens of the Seminary of St. Sulpice, in the North West Corner, there is a grape much like the Chasselas de Fontainebleau from the Collège de Montréal; but slightly oval in berry, and more firm and fleshy in texture, and earlier too, we fancy. It is a luscious grape of very high quality.

—Another, on the same North side, but farther to the West, much like the above, but more bronzed when quite ripe. It cannot be compared in richness with the above.

CHASSELAS.—Mr. John Beatty sent to the Montreal Horticultural Society's Exhibition two bunches which he had grown at St. Lambert, one of which had weighed 2 lbs 2 oz. There were seven bunches upon the vine, all about the same size. For ten winters it had been unprotected and had been killed to the ground. Only for the last year or two had it had any care. Its origin is not traceable. It took prizes in Montreal under a former owner about 15 years ago. The bunch is very heavily shouldered on all sides, the berry medium or above. It ripened about 10th October, and was of fine quality. But for its lateness, it would be well worth looking into.

CHASSELAS.—A grape of this type has been grown by Mr. Jas. Morgan, Jr., at Hoehelaga, received from Ellwanger and Barry as the Chasselas de Fontainebleau. Though it did not arrive till after our show, it must be mentioned. The bunch is nearly double the size of Concord, long, compact, and heavily shouldered on one side; the berry is largish and oval, in color green until fully ripe, when it becomes purplish in hue. The flesh is firm, sweet and luscious. Two vines of this have yielded about 30 bunches each, or 25 lbs each, per annum, for several years past, and, though in a low and shaded place, have not mildewed, and have ripened pretty well.

CHASSELAS.—A grape large and irregular in size and form of berry, and large in bunch. In color an opaque white, veined like a Malaga. This has done well in a garden in Montreal. A fine flavored grape, which has nearly always ripened well, and has borne good crops.

A few other white grapes we should like to draw attention to, in the hope that some one may test and report upon them.

GOLDEN DROP.—Raised by C. G. Pringle, of Charlotte,

Vt. It is of native parentage, from Adirondac crossed with Delaware. A small grape, said to be quite free from foxiness, and very sweet, and ripens even earlier than Adirondac. Mr. Pringle's opinion as expressed to a friend of ours, is, that is likely to prove quite a valuable grape in the North. It is in the hands of B. K. Bliss, New-York.

LADY originated in Ohio, and is said to be a seedling of Concord which ripens 10 days before its parent. It promises to be an early grape of good fair quality.

ANTUON is from a seedling of the Clinton type hybridised with Golden Chasselas, raised by Mr. Charles Arnold, Paris, Ont. Here let us note that the female parent of this vine is of the Cordifolia or Frost Grape Species. A grape, we are led to believe, of fine quality, not to say late, and one that should be tried on our uplands.

NAOMI is a seedling of Clinton and one of the Muscats, raised by Mr. Ricketts, who produced the Lady Washington.

OUR ENGRAVINGS.

Two Shorthorn cows, the property of the Hon. M. H. Cochrane, of Hillhurst. Both are rare milkers, the udder of the Lady of the Lake, when we saw her last, was a model of perfection.

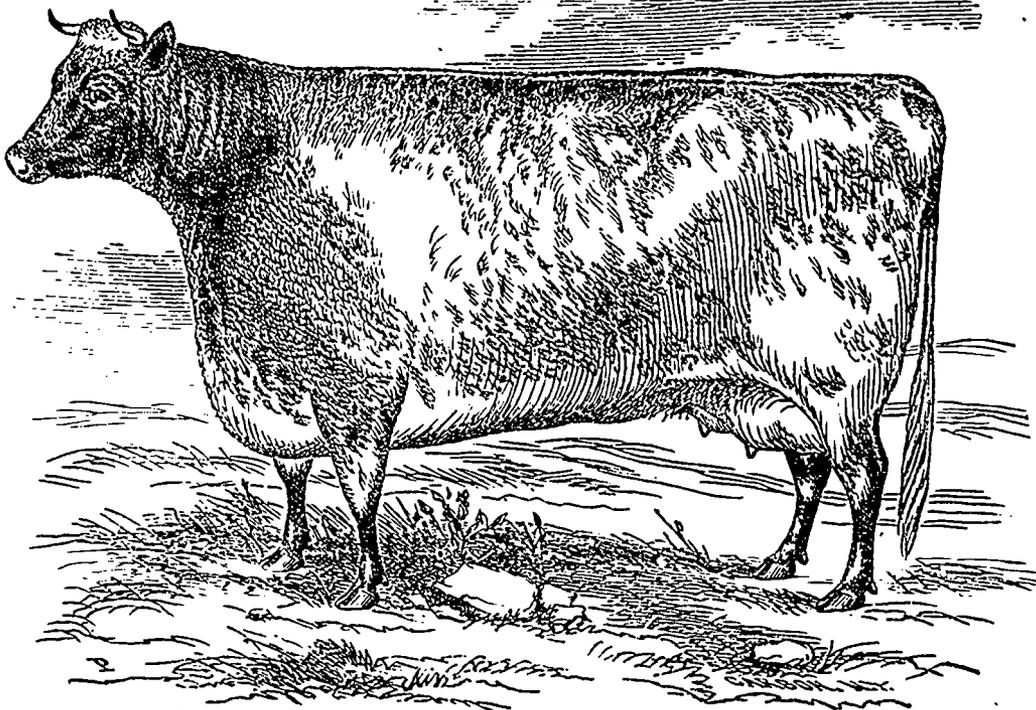
Draining tools, i. e. semi-cylindrical bottoming tool and draw-scoop—tramp-pick—flat draw-scoop, and pipe-layer.

POULTRY DEPARTMENT.

Under the direction of Dr. Andres, Beaver Hall, Montreal Poultry on the Farm.

We give to our readers part of an article written for the London Live Stock Journal by Mr. Lewis Wright.

In considering how poultry can be made more profitable and therefore more popular, upon existing farms, we must remember that the main difficulties are pretty much the



THE LADY OF THE LAKE.

The character of the vine, and of the size and quality of fruit, as given by Mr. Downing, show it to be a first class fruit in every respect. It ripens with Concord.

LADY CHARLOTTE, from Delaware fertilized with Iona, is another pure native raised by Mr. Pringle, whose bearing and quality are highly spoken of. It ripens with Concord.

Of the seedlings of the late T. B. Miner, now held by Mrs. Miner, Linden, Union Co, N. Y., BELINDA is said to ripen a week earlier than Concord: and CARLOTTA, ADELIN, & ANTOINETTE, with that variety.

Of grapes later than these we will make no mention, as they are suitable only to very special localities.

Of red and black grapes we hope to speak later.

CHARLES GIBB, Sec.-Treas.

same as encountered in poultry farming pure and simple. They still consist, mainly, in having to utilize a great number of small profits, and in avoiding the multiplied chances of small wastes and losses on every hand. But the problem is faced under different and, in most cases, more favorable conditions. The improvement of the stock as regards laying and other qualities must, in this case, take the first and most commanding share of attention; but will generally have to be effected upon some actual stock or other which already exists. In many instances, it would really be best to clear out the old stock entirely, and start entirely fresh by purchasing either stock or eggs: but not every farmer has the spirit for such radical reforms, and it is by no means necessary: much can be done in other ways, though I repeat it

would often pay best to go to the root of the matter at once.

The main point for farmers to consider is, *how many eggs a year they get from their laying hens.*

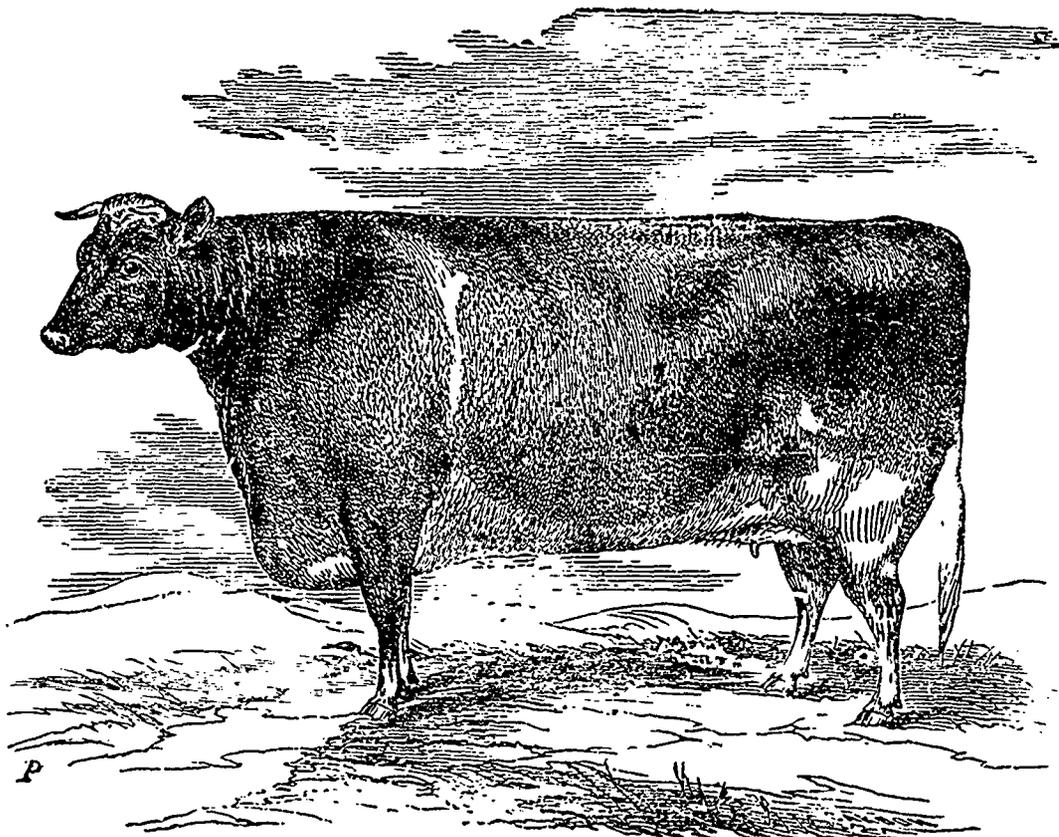
It will probably be much under 100. It is the simple fact that they may easily acquire a stock which shall lay 150, and this alone ought to put quite a different face on the poultry account. I have already alluded to the case of a farm on which change of stock alone made an immediate difference of £30 per annum: but in many it would make far more.

A good plan to pursue where the existing poultry stock of a farm has any really good qualities to work upon, is to purchase or rear from eggs a succession of pure bred cockerels, Houdans or Dorkings where table poultry are the main point; some of the Spanish tribe or Houdans of a good laying sort, where eggs are wanted, and the stock lays (for farm poultry) pretty fairly. In any case, however, it

The exhibitor fixes his aim chiefly on "points", and hence, as a rule, he must lose those laying qualities, which he is tempted in comparison to neglect.

There may be, and are, exceptions; and some do try to keep an eye upon both; but as a rule, the result must be as I stated it. And as a fact it is. But it is the farmer's business to breed for laying. The difficulty with him is that he has no idea of fowls being *worth* careful breeding at all. And that his notions of "careful" breeding almost always confound it with "fancy" breeding; whereas, all I mean is that it is his business to breed himself a stock which shall lay him 50 per cent more eggs than he gets already, unless indeed he has already entered on this profitable path.

To breed fowls thus, according to their purpose, just as one does his cows, is necessary to make them pay any profit worth having; but no one ever did it without finding a profit. It is obviously necessary to take eggs for sitting only



STAR OF BRAILSWAITE.

is essential that every one of the *old* fowls be killed off. They can never be of any use in any case, and in future, the rule must be rigidly pursued of killing every one but a particularly valuable stock bird before the moult, which takes place at the age of two years and a half, clearing these old birds out of the way: then, a succession of cocks selected with judgment, fresh every year, will soon produce a very satisfactory change.

But this must be followed up by selecting to propagate their species only the *best* layers. I may correct a misapprehension that some seem to have formed. I never said, or implied that exhibition stock was *never* good laying stock. I simply said, and I repeat, that as a rule naturally, a breeder will get those points chiefly *which he breeds for.*

from the pick of the flock. It is equally obvious that, unless incubators are used, some kind of fowls that sit must be kept in order to hatch the eggs, though the general stock should be a non-sitting breed. As a rule, it will be best if both these special classes can be arranged for around the farm house or homestead where they have more constant attention.

It must not be understood, however that I disparage pure breeds. Unless there is a really fine barnyard race to work upon, I would far prefer to start with a pure race; and in any case the best results will follow using pure crosses. However some qualities may have been lost while the fancier has been too exclusively attending to his points, they still lie dormant in the breeds, and a little different treatment

will restore them or bring them out. Taking of Minorcas or Leghorns, for instance. A high average of eggs would be worked up far sooner from such a race, by proper treatment and selection, than from any lot of barnyard poultry by mere selection, unaided by at least a cross from such a laying breed. But a cross for three years on a fine dunghill breed, will give a strain seven eighths pure, which comes to almost the same thing, while the foundation will probably increase the hardiness and fecundity, and I would as soon, for laying purposes, cross a succession of Minorca, Andalusian, and Leghorn cocks upon some farmyard mongrel stocks I have seen, as to take any stock I know. But in every case the one essential point is year by year to select for breeding only the very best."

For want of space we cannot give any thing farther on this subject this month; but in our next number will give some suggestions as to crosses which may be made with the common barnyard fowl to good advantage to our farmers and readers generally.

S. J. A.

The Dust Bath.

DEAR SIR: The habit which fowls have of rolling and dusting themselves in the dirt has been explained in various ways. They not only dust the feathers, but also the skin on all parts of the body.

The common theory is that dust is applied to remove parasitic insects. The large lice that infest fowls, particularly the under part of their bodies, find it difficult to keep a foothold where the surface is covered with dust, portions of which are as large in proportion to their feet as cobble stones are to ours, and they find it as hard to walk over these fragments as we should going up a steep hill over rolling boulders. Undoubtedly some of the parasites are detached when fowls shuffle the dust among their feathers and then shake it off suddenly.

Another explanation is that the caustic ingredients of some soils kill the vermin, but of course a good deal depends on locality. The dust of our Western Plains, containing so much alkali, would not be very agreeable to the vile creatures, and if we suppose that the ancestors of our domestic fowls lived for a long period of time on or adjoining land of this kind, and there learned to dust themselves, the habit there formed may be easily accounted for now, by the laws of inheritance.

Another explanation is that the keen points which abound amongst dust, if gritty, as shown by the microscope, when thrown against the soft bodies of these insects are as dangerous to them as would pieces of angular flint or glass be to us, thrown against our unprotected faces.

Another theory appears to us quite rational. It is that fowls use dry earth for the sake of cleanliness. The coverings of the quill part of the feathers, which are shed, and the pieces of worn-out scarf skin that remain in the feathers, which retain so much animal heat, would lead to uncleanness if there was no means of relief. Fowls, unlike some other land birds, do not wash themselves in water; but when we think of the disinfecting qualities that dry earth possesses, we see how cleansing a dust bath must be.

Based on the above supposition, an opinion has been advanced, which is this: that the parasites lodge on the fowl's skin and feed on the worn out matter, and that dry earth removes so much of this that the insects starve to death. This theory does not hold good, as they feed upon the juices of the living flesh of the fowl, and not upon this effete matter. They pierce the flesh with a lancet-like point, which incloses a tube for suction, commonly so called. It is not properly suction or the production of a vacuum which makes the fluid pass into the proboscis of the insect, but it is the movement of the

walls of that organ, in the same way water may be made to flow through a hose by immersing one end and pressing its side in a particular manner. The operation of milking is also a good illustration.

We have studied up the subject of the dust bath and the anatomy of the parasites infesting poultry quite thoroughly, in order to find a way of ridding fowls of this nuisance, or better still, to prevent them from appearing in the first place.

The conclusion we have come to respecting the dust bath is that its chief value is not on account of serving in the several ways mentioned at the beginning of this article, but that the fine particles of earth operate as follows: The lice which infest poultry (and this is true of all insects) do not take air through nostrils in the head and from thence into the lungs, as most of the larger animals do, but they have minute openings along their sides through which they respire, and these lead to a system of air vessels that branch out to all parts of the body, and take the place of lungs. These external openings are only partially protected from the entrance of foreign particles. Dust clogs these openings, thus preventing the respiratory organs from acting, and the parasite is suffocated as certainly as the fowl itself would be if its head was held under water. This is the opinion which some naturalists hold respecting the dust bath which hens and most other birds delight in. We do not pretend to any original discoveries, but only to some research to verify what others have said. In the discussion of rival theories on this subject, it is sometimes objected that fowls do not care so much for dry earth, but will roll in that which is damp or in almost any thing that is easily pulverized. But it is not to be expected that their instinct for dusting will be less blind than others which they possess, that of incubation, for instance. A hen will sit on china eggs, yet the instinct of incubation is for hatching chickens. In the same way a fowl may take to damp earth, though the passion for dusting may have its justification in the use which dry earth has in smothering parasites.

We should just about as soon think of having our poultry do without buildings as without a dust bath, no matter if we did not understand the purpose for which it was intended, as it would only be heeding the voice of nature to give them what they seem to like so well and trust that it serves some beneficial end. Fowls should have good large dusting bins provided for their use, if for no other reason than that they enjoy them so well; these should be replenished regularly with pulverized, gritty loam (which is much better than sand or clay), or coal ashes may be used instead. Fowls do not like wood ashes, because if their feet are wet when they dust themselves a lye is formed, which is too strong for any animal tissue to withstand. But coal ashes are free from this objection, and they can be obtained dry at any season of the year and can be procured in all parts of the country. If dry earth is wanted and it has not been gathered during the summer drought, it can be dug later, even if saturated by rains, as it can be spread out under cover where the winds have free access, and it will dry in a short time.

Dust-bins should be made long and broad and kept nearly full. If too small the fowls do not like them, as the wings are used violently when dusting, and striking against the sides hurts them. They should be kept nearly full, so the fowls will enter, for (except for the purpose of laying) they do not like to enter a box so deep that they can not easily see over the sides.

XERXES.

Poultry Yard.

Light Brahmas as Layers.

A correspondent writes to the editor of the *Poultry World*, respecting the laying qualities of Light Brahmas, as follows: We want, with your permission, to ask Mr. I. K. Felch

(whom we look up to) a few questions about his Light Brahmas.

1st Suppose an intelligent and experienced poultry-keeper was to take some of your pullets, matched by you with your own cocks, and breed till he had, say one hundred hens, and suppose he fed and tended them according to your directions, but did not kill any, but kept all the pullets that were hatched (without any culling of the best), what would the average yield of eggs be per hen, per year? As near as you can judge.

2d. Do you know whether the yield is greater or less than it was ten years ago, with your Brahmas?

3d. If the yield is greater than ten years ago, or, again, if it is less, how do you account for it?

4th. Do light Brahmas lay more or less eggs, in your opinion, than dung-hill fowls, under the same treatment?

LEARNER.

[On sending the above to Mr. Felch, he kindly sent the following reply:]

DEAR WORLD:— In answer to Learner's first question, I should say one hundred and fifty eggs to each hen, per annum, besides rearing a brood of chicks.

Question second. I should say less.

Question third. To answer this in full is to open a large field of why and wherefore. That, ten years ago, few breeds could beat the Light Brahmas in the production of eggs, is very well known, but why now find them falling short in this merit, few understand.

The year 1868 was the one in which all ran riot for large birds. Judges gave to weight the prizes, even to the sacrifice of many fine points. One pound in weight I have seen carry a show-pen against twelve points, as would now be required by our "Standard of Excellence," and I claim that the fearful falling off in the production of eggs in this brood was caused solely by breeding for large size. It is a rule among fowls that the larger and more masculine individual hen is the poorer layer. We have only to go back to boyhood and recollect the large hen with spurs, to also recollect that from her we can not remember of ever getting an egg.

So great, in 1867-8, was the desire for large hens, that even those known to be not of full blood were used by many breeders, who would gladly now retrace their steps. I have known parties to use hens raised from single-combed birds with white necks, because they weighed thirteen pounds, and besides that known to be comparatively barren, all to procure greater weight. And others have used out-and-out half-bred birds because of their great size. None can fail to see that such a course is injurious to the breed. Even those desirous of adhering strictly to purity of blood have been compelled, in order to meet the demands of a vitiated public taste, to make such selections, to secure size, as were less prolific, and thus assail the merits of the breed. This is every day being done by all of the breeders, for none of us have come out squarefooted and said "Let public taste go where it may, I will not cater for it." The most we do is to take a middle ground and try to please all. Ten years ago I used to think it safe to guarantee one hundred and sixty eggs and one brood of chicks as the product of a hen.

In 1864 eight hens in one run laid one hundred and ninety-two eggs and hatched and reared eight chicks each, in the year. It is safe to say a like number could not be produced now by a like number of hens from the modern breeders. Then one hundred pounds was considered a large weight for a breeding flock of twelve hens, and I did not think it good judgment to use breeders of above that weight, for I had learned that fowls of above seven and a half pounds average were less productive as layers, and I believe that to-day, with all our great weights to choose from, one thousand pounds of poultry can be made at less cost from Brahmas, the hens weighing, say eight and

the cocks ten pounds, as breeders, than by the use of the enormously large fowls.

The excessively large fowls are produced at a larger per cent. of cost, according to the weight, than are medium-sized birds, no matter what the breed. It all resolves into this: obesity is not profitable.

I believe that we can get the size and the productiveness too. Make it a rule to discard every thing, no matter what its appearance, if it fail in the merit of producing eggs.

There are strains of Light Brahma which do not commence to lay till eight and even nine months old, and the reason can be traced directly to this cause, "breeding for weight, and the use of comparatively barren fowls."

I have said enough on this subject for once. I do hope breeders, and not only the breeders, but that the public will set their faces against this mode of breeding. Instead of writing to ask the breeder what such and such pullets weigh, ask, if past five months old, how many eggs they have laid. If public opinion would say, "Unless a pullet has laid at six months old I do not want her," we should soon see fowls bred for merit and not from "caprice."

I think I have demonstrated why the yield of eggs is less now than fifteen years ago. I think all will agree with me when I say that "where the size has been kept up to the public requirements, the falling off of eggs has been at least fifteen and probably twenty per cent."

There is a larger per cent. of bone in the Light Brahmas now than ten years ago, in some strains, but this is not true of my own. Nearly every one of my Brahmas that to day weighs twelve pounds, I consider finer and as possessing less bone, by far, than when I first commenced to breed them. I have always looked upon a Brahma without a full breast with pity, and a part of my work for ten years has been to produce that feature in a larger degree, and I think any beholder of "Optimus" would not fail to see that *breast was a feature of a good Brahma*. There are different tastes in this matter. Some desire a very short leg. I like a medium length of leg. There are others whose whole ideal of a Light Brahma is found in the expression, "He is a big bird!" Such generally go for long legs and coarse, rangy fowls, and in these of course we find a larger per cent. of bone than in those that are bred very fine.

I like to see a nice short-horn heifer weighing two thousand pounds, whose leg I can clasp with my hand below the knee. Now, farmers can understand me when I say I like to see a Light Brahma cock that will weigh twelve and one-half pounds bred on the same principle.

It is not the bird that will weigh the greatest number of pounds, but the one that has the largest per cent. of fine points for its weight.

Breeders, breed as large as you can, and breed fine, and save all there is of merit in your breed.

When the time comes (and I hope it will come soon) when exhibitors will have to know that the fowls they exhibit must be known to be thorough-bred, then people will cease to buy half-bred, birds to show. Such things are done now. Are they right? I hope breeders will set their faces against such things.

Having occupied so much time and space upon the third question of "Learner," I proceed to answer the fourth, briefly. I do not hesitate to say that a good Light Brahma hen, with the same care, will lay thirty eggs more, in a year, than the common fowl. My experience in 1858, with a number of coops, as below, shows the following results:

A coop of common fowl	laid	71	eggs	each.
"	Leghorns	" 101	"	"
"	Black Spanish	" 80	"	"
"	Light Brahmas	" 82	"	"

This was from March 1 to September 1. For a year my general experiments have convinced me of the following, when the same quarters and same care is extended to all. A dung-hill, as "Learner" terms her, will lay 128 eggs, in a year. White Leghorns, from 175 to 201. Black Spanish, from 100 to 125 (but the eggs are large): Light Brahmas, from 154 to 192.

These figures being the extremes of my different experiments, you will see that the six months' experiments are at that time of year most favorable to all except the Brahma. Taking them from September 1 to March 1, they will outlay all other breeds in existence.

Hoping what I have said will serve to answer your correspondent's queries, I remain,

Yours truly,

I. K. FELCH.

The tendency is almost invariably to exaggerate the laying powers of all breeds. The above figures given by Mr. Felch are too large, except in case of the Black Spanish.

Poultry Yard.

VETERINARY DEPARTMENT.

Under the direction of D. McEachran, F. R. C. V. S., Principal of the Montreal Veterinary College, and Inspector of Stock for the Canadian Government.

The Foot of the Horse and its management.

How the farrier treats the foot.—If we compare the foot of the unshod four-year-old with the foot of an eight-year-old horse which has been shod and subjected at least monthly to the operations of the farrier, usually indicated by the term *shoeing*, we shall be astonished at the change in its general form and appearance. We give as an illustration of these changes the outlines of the foot of a colt, a year old showing the gradual change which it undergoes under the influences of the farrier's art, each succeeding year for seven years, by which term the foot has become a genuine contracted one.



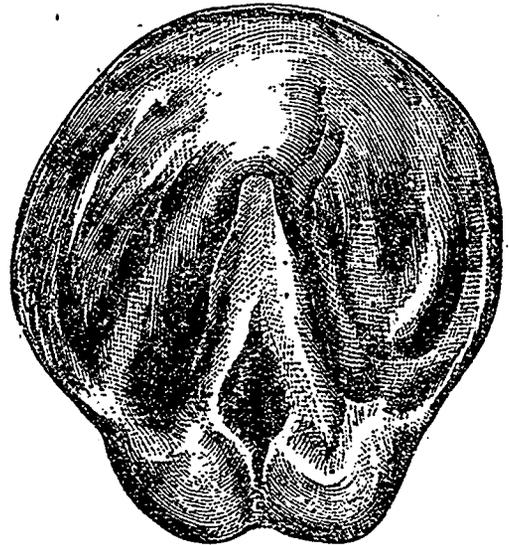
How much of this change is due to natural alteration consequent on advancing age, how much to the road, what share has the groom in it, and to what extent it is a result of shoeing good or bad, are points worthy of consideration.

That the horse will continue to have the wide open feet of his colthood through life we need not expect, as the animal grows older the feet, as a rule, become longer, narrower and

Bracy Clark.

harder, often thicker—We have seen horses which have never been shod, with feet which could not be called otherwise than contracted. This natural tendency to contract is increased by the elongation of the toe from want of friction to keep it worn down, and the carelessness of those in charge in not having them cut down.

When we consider the influence which food and temperature have on the growth of the hair, we can imagine that a tissue so similar in its nature as horn will also be influenced by the same causes: such we find to be the case.



We know that while the well fed horse has a smooth, fine coat, the underfed one has a rough, dry coat. We notice that oil cake or linseed will produce a smooth, sleek coat, while hay and water will produce a long, rough one. A warm stable with good grooming and blanketing will make the coat smooth and short; a cold stable without blankets, and general neglect, will result in a growth of hair thick and long.

Sickness affects the skin and coat; thus we often find that, after an illness, there is a falling off of the hair and scurf skin. The change of season also affects the skin and hair, which latter is changed twice a year, spring and fall.

The very same changes which occur in the skin and hair, also take place in a modified degree in the hoof. Its growth is subject to endless changes from the above causes. At one time it is stimulated, at another it is checked. Hence the ridges we frequently find in it.—The quality of the horn is just as much influenced by care and feeding as is the hair.

It will thus be seen that the feet require careful cultivation, and the different influences which affect them, should be borne in mind by those men in whose hands they are placed, and by none more than by the groom.

The horn of the foot requires a certain amount of moisture, and unless this is supplied, it becomes hard from evaporation of its natural moisture, and contraction and other changes ensue.

It will thus be seen that the owner has much to do with the feet, and many a good foot has been injured by improper stabling, grooming and feeding.

Let us accompany the colt to the forge; let us see how the foot fares in the hands of the farrier. We observe that, after some trouble, he succeeds in having the foot submitted to his will. The drawing knife, is freely used on the soft horn. the heels and frog being easiest to pare away suffer most; the rasp shortens and rounds the toe; the sole, already thin,

is still further thinned—no attention is paid to the natural bearing, or to the direction of the plane of the foot in relation to the action and natural position in standing.

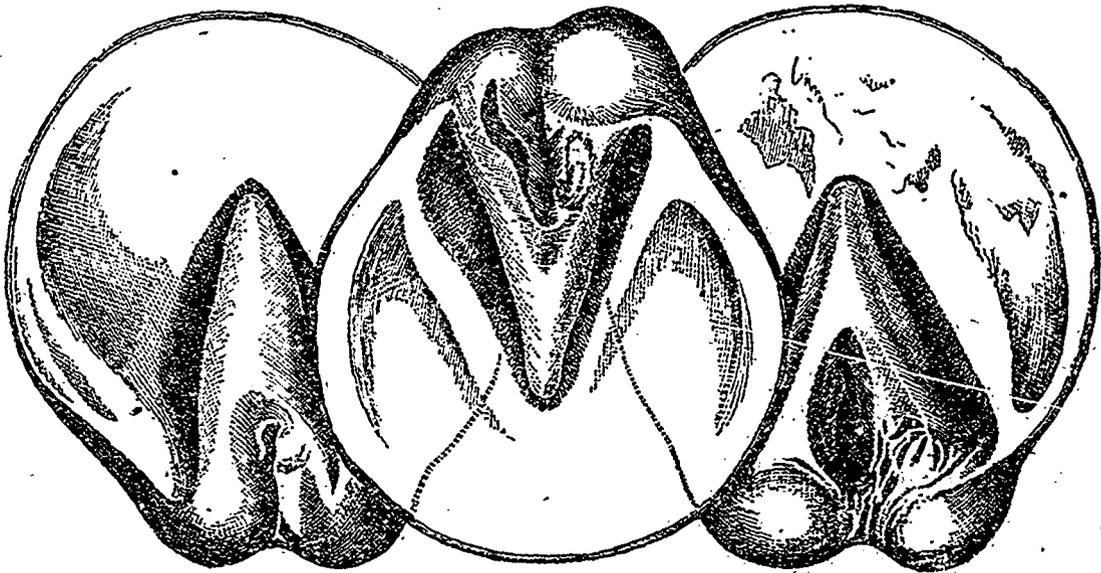
To the foot, thus prepared, a red hot shoe is applied, and a still further thinning of the sole round the margin takes place, till nothing is left to protect the sometime sole from the scorching of the hot iron shoe. The shoe being thus fitted to the foot, or *the foot to the shoe*, it is cooled and nailed on. Now, what is the result of all this? The unduly thinned, perhaps badly scorched, sole is so tender that it is further bruised by every uneven substance the colt steps on; then his action is cramped and tender; his feet are hot, and he prefers to lie down in the stable. The heat of the straw, dry and hot as it is, does not tend to lessen the fever in the feet; they become hot, hard and tender. In about a week or ten days, the feet have outgrown, and in a measure recovered from, the injury; and the horse improves in his action.

When the time for shoeing again comes round, his feet are again mercilessly dealt with by the knife, and the hot shoe; the thin soles and heels weakened by repeated bruising

intelligent supervision is given, the heels are unduly reduced, and the toe allowed to elongate, thereby throwing the weight on the posterior part of the foot, causing corns and tenderness of the heels. In others, the toe is the object of attention, and is made round and short, while the heels are left high and raised still more by caulkins on the shoes, so that the horse is thrown forward on the toe in a most uncomfortable manner.

The foot, thus prepared regardless of scientific principles, is next adapted, by burning and further paring, to the shoe.

The shoe is usually made nearly level on the upper surface on which the crust rests, but seldom indeed is the ground surface (made to meet the ground) level. Usually, on one pretext or another, the inner heel is raised more than the outer; thus, if the horse interferes, the inner heel is raised so as to twist the fetlock, outward if he has a corn. In many forges, the caulkin is cut off the inner heel, and only the toe and outside heel left; so that every step the animal takes the foot rocks, and ends by throwing the weight on the tender heel. Too often, the poor horse is made to travel on hard roads, and to draw heavy loads, with his feet and legs twisted by uneven shoes in the most uncomfortable manner.



become permanently tender, the colt loses action and courage, proves a disappointment to his owner, and is perhaps sold for a trifle, when, if he is fortunate enough to fall into the hands of a good master who understands his case, by proper care he may yet be saved; if not, he becomes a drudge and a confirmed cripple for life.

Let us now accompany the adult horse to the forge, and observe the operations of the farrier when left to his own will.

The removal of the shoe is the first step: this is done by the "driver" or "floor man," in English forges; in France it takes two men, one to hold the foot and one to do the work.

Taking the foot between the knees, the clinches are out with the "buffer;" which, often carelessly done, leaves rough clinches to tear through, and often break off in, the nail holes. With a few violent wrenches of the "pincers" the shoe is pulled off. The knife is now brought into play, the soft frog and fleshy sole are speedily removed by the drawing knife; without any judgement it is thinned and pared, till the foot is moulded to the shape and size which the farrier imagines to be the correct one, but which imaginary model is not arrived at by any special study, and, as a rule, is anything but what it should be. In some forges, where no

If the farrier would only reflect, and practise wearing a boot which would twist his own foot for a few days, he would be more careful when nailing on an immovable iron shoe to the foot of the horse.

Not only is carelessness a marked feature in the paring of the foot and the fitting of the shoe; but the placing of the nail-holes in the shoe seldom receives the attention its importance demands.

In making the shoes, the nail-holes are placed in all shoes in the same position, and thus all shoes are nailed on alike, whereas no two feet are alike in strength of quarter or adaptability for receiving nails. Sufficient attention is not paid to the direction of the nail holes, which should correspond with the direction of the wall—thus, straight at the heel and oblique as they near the toe.—The shoe being nailed on, the clinches are turned down by hammering the end of the nail on to the pincers; then, with the smooth side of the rasp, the ends are shortened, and made even, when by holding the head on the pincers they are hammered down. In doing this, too much violence is often resorted to, and the nails are hammered down as if they were in a solid block of wood, instead of in a sensitive delicate structure such as a horse's

foot. Some floormen take a pride in having their nails driven high up, and in an even line; and in order to do this, they will often drive the nails so close to the inner surface of the wall as to either penetrate the sensitive laminae, or, at least, cause a bulging inward in its course; either of which causes lameness. Much damage is done to the foot by the use of the rasp in removing the glutinous covering of the wall in the senseless custom of polishing the wall of the foot at the time of shoeing.

CORRESPONDENCE.

Durham, 22nd Nov. 1880.

Sir.—As the subject of dairy stock is one of no ordinary importance to the farmers of the Eastern Townships at present, and much advice is offered both in American and Canadian papers on this subject—as a practical farmer I would beg indulgence to lay before your numerous readers my feeble experience in this matter.

I commenced farming in the year 1850, on a farm of 240 acres of land, 150 acres clear, with four grade cows, some young stock, and a pair of horses: the Eastern Townships, farmers at this date were making great efforts to obtain Durhams, or Shorthorns. All had a taste for them; myself along with the rest.

The late R. N. Watts, Esq., of Drummondville, M. P. P. for the county, was at this time an extensive and successful breeder of Shorthorns. The fabulous prices for which he sold them, as well as carrying off all the large prizes at our exhibitions, excited the farmers of this district to a terrible pitch. I would myself have often given Mr. Watts three out of my four cows for one of his pure Durhams. However, I at last got hold of a Durham bull from the Hon. Geo. Vails' herd, West Troy, and considered my fortune made. I crossed with this bull my native and grade cattle, and bred some very good milkers, but was not yet content with the half-breeds, thinking when they were so good, that the pure breeds must be very much better.

Now an opportunity presents itself by which I secure to myself a thoroughbred Durham cow. A young gentleman from England purchased a farm in the Township of Kingsey, and stocked it with imported Durhams. Among his herd was a very fine three years old heifer: she took first prizes at Three-Rivers, Sherbrooke, and Montreal. She was again shown as a cow in 1857 at Montreal, when she took first prize and a gold medal, and subsequently first prize at Hamilton. The owner, about 1860, makes an auction sale of all his thoroughbreds. I was bound to have this cow in order to complete my fortune. When she was brought out of the stable, it took the auctioneer some time to read the long pedigree, the long list of prizes she had taken, and to exhibit the medals: and to complete the programme, she was pronounced the best cow in Lower Canada, having beaten all competitors at the public Exhibitions. This famous cow was adjudged to me for the sum of one hundred and five dollars and seventy-five cents.

In the same year that I made this lucky purchase, I bought a small native Canadian cow for the sum of fourteen dollars. She calved on the eleventh of April. As no value was placed on her calf, it was not raised. The English cow dropped her calf on the third of May, a bull calf. The milking cows were turned to grass on the 24th of May, they were not long on the grass before the little Canadian cow became mistress of the large Durham cow, which looked more like a 7 foot ox than a milking cow, and to look at her bag, you would fancy she would fill two pails of milk to one of the others. About the middle of June, one of the young ladies milking the cows reported that the little French cow was the best of the lot, not only in milk but in richness for butter, that strong spikes of butter would be always found on her milk. I, as a matter of course, wishing to maintain the character of the English cow, argued in her favour; stating that it was not altogether for milking qualities that she was bought, but for the general improvement of my stock. On the fifth day of July, in order to settle all disputes, the mistress had the milk of these two cows separated, and the cream was churned on the 10th. The French cow giving 5½ lbs. of butter in the five days, the Durham cow giving four lbs. two ounces. On the first of November the Durham cow was dry, while the French cow continued to milk until after Christmas on the very same food. Now, Mr. Editor, as this is a matter of dollars and cents to the farmer, you will observe that according to the amount of capital invested in the imported cow and called the best in Lower Canada, that I could have purchased seven Canadian cows and had seven dollars and seventy-five cents over, in other words, with 7 dollars and 75 cents added to the one hundred and 5 dollars and 75 cents I could have purchased eight native cows.

Now let me say a word on the food or keep of these cows. As some farmers may think that if the cows were placed on short pasture the native cow would have an advantage over the large cow, being able to fill herself in much less time than the large cow, while the large cow might be kept on foot the greater part of the day in order to collect ample food: my pastures were first class, and I found when stabled that the large cow consumed more than double the amount of food that the native cow did (1).

THOS. BRADY.

Dear Sir—A great deal is usually said, at this season, through the medium of our Agricultural press, on winter care of stock; at the same time, but few of our agricultural writers touch upon feeding, except in a general way; leaving the number of times a day that horned animals should be fed during the winter months to the convenience of the owners; or if they do tell us to feed three, or more times a day, they neglect to tell us why we should do so.—I do not care to accept or make an assertion in this matter, without proof, and I hope to be able to prove to you, that twice each day is the proper number of times to feed our stock through the winter months.

There is no doubt, that to men who are accustomed to keep their cattle eating all the time, it will look like hard lines; but it is economy both in food and labor. To understand this subject thoroughly, we must consider that our horned animals are ruminating animals; their stomachs are very large, much larger than that of the horse, (in which digestion goes on very rapidly), and for digestion to take place perfectly, these large stomachs must be full.

If we feed a stablefull of cattle at daylight in the morning; I mean, give them all they want; what will they be doing at noon? If other cattle are like mine they will be chewing their cud—ruminating, or digesting. Now, what is the sense, of stopping the process of digestion, by asking them to get up and eat again. If they were not given a full feed, then digestion has not taken place perfectly; and I may say, will not take place perfectly. If it is not (as every body will admit), the great amount we, or our animals eat, but rather what we digest, that makes us fat, then it clearly follows, that we must fill the stomachs of our horned animals before they will digest perfectly; and after filling them, must wait for digestion to take place, and not interfere, by asking them to eat again, until the process is complete. I have in my mind, now, a man past his three score and ten years, who very often compares notes with us on the condition of our respective herds, and he always admits, that mine are in the best order. He feeds five times, and I feed twice a day. He says: "when it is noon I want my dinner, and I know my cattle do," and I retaliate, by asking him how many times a day he feeds his young calves in spring, and also ask him what the philosophy is of feeding a young animal, that I suppose naturally eats very often, twice a day, and when it is grown up feeding it from three to five times a day. He always says "they are hungry," and I say they always are hungry, because their digestion is imperfect.

Some may say, that cattle feed nearly all the time in summer. Of course they do, for the very reason that it takes them nearly all the time to get full; and when full, as a matter of course, it does not take so long to digest a stomach full of green food, as it would one of dry.

I always notice on entering a stable in which cattle are fed three or more times a day, or fed irregularly even, that as soon as the door is open they are all on their feet looking for something to eat. I presume, and I think to myself "there is a screw loose in the management;" for a well fed herd i. e., a herd that has all they will eat twice each day, will pay no attention to any kind of a racket between meals.

We bipeds eat and sleep at certain seasons, from the force of habit; and as the most of us are constrained to eat our three meals a day from earliest childhood, and usually have an appetite for them, we think per force we must feed our stock in the same manner, not stopping to consider the vast difference in our digestive apparatus.

When we feed our herds twice a day we are but educating their stomachs to assist nature in the process of digesting dry food; but when we feed more than twice we are educating—No we are not educating, it is rather a lack of all education, for it is going against nature.

I have said nothing about watering, for every one will concede that stock must have water at least once a day, but twice would be better.—If stock has water but once a day it should be directly after eating in the morning, or else not until after digestion has taken place.

(1) In a recent visit to the township of Durham, we heard it generally admitted that what is called "The cow from the French country" has been universally found superior as a milker and a butter maker to the larger breeds. — We are thankful to Mr. Brady for the above details of his experience in the matter.

A very common error, for men to fall into, in adopting the twice a day system, is to over-feed, which is nearly as bad as starving. and is, in my estimation a fruitful source of the mangy scurf to be found on cattle in the late winter and early springs months.

Now my dear sir, I can give up my way very easily, when convinced that I am wrong; but having tried all other methods of feeding, I shall adhere to the twice a day system until I see a better one, because I consider it a saving in time, and labor, as well as food, to attain the same results. Yours truly,
 Freighsburg, Dec. 1st, 1880.

C. A. DEMING.

Dear Sir.—I send you per this mail an article on "winter care of stock" or whatever name you choose to give it, if you accept.

If you accept, I shall hope it is in time for the Dec number. I am waiting very patiently for some of your numerous readers to "take up the cudgels" either for or against me, on stacking, or green hay and tight barns, &c I reasoned in this way that a little delay in the matter would do no harm; for if somebody should happen to learn anything through our disagreements they would not be so likely to forget it before next haying time. You know that we, as a class, forget a great many things by being reminded of them at the wrong season. Yours truly,

C. A. DEMING.

Cooperative Farming.

Sir.—I write you a few lines on this subject, not so much to advance anything new on my own part as to start what may prove to be a useful discussion on the subject. Does it not seem strange that men will become partners in almost all kinds of business such as store-keeping, banking, publishing, manufacturing, &c., whilst few if any "go in Co." to farm. Now, Mr. Ed., how is this? The question might with profit be discussed in the columns of your journal during the coming winter.

Allow me to briefly state what seem to me to be some of the advantages of the co-operative system. 1st. *A combination of capital:* This would enable the contracting parties to jointly undertake enterprises, one man with limited means would be unable to undertake. Owing to the greater quantity of goods needed, these could therefore be bought at a nearer approximation to wholesale prices. 2nd. *A comb. of intellect.* Upon this I will not enlarge, yet I think it is of the greatest importance. 3rd. *A comb. of labor.* Generally speaking, two men together will do more than twice as much labor as one man toiling alone, and the ratio of advantage is found to increase in proportion as the laborers are increased. There is also the combination of animal labor, and hence under this system will likely be seen the substitution of sleek spans of horses attached to waggons, for a decrepid horse in an unwieldy cart. We might also notice the social advantages of the system. For instance 10 books are a small library, but ten times ten are quite a decent one. One newspaper will stand to be read by a dozen men. One organ would do for the use of 20 families, but every poor man cannot afford to buy one for himself. Around the locality in which I live it will be found that almost every farmer has a sewing-machine. Now there is no doubt that any one of these machines, if kept running constantly would do more work than is now done by a score of them.

Is not this a plea for concentration of effort. For it is plain that any plan that will accomplish as much without costing one half as much, is a beneficial one. I might refer to all other necessary machinery in the same way.

For instance, do we not often see poor but progressive farmers buying inferior machinery because they cannot afford to get the best. Instead of such, under the cooperative system would be found first-class Steam-Threshers, Self-Binding Reapers, &c &c.

And without any undue stretch of the imagination may we not anticipate many other advantages of the system. It would lend dignity to the profession of farming. It would have a tendency to unite the agricultural class on many public questions, and enable them to intelligently combine together against all aggressors or against any possible enemy.

And as for objections such as—the difficulty of agreeing as to the division of labor and profits—the difficulty of obtaining suitable farms of sufficient size—the difficulty of getting the right kind of men to lead such enterprises, and right men to attend to

minor details; these and all other possible objections to co-operative farming would, I humbly venture to think, vanish before the superior light of a higher civilization.—*North.*

Inverness, Que.

We shall be happy to hear from our correspondent how he proposes to overcome the very serious objections he himself mentions in relation to co-operative farming.—*Editor.*

Mr. Macfarlane, of Brome, whose cheese I praised so highly in the October number of the Journal, sends me the following letter. I am glad find that, although it is many years since I tasted a Cheddar, my mouth-memory has not deserted me. Such a cheese I was sure could not have come from cattle grazed on new grass. I shall have great pleasure in hearing from Mr. Macfarlane again at any time.

A. R. J. F.

West Brome, December 2nd 1880.

ARTHUR R. JENNER FUST ESQ., MONTREAL.

Dear Sir.—Your letter of the 21st November came to hand in due course of mail. I hope you will excuse my neglect in not writing to you before this.

With reference to my style of cheese being like the Cheddar, that is the kind in reality that I try to imitate, although I never saw a Cheddar cheese in my life. I saw one three years ago made partly on the Cheddar system, but as far as I remember, it was no closer made than my style. I make simply on the American system of factory cheese; that is, I work my curd in the whey until it reaches 98 degrees of heat; then turn the heat off and work it a very little; then let it lie in the whey until it becomes slightly acid, and then run the whey off, and dip the curd into the curd-vat; stir it a few times, then salt it stir it a few times more, and then it is ready for the press. I do not use the curd mill, I stir all by hand.

In reference to the kinds of grasses which the pastures are composed of here, they are mostly timothy and clover, i. e. white clover, and the pastures are all permanent and, mostly, hilly, with now and again a pasture on low ground with wild grass; and it is very rare to see a pasture with any of it ever having been ploughed—just as nature left it after being cleared of the timber which grew on it. This part of the country is a part of the Green Mountains lying alongside of the State of Vermont, on the line of the S. E. R. R. West Brome being the nearest station; two miles from my factory which is in North Sutton.

As to handling the curd in the whey too much causing it to lose in richness, I do not think it does, as we are very careful in handling while it is soft. I do not take on an average ten pounds of milk for a pound of cheese: it falls considerably under that amount the season through. It is our aim to get as clear a whey as possible, and it generally takes us from an hour to an hour and fifteen minutes to run up the vat from the time the heat is let on till it is shut off.

In regard to manure being the cause of cheese heaving, or in other words becoming porous, I do not think it is the case, as it is generally considered that it is gas in the curd that is the cause of it, by not getting enough acid on the curd before salting and not being aired properly before being put to press; or putting the curd to press too warm. On this very point, I am very careful to work the salt well in to the curd, and by so doing I get a very fine curd by the time it is ready for the press: I think that is the reason why I get my cheese so much like the Cheddar.

Try to come out in the summer and see us make cheese, if you can. I will try and make it as interesting for you as I can, and we will talk these things over. As to writing an article on cheese making, I never did such a thing in all my life, but I can try it, and if you think it is worth publishing, do so, I have not the time to write at present, but will try and write one soon, that is, if it is the practical part of cheese making from beginning to end, and my ideas in connection with it, that you mean. Please let me know, and I will try and do the best I can, and it may be the means of getting others to give their ideas as well.

Yours truly,

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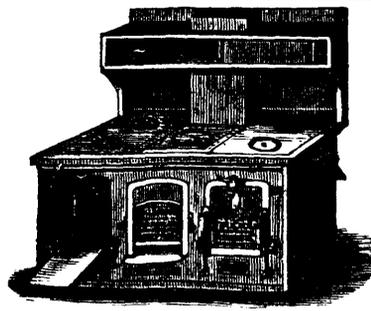
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