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THE ILLUSTRATED JOURNAL OF AGRICULTURE

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No. 6.

The gentlemen in charge of the various departments of the Journal, make it a point to answer without delay all questions, addressed to us and which may prove of interest to our readers.

DOES FARMING PAY?

MANITOBA AND OUR EASTERN PROVINCES.

SIR,—I have taken the liberty of forwarding herewith a copy of the Journal of Commerce, of August 15th, containing an article which will perhaps be of some present interest.

The continued agricultural depression in England, culminating in the almost complete ruin of the year's crop, will undoubtedly cause an unusually large emigration of the tenant farmers of that country, who, as they possess both capital and experience, form the most desirable class to attract to Canada. The three great advantages offered by Manitoba: cheap land (1), permanent fertility (2), and immediate readiness for cultivation (3) are so obvious, that unless due prominence is given to the particular inducements which the older Provinces can hold forth, these latter will fail to secure their fair share of settlers.

I would suggest, therefore, that an official effort should be made to obtain through the local agricultural societies, or still better, by personal application to their members, the figures necessary to arrive at an answer to the question, and I trust that the paper may be the means of eliciting such details of capital employed, and profits made in agriculture, as will serve to direct the unproductive labor and money of the mother country into that industry, on the progress and prosperity of which, the welfare of Canada so largely depends.

Respectfully yours, C. J. B.

Does Farming Pay?

The question of profit, though more frequently discussed with reference to agriculture than to any other branch of industry, has not yet, so far as we are aware, received any definite answer. The fact that very many farmers have accumulated considerable means through their own exertions does not conclusively prove the affirmative, for their fortune is often at least as much due to the increase in the value of their real estate, as to the profits of the sale of the farm produce (4). The question is of especial interest at the present time, when, owing to the overcrowded state of commerce and the professions, and the opening up of a new field for agricultural enterprise in the North-West Territories, hundreds of persons are looking to agriculture for a means of livelihood and an opening for the investment of capital.

It is an undeniable fact that an unduly large proportion of the earnings of the country during prosperous years has been invested in banking and commerce, which, even in the best of times, have rested upon a very insecure basis, and which, during the period of depression, from which we have not yet emerged, have not only failed to yield capitalists the return which they might reasonably expect from their investment, but have, in many cases, swept away the principal itself. The legitimate trade of the country is too small to employ even the remainder of the capital now engaged in it, and, although the adoption of a policy of protection will undoubtedly divert a part of this capital into manufactures,

the fact, that the possession of large sums of money is generally necessary for the successful prosecution of almost all manufactures, will prevent men of small means from engaging in them. The necessity of permanently reducing the number of non-producers is daily becoming more apparent and more widely recognized, and, with only the choice between withdrawing their money from an unproductive occupation, or of submitting to its gradual but certain annihilation, capitalists are seeking other and safer investments than trade can offer. The present, therefore, is perhaps the most favorable time to present the claims of agriculture that has occurred for many years. An opportunity offers to attract to the profession a class of men whose business training could not fail to establish principles, and work out results of the highest practical value, and who would, probably, be more prompt than routine farmers to recognize the proper proportion between capital and acreage, upon which the profit of agriculture so greatly depends. It remains for the promoters of agricultural progress, now engaged in the occupation, to point out, what no outsider can so well do, what return may be expected from the investment of labor and capital therein (5).

As a laborer, the farmer has a right to expect, as wages, a profit equal to what his education and capacity would enable him to earn in any other employment (6), and, as a capitalist, a net return equal to at least six per cent. upon the capital engaged, after deducting all necessary allowance for wear and tear, and contingent losses. Of course the relative proportion which each interest bears to the other will determine the nature and extent of the operations in each particular case, and hence it is of importance to distinguish between the profits of labor and the profits of capital.

Whether rightly or wrongly based, an impression is prevalent that farming does not pay; that, after deducting the necessary disbursements and allowance, and a fair equivalent for the farmer's time and labor, the balance, if any, does not represent a fair interest upon the capital employed (7). This view is supported by a consideration of the circumstances of the great majority of farmers, and by the infrequency with which agriculture yields a retiring competency to its followers, in comparison with trade (8). So long as the opinion prevails, capital will not be attracted to agriculture from outside sources, and indeed it rarely occurs that any outsider invests capital in farming, except as a hobby, and without regard to a return (9). Yet the intelligent investment of capital could not fail to be of the highest importance and benefit to the whole farming community; and agriculture, if it is in the thriving state which befits so important and so necessary an industry, ought to be able to offer as great inducements, as trade, to capitalists, whether as active or silent partners (10).

If it does offer such inducements, they must rank among things not generally known, and the figures sometimes adduced in favor of the affirmative side of the question are so vague and general, and so deficient in many particulars, as to throw very little light upon it. If, however, they could be tabulated something after the following form, a clearer understanding might be arrived at:

CAPITAL ACCOUNT.

Value of Land.
 " Farm Buildings.
 " Implements and plant.
 Live Stock, Dairy cows, young cattle, beef cattle, sheep, pigs and poultry, each in a separate account.

WORKING EXPENSES.

Interest on Capital.
 Cost of labor.
 Allowance to farmer for personal superintendence.
 Allowance for wear and tear.
 Manure.
 Seed.
 Taxes.
 Insurance.
 Sundries.

The total sales, plus the increase in value, if any, of the stock, and minus the total working expenses, would give the net profit upon the whole.

A similar statement might be framed of each separate department upon the farm, whether dairying, cattle raising, grain growing, or other forms of agriculture, showing the items composing the cost price of the products, and these would be of especial interest, both for comparison between different sections of the country, and as showing to which department the farmer might most profitably direct his attention. No inducement would be one-half so effectual as indubitable proof that there is money to be made in the occupation, and if this were once satisfactorily determined by a number of such statements, both capital and labor would flow into this channel (11).

If, in addition to this, some means could be devised for instructing, in at least the rudiments of agricultural knowledge, that unfortunate class who are now earning a precarious existence in situations in the larger towns, a service of national importance would be rendered, the value of which it is impossible to over-estimate (12). Hundreds of young men who now only realize Lord Palmerston's definition of dirt—matter in the wrong place—would each add something annually to the material wealth of the country as a producer, instead of subtracting from it as a non-producer, and Canada would welcome an era of real progress and solid prosperity such as she has never yet known. Who will begin the work?

We have numbered the principal questions, raised by our correspondent. Many of these might very well form the heading of a separate editorial. Want of space, however, forces us to answer in a few words only the various points in the above suggestive article.—1, 2, 3. We beg to differ. Farms in Manitoba, when stocked and improved, will cost about as much, per 100 acres, as they should here, —whilst produce, when harvested, will not be worth, on the spot and on an average, more than 30 or 40 0/10 of its value here. Then, there is no such thing as permanent fertility, this, the western farmers of the United States have long ago learned, to their cost. Again, as to immediate readiness for cultivation in Manitoba, we are reminded of a recent case in point, when buildings had to be erected in Ottawa, taken to pieces, loaded on the cars and sent to Manitoba, for economy's sake. For the same reason, stock, farm implements, and the whole "plenshing" of a homestead besides, were sent by the cars for more than a thousand miles. Finally, after digging three wells over eighty feet deep, water for the whole of the stock had to be carted five miles! — If this be still called *immediate readiness*, we have no more to say.

In our opinion, ninety nine out of every hundred British farmers, who emigrate with *experience and capital*—and all others in similar circumstances—ought to find it to their advantage to settle down in the older provinces of the Dominion; they have no business in Manitoba, where their experience of improved farming would be of very little use, and their capital would be in great danger of being irretrievably lost. However, we do not, by any means, deprecate emigration to Manitoba—in the case of those thousands of industrious and hardy foreigners with very limited means, whose main object is to raise food for themselves, and to secure a home for their growing sons and daughters. All such, however, must expect to *rough it*, for many years to come—but, they need not want for food—if they will only work for it, and this is certainly an object, now a days, with a great

many. But, those having experience in improved farming, and capital to pay for the needed improvements, would do infinitely better by purchasing, or leasing, a farm here, even if such farm be considerably run out.

4. What is perfectly certain is that farming has paid, and is still paying, thousands, aye, and a hundred thousand farmers, who, in most cases, started without any other capital than their strong arms, and their determination to conquer a living by farming. These men now own their farms and all belonging to them, they have lived comfortably, for many years, according to their station, they have gained advantages for their children; and, at their death, they leave several thousand dollars worth of accumulated property. Can the same be said for the same number of persons in similar circumstances, but who have chosen the various callings in a city?

5. Whether farming pays 7, or 8, or 12 0/10, for the capital invested, over and above wages and other expenses, depends on so many circumstances that it would be useless for us to attempt giving here the solution asked for. To make farming pay at all, the farmer must understand his business thoroughly. This is self evident. And yet, what a number of successful business men,—who have become rich by following business principles,—rush into farming without any practical knowledge of their new occupation. They lose their money,—of course;—but why should they swear that farming never did, never will, and never can pay?

6. Not exactly.—The writer, for many years a farmer, but originally in business in the city, would rather earn \$300 as wages, on his farm, than \$1000, for no harder work, in a city occupation. This, however, is a matter of inclination only. Very possibly, the thin skinned inhabitant of the city would rather reverse the proposition. There is also the question of ability. Many a man can make \$10 a day in town who would not earn his salt in the country, by manual labour only. Of course, brain work is indispensable on the farm, as well as in town. But farming generally, requires more than brain work. There must be, in this country at least, hard labour,—back breaking work too,—now and then, no matter how much capital a farmer may possess.

7 and 8. We know of several active professional men in the country, acquainted with farming, who, with an occasional superintendance only, of their farms, manage to obtain an average return of between 7 and 8 0/10 on all the capital therein invested. We also know of some invalid farmers, men unable to work and who have to pay for all the labour done on their farm, who, yet, secure an average net return of from 9 to 12 0/10 on their farming capital. These men, of course, know their business and look after it closely, altho' incapable of any other labour. We admit willingly that these are the exception. We will go further, and state that even the majority of farmers in this country, do not get an adequate return for their labour and for the capital invested in their farms. But we affirm, at the same time, that such farmers do not farm as they ought to farm. We feel convinced that most farmers in this country could double, at least, the net returns from their farms, merely by stopping the leaks, all round, and then stirring the soil as they should. We say it advisedly,—taken as a whole in this province, our farming is disreputable. This is not saying however, that it is much worse here than in many other parts of America. Is it surprising herefore, that our Canadian farmers have but a modest *retiring competency*? Is it not more surprising that, even with their prior farming, most of them should secure this modest retiring competency? And as much be said of a similar number of old, worn out, business men in the city?

9. Quite right; and if *outsiders* be wise they will continue to let agriculture alone.—Not so, however, with men of ca-

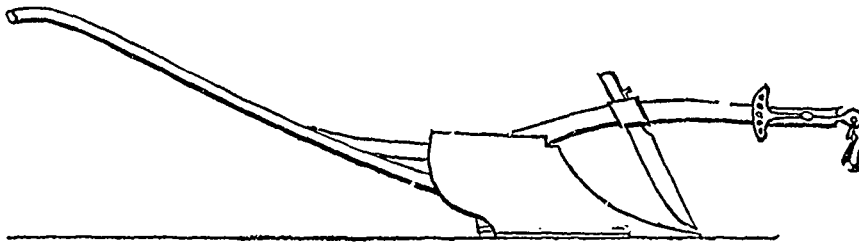
pital, who, in order to secure their investments, are willing to learn farming as a business occupation. Our advice to such is not to invest a cent in farming,—beyond the necessary outlay, in learning their business—until they have acquired the knowledge necessary to make it profitable. Such men would thus cease to be *outsiders*, and they need have no fear. They will most likely find that no business can give a greater guarantee for their capital, more real satisfaction, and a surer return.

10. This is not likely.—Trade always *seems* to offer quick, and even golden returns, with little or no hard work.—Not so with farming, which has, besides slow returns and no great fortunes, a fair proportion of hard, back-breaking work. It is very true that the golden expectations are, oftener than otherwise, changed into sad disappointments. Still as the glitter remains, and the golden returns turn true sometimes, the capitalist, and would be capitalist, will most likely continue to crowd into the city, with the full determination to avoid, any way, the hard, back-breaking farm labour.

11. However satisfactory the *tabulated statements* asked for might appear, a good look into the books of our best

farmers, in the various departments of agriculture, should be much more useful. Unfortunately, most farmers in this country,—amongst the best as well,—do not give sufficient attention to book-keeping. This is a great pity. It explains why so many questions are raised,—respecting the profits of farming, amongst *outsiders* especially.—It explains also why so many doubts remain, even of things the benefits of which are clearly established both in farm accounts and in the mind's eye of our best farmers.

12. It is, indeed, very much to be regretted that the system of education pursued in this country; both elementary and classical,—should do so little for agriculture.—As a rule, the longer a boy attends school, college, or university, the more he seems to learn that the only road to fortune—the great desideratum now a days,—is through city business and professional pursuits. And if the poor fellow, ever hear any thing said of farming,—in ninety-nine cases out of a hundred, at least,—it is that *farming does not pay*. Why it does not, however, is a question very seldom looked into,—if ever dreamed of—amongst our so-called educated men, of all classes, in this especially agricultural country.



Tweeddale Plough.—(Furrow side.)

ON FALLOWING.

The great Baron Liebig, in his "Chemistry applied to Agriculture," defines a fallow in these words: "Fallow in its most extended sense, means that period of culture during which a soil is exposed to the action of the weather for the purpose of enriching it in certain soluble ingredients. In a more confined sense, the time of fallow may be limited to the intervals in the cultivation of cereal plants; for a magazine of soluble silicates, and alkalies, is an essential condition to the existence of such plants. The cultivation of turnips, during the interval, will not impair the fertility of the land for the cereals which are to succeed, because the former plants do not require any of the silica necessary for the latter. It follows then from the preceding observations, that the mechanical operations of the field are the simplest and most economical means of rendering accessible to plants the nutritious matters of the soil."

Fallows are of three kinds.—Summer fallows; where the land enjoys at least a twelvemonth's rest, as when wheat is sown in autumn; or even 18 months rest, as when barley or oats are sown in spring.—Fallows for roots; in which case the land which bore the wheat crop in August is sown, after suitable preparation, with turnips &c., the following spring.—Bastard fallow; when land which has borne grass during the last years of the shift is ploughed, and otherwise cultivated, during the summer after the grass has been mown or fed off in preparation for wheat in the autumn; or barley, or oats, in the spring. In this country, I believe the bastard fallow has never been tried, but, I think, it would be, in many cases, an excellent plan on soils where the usual one-furrow system leaves the land too much consolidated in the sowing season.

The success of the *long*, or *summer* fallow depends greatly

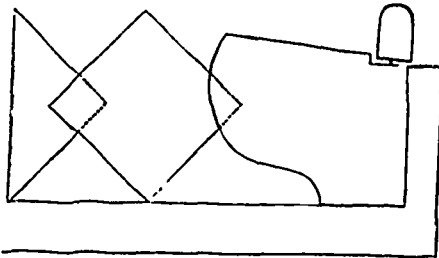
on the first ploughing. We must always remember that the object of making a fallow at all is threefold; first to clean the land; secondly to mix the soil; thirdly to liberate, by exposure to the air, the rain, the heat and the frost, those substances, mineral chiefly in their nature, necessary to supply the food of the plants which exist in abundance in the land, but are bound up in inaccessible places, until the alternate action of plough and harrow, of grubber and roller expose them to the action of the elements, and enable them to perform the duties which are the necessary sequel to their existence.

Immediately after the crop is carried home the work should be begun for the fallow. Autumn cleaning of stubbles is the foundation of all good, clean cultivation. In England I have often seen it practised before the grain is carted—the Ducie drag, or the Bentall's scarifier, worked between the rows of wheat shocks, the space where they stood being done afterwards. Then the implements cross the former work; the harrows quickly follow, and, dragging out all the root weeds, leave them exposed to the August sun to their intense mortification. But this cannot as a rule be done on the heavier class of soils; there, the plough must perform the work, and it is thus that our tough soils will eventually be treated.

The first furrow, for a fallow of any sort which is to be manured and sown ultimately with anything but a grain crop, should be as deep a one as the strength of the team employed on the farm can manage.

There are various modes of securing this deep furrow. The plough in general use is, from its construction, but ill adapted to this part of the work, not being able to go deeper than, at the utmost, eight inches. For some years past a plough invented by the late Marquess of Tweeddale, of Yester Mains, Scotland, has been coming into notice. Formed by

degrees, after long and patient experiments, and not founded on the theory of what a plough ought to be, the shape of the mould-board was attained by trial and error, and corrected and altered according to the suggestions of the ploughman who held the plough. At length the implement cut its furrow-slice of the dimensions of 13 inches deep, by 12 inches broad,

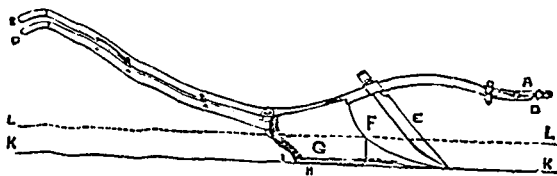


Tweeddale Plough furrow.

and, clearing its way as it went with perfect ease, was pronounced to have attained the contemplated end.

In general, the plough packs the furrow-slice too tightly against its neighbour, but the Tweeddale plough leaves it loose and pulverised, permitting air, rain, and frost to enter and do their work freely during the open season; and, when spring arrives, the grubber passed across the ridges draws out the root weeds which the plough has eradicated, and renders their subsequent desiccation easy. This is a far better practice than cross-ploughing, which, cutting, as it does, the root weeds into lengths, renders them less facile of destruction.

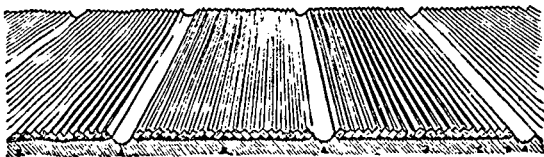
As the Tweeddale plough requires three powerful horses to work it, I fear it will be some time before it is introduced



Scotch Plough

into this country. The Scotch iron plough must then still be considered our best implement, though the two-wheeled ploughs of Howard, Busby, &c., are more perfect workers where there are no stones.

It is of no small importance that the land intended for fallow should lie in the right form all the winter. It should be as carefully ploughed, and the water furrowing as strictly

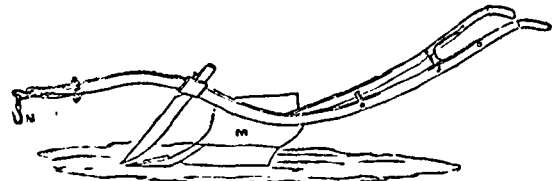


Well ploughed ridges.

attended to, as if it were intended to grow a crop. There is a difference of opinion as to the width of ridges. My own idea is emphatically this—on heavy land, with an impervious subsoil, nothing would tempt me to make my ridges of a greater width than eight feet, and I should have the harrows constructed to cover the whole ridge, and the horses yoked to the whipple trees in such a fashion that they should walk in the open furrows, (I speak of course of sowing time) and never set a foot on the ploughed land, except in turning at the headlands.

The position that the ridges should occupy is easily settled—up and down the greatest fall—except in the case of a very

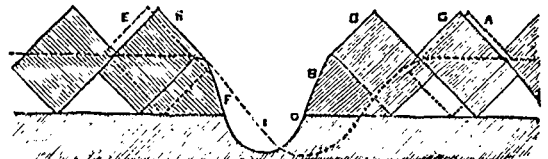
steep incline, when they should slant across the fall, both to ease the horses in their work, and to avoid the too rapid rush of water from the spring thaw and the subsequent rains. In ploughing the last furrows of ridges—*crumb*, or *hint-end* furrows—I cannot sufficiently recommend the practice of put-



Tweeddale Plough—land side.

ting the horses *atrip*, or one before the other. This need not be done till the day's work is nearly at an end, and probably a boy will be wanted to drive the team, as it is of great importance that these furrows should be well laid up, and not, as is too often seen, allowed to lie loosely scattered in the open furrows.

There should, it is hardly necessary to add, be cross water-furrows drawn after the ploughing is finished, and they should



A good water furrow.

be numerous, particularly in the hollow places, and on side hills. I hope in the next number of this journal to continue this subject, and to treat of the cultivation to be pursued in the opening of the dry season in early spring.

JENNER FUST.

ON CROSSING.

There is now no doubt that an immense good has been produced by the well managed system of crossing which has so long obtained in England. At first, the principle upon which the practice was based was little understood; but of late the more violent attempts of the earlier breeders have been avoided, and the more natural, and therefore the more sensible course has been pursued. However it has always been, and still is the rule to, in the country phrase, "put the best atop," i. e. to employ nothing but thorough-bred males.

It would be clearly absurd, in attempting to improve our flocks and herds by crossing, to lose sight of the fact, that the progeny must find ready for them food suited to their wants. There are many situations where a high-bred stock cannot be maintained as a *breeding* stock, continued crossing cannot in these cases be followed out, for eventually the whole herd, or flock, would become like the thorough-bred parent, and utterly unfit for their locality. Thus to keep on breeding from Shorthorn bulls and Canadian cows, on the poorer clay soils of this province, would be most injudicious. The first cross, or perhaps the second, is all that should be attempted, the breeding heifers being still kept true to the parent stock, until the improvement which we all so earnestly long for takes place, and the land becomes fit to support a superior class of animals. As for the notion that exist that, if a large sire be put to a small dam the foetus will be so large that the mother will be unable to bring it to the birth, we attach no weight to it, the foetus being always in proportion to the matrix which contains it. There may be perhaps a little extra trouble in its pro-

duction on account of the increased size of the brain of the improved offspring. I have bred, in cattle, sheep, and horses, from all sorts of males, and never found any difficulty on this score, but I have found that the progeny was infinitely superior to the dam in all outward parts, and that the rough healthiness of the dam, with her abundant flow of milk, gave her plenty of strength to bring forth, and to sustain afterwards her better bred offspring. Look at the modern "Exmoor Ponies!" Sixty years ago they were little creatures, from ten to twelve hands high, with nothing but their constitution and hardiness to recommend them. Now, crossed as they have been with full sized, thorough-bred stallions, a more perfect type of pony for a lady's phaeton cannot be found, their height varying from fourteen to fourteen and a half hands.

Again, I have used Shorthorn bulls of such size and weight that our small Kentish cows staggered under them, and the calving never once was attended with any evil consequence more than is usual in an ordinary herd.

Once more; I have coupled the heavy Hampshire-Down ram with the small, refined type of Sussex-South-Downs, and, although the head of the Hampshire-Down is certainly disproportionately large, the lambing was got through with much as usual.

And here I must mention, as an instance of the effect of crossing, the creation of the Babraham flock of South-Downs. The original progenitors of this most beautiful breed of sheep were bought, somewhere about forty-five years ago, from Ellman, of Glynde, Sussex. They were elegant, deerlike creatures, with narrow chests and light forequarters, (thousands of them went to fold every night on the breezy downs looking over the sea) but with good loins, and full, though of course, small "legs of mutton." Seldom killed before three years old, their weight varied from fourteen pounds to sixteen pounds the quarter—what the flavour of the meat was those who have been fortunate enough to have eaten a three or four year old Southdown wether will willingly recall to mind. Rams and ewes selected from this stock were taken, by Mr. Jonas Webb, to a small farm he had hired of Mr. Adeane, whose gamekeeper he was, and bred from. What the subsequent cross was nobody, I believe, ever found out; but it was a most successful one, as the wethers at thirty months old, often weighed from twenty two pounds to twenty six pounds per quarter, and yet retained all the quality of the parent stock as regards meat and wool, while the bosom was enlarged, the loin broadened, and the quantity of the wool greatly increased. No doubt the small size of the Sussex-Down of to day in its native county is, in great measure, owing to the absurd practice of sending the ewe lambs out into the poor soils of the Weald to pass their first winter, at so much per score—to *harden* them it is said! And truly it ought to harden them, for they return, just before shearing time, mere bags of bones; but that there was a cross of the long-wool in the Babraham flock no judge of the animal could doubt. Size, according to the old saying, goes in at the mouth, but the change of the whole animal was so great that food could not have produced it. I may as well mention here, that I saw, on one day in July 1852, rams, to the value of £3752, let for the season. So carefully had the flock been that bred, that the following year, I saw 150 shearling rams, in one lot, that so closely resembled one another, that it was intensely difficult to distinguish them.

The, now, well known Oxford-Downs are another instance of successful crossing. It was only after a 20 years endeavour to form a permanent type of sheep, by uniting the Hampshire-Down and the longwool Cotswold, that Samuel Druce jr, of Ensham, Oxfordshire, succeeded. At first the legs were some dark, some light, the faces of some were white, of others brown, of others again mottled; there was no uniformity.

Now however the type, or character, has been long fixed, and the flock is as uniform as a flock of Leicesters, or Cheviots.

In crossing we should aim at combining utility with beauty. This union is almost a necessary sequel of judicious selection, for,—

"Beauty never deigns to dwell
Where use and aptitude are strangers."

It would be foolish to hope for any successful issue in breeding from a Peacock and a Guinea-fowl, or from an alliance between a Mastiff and a Toy-terrier. All attempts at crossing should be kept within certain bounds and a clear idea formed, before beginning, of the object in view, and when this idea is once formed it should be firmly adhered to.

For instance; the cross of the Cotswold ram and Hampshire-Down ewe, as we have seen, turned out most successfully; but the cross between the Cheviot ram and the Leicester ewe, as well as that between the Black-faced ram and the Leicester ewe, was a perfect failure; the progeny, in both cases, possessing a worse and more uncertain organisation than either of the parents.

As to Mr. Mousseau's failure to raise good stock from a cross between the Shorthorn and the Canadian cow, may I be permitted to say, that many of the so call Shorthorns of the Eastern Townships are, to use a breeders phrase, "only just out of the woods," particularly those of the "Lady Barrington" line, and therefore it would be hopeless to expect any great impressive power from bulls of that class? As I endeavoured to show in my article in the last number of this journal, an animal must have been bred from a family which has been related in blood, for many years, by manifold relationships, before we can look for this wonderful gift. What says Mr. Wood, of Castle grove, a great Shorthorn authority, on this subject?

"It is very frequently have been observed that animals seen at shows and at Shorthorn sales, though good in themselves, and, it may be, descended by several crosses from purely bred and perhaps well formed Shorthorns, rarely in their progeny meet the expectations of their purchasers. What is the reason of this, and why are the hopes of those persons so often disappointed? If you look into the Herd Book and examine the pedigree of these animals, I think you will almost invariably find in them recent *new* crosses—that is, recent crosses of animals of different families not related in blood. The parents of such crosses, when good, I can never consider otherwise than as *good only by accident*; for however excellent the parents themselves may have been, I believe that the chance of their producing good animals was in proportion, not so much to their own apparent excellence, nor even to the number and qualities of their ancestors of different families, as to the number of recent good crosses they may have had of the *same* blood or family.

If it be true that breeding from a good sire and dam does not necessarily ensure a good progeny, can it be true that "like begets like"? I answer, that I believe that maxim to be true in a certain sense, but it undoubtedly is not true in the popular sense in which it is used, and I believe it has led many a young breeder astray, by inducing him to believe that when he had purchased a good-looking sire he had secured all the necessary conditions for a good progeny. There is no more prevalent error among young breeders, and there can scarcely be a more fatal one. An animal has certain qualities apparent to the hand and eye; it also has hidden qualities that neither the hand nor eye can detect, but which hidden or latent qualities descend to the offspring, and, when the animal has been crossed with another animal of different blood, will produce new combinations palpable and unexpected. The above maxim is true then in this sense, that, though the offspring may appear unlike either

parent, yet the peculiar properties of the parents are not lost in the offspring—they are inherited, but in combination may have produced effects that probably had not, and could not with any degree of certainty, have been foreseen. That these qualities are not lost would appear evident, as it is found that peculiarities of even remote ancestors will from time to time, more or less frequently, according to the skill and perseverance of the breeder, show themselves, or crop out, to use a geological expression."

I hold a very strong opinion as to the best cross for the French-Canadian part of the province, where hardness of constitution and contentedness with short commons are so absolutely requisite. The Ayrshire is a *breed* and not a *race*; therefore, unless it is very carefully bred, it is sure to degenerate. Now the Devon is a race, sprung from the soil of England, so to speak, fresh from the hands of the Creator, and without a cross of any description. They are good milkers, first rate butter producers, and very ready to take on fat. Hardy to resist cold, with their rough and rugged coats, and satisfied with small blessings in the shape of food. It is very well to look for butter, but we shall want meat too, when our best cattle are all sent to England, meat of a moderate size and not too fat, and the cross between the Devon bull and the better class of Canadian cow will give it us. It would, of course, be absurd to attempt to use the "pacages" as grazing land for the present, but the young cattle bred from this cross might be sold to farmers of the good lands in the Eastern Townships at 2 3/4 years old, and, after a summer's run on grass, tied up in October, and finished on roots, hay, and the linseed which I fear the majority of the French-Canadians sell to the oil crushers.

"The law of crossing is, that when each parent is of a different breed, and when both are of equal age and vigour, the male gives the back head and locomotive organs, the female gives the face and nutritive organs. This law, in its effects on the domesticated animals, is very similar to the law of selection; but, in crossing, the parents *always* maintain this relative position, while, in ordinary breeding, the parents change positions in proportion to the comparative greater vigour of the characteristics of each, and when one imprints the prevailing characteristics the other stamps the opposite. The cause that, in the crosses, the male gives the cerebel and locomotive system, is both striking and beautiful. If no being can desire that of which he is already in possession—if, on the contrary, it must desire what it most wants, (if not incompatible) it cannot be wondered at that, in crosses, when the desired difference is greatest, the male, whose desire is most ardent, should stamp the system by which he exercises that desire, namely the voluntary locomotive, upon the progeny. If, then, of the two great series of organs described, each belongs entirely to a distinct parent, we can neither derive, in the progeny, both series from one parent, nor portions of both from each parent; and every attempt to do so must be a failure. It, moreover, shows that, in a feeble or imperfect cross, bad as well as good combinations may be produced; but that such a progeny as presents the desired qualities must be alone preserved for future breeding, while the inferior must be cast aside. The intermediate character of the qualities produced in crossing is owing, not to each parent imperfectly giving its share in the progeny's organisation, but to circumstances that, in their new combination, each series of organs acts with, and therefore modifies, the other." (1)

ARTHUR R. JENNER FUST.

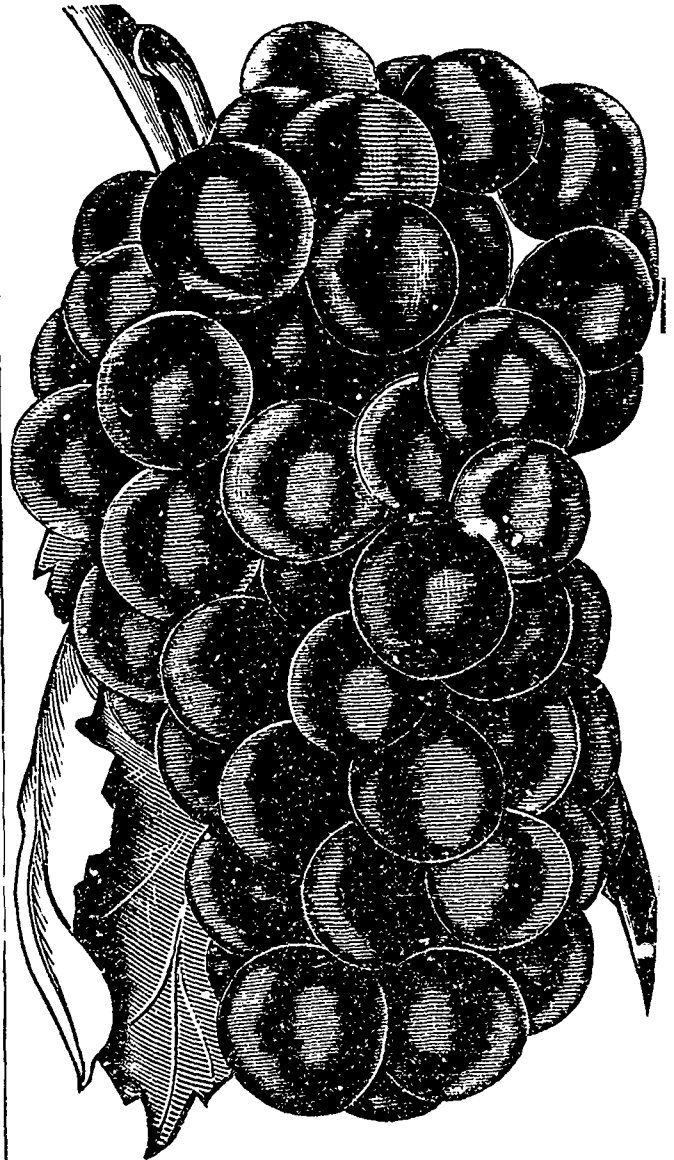
AMONG THE VINES.

The question whether grapes will ripen every year in the Province of Quebec seems to be settled. The profit to be de-

(1) Walker on Inter-marriage.

rived from their cultivation is another thing, and requires a more extended experience before a conclusion can be arrived at.

On the 25th of August I visited the Vineyard at Pointe-Claire. There is no poetry about it, but a vast deal of honest, practical good sense. The land is as thoroughly cultivated as as land can be—the soil finely subdivided, the plants, young and old, healthy, and not a weed dare show its head. Messrs. Menzies and Gallagher have evidently spared no pains to give the vines, the land, and the climate, a fair chance of proving what they can do, and as far as one could tell, they are on the road to a most successful issue. I cannot say that the grapes were ripe, but many of them were fast changing colour, and no doubt exists in my mind that most of the bunches be will fit for market by the 20th of September.



The Beaconsfield. (Natural size.)

The vines in bearing are about 2,800 in number and carry a heavy crop of fruit—many have 25 to 30 bunches—the berries are very large, and, if a few bunches were thinned out, I do not doubt they would equal in size the Black Hamburg of the hot houses. They are all of the Beaconsfield variety about the origin of which there seems considerable doubt.

In the nursery there are 87,000 young plants set out for

sale this autumn. They are, as is very thing here, in a most flourishing state. In all, 22 acres have been planted, for bearing purposes, at a distance of ten feet between the rows, and five feet from plant to plant, though the oldest part of the yard was, unfortunately, set to close.

The land varies from a heavy clay to a light sand. A fortunate occurrence, as the sort of vine suited to each soil can be easily discovered by practical experience, and customers supplied with vines adapted to their requirements. The geological formation seems to be the "Boulder Clay."

Several sorts are being tried, among others the *Martha*, the *Lady*, and the *Sweetwater*. Wine will be made, as an experiment, on a small scale, this year, an experiment which I hope may prove successful.

The vines planted at Longueuil are intended entirely for the manufacture of wine. This vineyard, which I visited on the 31st of August, is at present in its infancy. The proprietor Mons. Antoine Renaud has entered into partnership with two Italians, I Signori Calvi, and Verini. They have planted 7,500 cuttings of the following sorts of grapes which they have imported from Italy viz. Barbera, Grignolo, Pignolo. The soil seems a moderate loam, in poor condition, but the cultivators will cart a large quantity of stable manure from Montreal this winter, and hope to restore the whole of the 20 acres, of which the yard is ultimately to consist, to a fertile state before the expiration of the following summer. It must not be forgotten that this has been a season of little heat with a frost every month.

Mons. Renaud informed me that he and his partners had sent to Italy for 50,000 more cuttings. Now, according to my ideas it is a very strange thing that the *Quebec Government* should give a grant of money to these people to encourage them in their enterprise, and that the *Dominion Government* should extract part of that grant from their pockets, in the form of import duty on the cuttings and plants. The revenue derived from this tax must be infinitesimally small. Surely such things as vine cuttings, hop sets, and such like, should be admitted duty free.

ARTHUR R. JENNER FUST.

The Beaconsfield grapes were ripe on the 16th of September. The berries were large and the bloom rich, the bunches well shaped, but, owing doubtless to want of sun, the skin was thick and the flavour rather harsh when compared with the flavour of "Sweetwater" from Dr. Girdwood's, at St. Anne's.

In 1876, two *Burgundians*, named Grebbin, planted an arpent of cuttings of the wild Canadian grape at St. Hugues, near St. Hyacinthe, thinking as they told me, to quadruple the size of the berry by pruning and cultivation. I have just heard that the experiment has turned out a perfect failure.

A. R. J. F.

Pear Culture.

I will begin by presuming that growers are acquainted with the essentials in proper planting. Let me say a word on the after culture and management of a pear orchard. In the animal creation we find great differences; one class is distinguished for hardiness, while another is as well known for tenderness and delicate constitution. So it is in the vegetable kingdom, all are not alike, nay all differ in something, even two blades of grass differ. The peartreebark is of a large grain and spongy nature, it contracts and expands more easily than does the bark of many other trees, and takes in the effects of atmospheric changes very readily. Blight has been discussed in so many ways that I will not now deal at much length upon it, merely saying that, from my experience of late

years, I find one of the first symptoms is a shrinking of the bark, then the leaves become limp when handled, and, in a couple of days more, turn black and die. Believing that circulation was stopped by the binding of the bark, I tried many appliances by way of a remedy, and among others linseed oil. Since then I have used this oil every spring as a wash for my trees, first taking a cloth dipped in the oil and rubbing it over the trunk and as many of the limbs as possible, and then, with a coarse brush, scrubbing each tree well. I have never had the smallest twig blighted on my trees since this practice was adopted. At the same time that I tried this remedy myself I advised others to do so through the columns of some American journals, and it is very gratifying to observe, from time to time, the reports from many sections of the entire success of this remedy. Quite lately, I saw an account, from one of the largest pear growers in Michigan, who feels confident that the proper remedy for pear blight has been discovered, namely linseed oil. I hope pear growers will give this a fair trial, and report progress from our fair Province. The oil is perfectly safe, and appears to act as charmingly on pear trees as does the dose of the Veterinary on the hide bound dray horse. It is important to keep trees, more especially bearing trees, in full vigor. For this purpose they should be well fed every year with good manure, potash or lime according to the requirements of the soil, the former is always of use and never comes amiss, and the other two should be supplied when needed. *Every fruit tree should be mulched every year where they are in cultivated soil*, and I believe the soil ought to be cultivated every year where fruit trees are planted. I do not believe at all in the system of placing a heap of manure, ashes or other substance round fruit trees in grass, and, at some future time, I may take occasion to discuss this matter if the journal cares to receive such a communication. (Of course, we do. *Et.*)

Plum Culture.

In Ontario, is becoming decidedly monotonous for want of variety, not in kind or quality of fruit, but of enemy affecting the fruit. From one end of the Province, and in fact wherever plums are grown, one universal howl of despair arises because of the ravages of the curculio. But stop a little and "let us reason together," this like everything else, comes from an all wise Providence, and may be a laying on of the scourge for abusing, instead of cherishing and caring for the plum trees, that have so many years yielded their delicious fruit. Bear yet a little with the scourge, feed the trees well, and exercise a little patience. We have seen many other scourges in years gone by; they have lived their day and passed away. So will it be in this case; indeed already we hear of two enemies, but they are not a large army. We must feed this enemy to the curculio for it is our friend. How is this to be accomplished? By allowing all fruit that drops prematurely to lie on the ground, and thus provide food for our friendly little messenger, for these plums are filled with the larvæ of the curculio. Growers here are giving every chance possible to the curculio, never jarring the trees or using any other means of destroying these pests. We are waiting patiently until the pest is swept away by some other insect, and in the meantime orchardists are giving attention to their trees in cultivation and manuring. But the worst enemy to contend with is the rot, and opinions are various in regard to this. There is no doubt but it is a fungus, but I am yet uncertain as to the exact course it takes, and especially from what it starts. One theory I have, and from close observation it appears to bear a great deal of truth and reason with it, is that when the curculio stings a plum while it is growing the spot stung hardens and dries up and the



Strawberries—Sharpless, (natural size)

plum shrivels and falls prematurely; but plums, stung after they have attained their full growth and commenced the ripening process, rot and form a fungus growth which readily spreads from one to the other by the slightest touch. I would like to have others look into this theory, and report upon it after careful observation. All fruit affected with the rot should be gathered and destroyed, as it is filled with spores that will spread and affect healthy fruit. In the spring also the trees should be well washed so as to destroy spores that stick to the limbs. Any alkaline wash will do.

Goderich Aug. 18, 1879.

LAHRAX.

HORTICULTURE.

Exhibition of the Montreal Horticultural Society.

The display of flowers, fruits, and vegetables at the Skating Rink, on the 16th, 17th, and 18th of September, was as good as could be expected. The difficulties under which the Society labours as regards the season of the year when its annual show takes place are numerous. First, we may reckon the impossibility of tomatoes and late apples being ripe at the same time; rain too, always to be expected towards this month, damages some flowers, and softens some promising vegetables; whilst the bulk of the melon crop has been already

gathered, and cucumbers, french-beans, &c. are worth next to nothing.

The hothouse grapes were remarkably fine—particularly the Hamburgs. One or two of the branches were, however, insufficiently thinned, and the shoulders had not been tied up; so, they looked crowded, particularly *Allen's hybrid*. The Muscat berries were large, but seemed as if, at certain periods of their growth, they had been too rapidly forced.

A small show of peaches and nectarines, but the latter were very fine. Mr. O'Hera seems to understand the cultivation of fruits under glass better than most people. His 12 sorts of apples were brilliant to see, bar the one dish of *Wagoners*, which may be good, but certainly are not beautiful to look at.

The melons were all affected by the weather, and, as far as the nose could judge, devoid of savour, Mrs. Gindwood's tiny fruit would form a curiously elegant ornament to a well laid out dessert table.

The *Sweetwater* grapes (out of doors) appeared to be quite ripe and that is saying something this dull season. Of course the apples were the cream of the show; perfect pictures some of them, and the only fault to be found was want of ripeness. The Abbotsford collection shone pre-eminent in good winter fruit, which, from the dulness of colour, rather detracted from the look, but increased the real value of the exhibit.

Plums and pears, though pretty to look at, were far from ripe except those grown under glass, and even they wanted both bloom and colour. As to vegetables, Mr. Davidson's cauliflowers were monstrously large—no decent pot would hold one—but they were close and just fit for cutting.

Carrots and parsnips, though few were shown, were very clean grown and bright in colour, but white turnips were poor, and there were only two bunches of yellow turnips, the others, coming under that denomination, being *swedes*, and therefore not turnips at all.

The collections of plants were well arranged, but the room was dark, and the orchestra noisy.

A. R. J. F.

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.

Feeding Horses.

It is a very common remark of certain horse-owners, or stablemen, that "he is a good feeder," the meaning of which is, that he understands how to feed a horse so as to produce the best results at the least possible cost. It is well known to owners of horses, that while a good manager will have his horses fat and always fit for their work, a bad one, on the same food, will have them in poor condition. As this is a subject of practical importance to many of our readers we purpose to explain how this is to be accomplished.

To enable any animal to fatten, certain conditions are necessary, first, a condition of health or freedom from disease or suffering, more especially a healthy condition of the digestive organs, secondly, a sufficient supply of proper nutriment, and thirdly, a quiet easy temperament and the absence of nervous excitement.

A good stable-manager will readily observe anything amiss with his horses. The presence of worms or other causes of indigestion, and mal-assimilation of food, will cause loss of condition and prevent the animal from thriving. These, or any other derangements interfering with health, should first be remedied by proper treatment.

The usual course, and one which is frequently of considerable practical value, is to administer, after proper prep-

aration, a purgative dose, which will often remove worms and their oviparous remains, remove ingestion, and impart tone to the mucous surface and gastric apparatus. To fully understand the principles of feeding horses, it must be remembered that, compared with the size of the animal, the stomach is very small in the horse; that digestion in the stomach is very rapid for solids, while fluids pass almost directly through it to the cæcum, a large sac in the intestinal canal.

The rapidity of digestion will be inferred from the fact that, notwithstanding the smallness of the stomach, the horse is almost constantly feeding, spending, when at freedom, nearly three fourths of his time in mastication; while, notwithstanding the large quantity of food eaten, he will readily dispose of a pailful, or more, of water, which cannot all be accommodated in the small stomach. To feed a horse properly then, we must follow nature as closely as is practical, that is, the horse should eat often and in small quantities. Experience teaches us that this is the true plan.

Our readers must often have noticed, that horses subjected to long fasts are apt to become rapid feeders, bolting their food half masticated, and, as a consequence, they are the subjects of indigestion, colic, and other sequences of errors in diet. At one time, in England, the mortality among agricultural horses, from acute indigestion caused by long fasts and inordinate feeds after, was so alarming as to call for an investigation. Professor Coleman pointed out the cause, and suggested, in cases when horses could not be regularly fed, they should have nose-bags, from which they could eat hay, or oats, when they had a few minutes to spare. This simple suggestion saved thousands of pounds annually. The practice is now common in all parts of Britain to carry a bag of hay and a nose bag for oats to bait the horses when opportunity occurs. Give the horse therefore "small feeds, and often."

As to the kind of food, that will vary with the work and other circumstances. For workinghorses there is no feed so satisfactory as hay and oats, with occasional mashes of bran, at least twice a week.

For idle horses, grass, roots, and mashes. The quantity will be regulated by the work and the feeding qualities of the horse. He should never be given more than he will eat heartily. Nothing will put a delicate feeder off his feed quicker, than leaving food before him to be blown upon. While feeding, the horse should never be disturbed or excited. A horse which is petted and kindly treated will do on much less food than a poor creature scared by brutal oaths and a merciless whip. His feed box must be kept clean; few animals are more cleanly, or particular about their food, than the horse; true, by force of circumstances they can be made to eat out of boxes which are naturally disgusting to them. From what has above been said with regard to drinking-water, it will be seen that if the openings of the stomach have to dilate to allow the fluid to pass through to the intestines, if the stomach is full or partly full, it will wash the contents into the intestines before they have undergone the necessary digestion in the stomach, the consequence of which is, irritation of the bowels is set up resulting in colic, if not in inflammation. Water, therefore, should be given before feeding, notwithstanding that some old stablemen practise the custom of giving water after feeding; they do so at great risk, and frequently to the injury of the animal. A horse should never be fed for at least an hour after coming in from fast work; this is a practice observed in all well regulated stables, the rationale of which few of those who observe the custom take the trouble to consider. In the performance of all the functions of the different organs of the body, blood plays a most important part, and during the activity of these functions it is sent to the organs in increased quantity. During rapid motion, or continued muscular exertion, the

blood is sent in large quantities to the lungs and surface of the body, especially the muscular system, while, during digestion, the bloodvessels of the stomach are distended, and the circulation is active in all the organs engaged in that important function.

It will therefore be seen, that the organ is not in a functional condition to digest food while the determination of blood to other organs is in a state of activity. Consequently, for some time, say an hour after feeding, the stomach is active in the secretion of the solvent fluids which act on the food, but as secretion and digestion are not the only action of the stomach, its other property, its peristaltic action, (its peculiar contractions by which its contents are passed on to the intestines,) is increased by exercise, consequently continued inactivity is prejudicial to digestion. A certain amount of exercise therefore is necessary. Idle horses should always be stinted in their feed; thus, horses accustomed to constant work and full allowance of hard feed, when any circumstance arises necessitating their being kept in the stable, should have no grain till they are fit for work again, and, when practicable, they should always have at least two hours exercise every day.

Injury is often done to horses by continuing the same quantity of food when idle, as when at work.

THE DOMINION EXHIBITION.

Minister of Agriculture Prize for an essay on contagious diseases of Cattle.

We notice by the Prize list of the forthcoming Exhibition at Ottawa, that a Prize of \$50.00 is offered by the minister of Agriculture, The Hon. J. H. Pope for the best Essay on Pleuro-pneumonia and other contagious diseases of Cattle.

We think the idea is an excellent one. At a time when the whole world is interested in this important question, it is a well timed inducement for our young Veterinarians to read up these important subjects, and familiarize them-selves with the experience and observations of those who have studied them. Though we have no contagious diseases in Canada, and we hope it will be long before they will have any practical experience of them, still "knowledge is power," and a correct knowledge of the fearful destruction wrought by these diseases amongst European herds, their insidiousness, extraordinary contagiousness, and difficulty of suppression, are all facts with which our Veterinarians should be familiar, and they will become the informants of our agricultural communities, and, thus, they will strengthen the hands of the Minister, and those acting under him, in their important duty of protecting the country from invasion by any of these dreadful scourges.

We hope to see a large number of competitors from the Province of Quebec. As the Prize is to be awarded during the Exhibition they should be sent in not later than the 20th of September.

IMPORTATION OF BREEDING STOCK.

While the export trade is assuming proportions not dreamed of, it is gratifying to notice that importation of fresh blood to improve our stock is also actively carried on.

Last week the steamships Deminion and Govino bought 33 cattle of the Hereford breed, and 105 sheep of the Cotswold and Shropshire breeds; while this week 44 Cotswold sheep, and one Berkshire boar have arrived by the S. S. "Mississippi." When we consider that most of these animals are the prize winners at the Royal, and other shows in England, and that they are the best stock which can be bought in England, it will readily be seen that, with the attention which stock raising is likely to receive in this country now, the quality of our animals will soon be greatly improved.

Our farmers on this Province should take advantage of these importations and secure breeding rams, as sheep farming can be profitably carried on in many parts of the province.

GLEANINGS FROM AGRICULTURAL PRESS DE LAVAL'S CREAM SEPARATOR.

The Agricultural Gazette of August 25th says: the patent milk and cream separator of Mr. Gustav De Laval, of Stockholm, is the most important novelty that was exhibited at the late Kilburn show, and what greatly enhances the practical value of the invention is its timely appearance, just when competent judges are placing England in the background of dairy husbandry. Our dairy farmers may well look out for anything to help them, and in Mr. de Laval's separator they may see what is practically the introduction of a new system of dairy manipulation, the working out the details of which may best be left in their hands.

Fig 34 represents the outside appearance of Mr. de Laval's milk and cream separator at work, and fig. 33, a section showing the working parts of the interior. In addition to the silver medal awarded at Kilburn, it has gained a silver medal at the agricultural exhibition at Flensburg, Germany.

The intermediate motion is driven by adjustable friction gear, and consists of a large pulley, with tension pulleys for changing the direction of the driving band, and by it a speed of about 8000 revolutions per minute is obtained; in the case of hand power or horse gear machines, a flywheel may be provided on the intermediate motion, but in steam engines on the crank shaft.

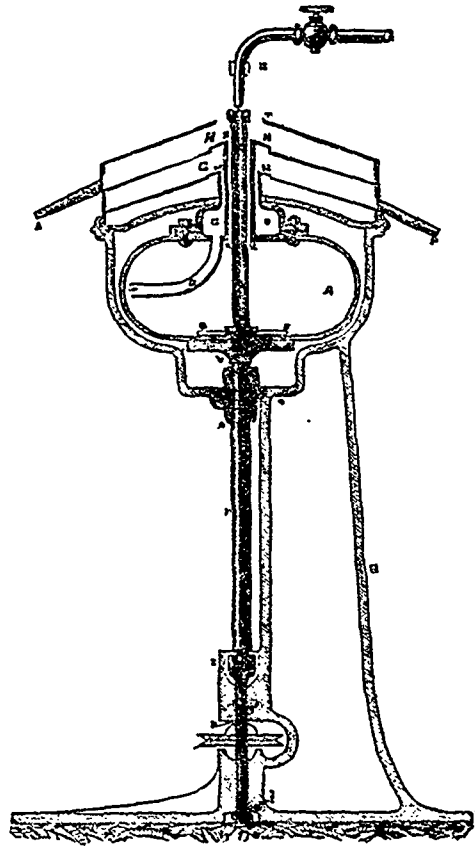


Fig. 33.

It will be understood from the engraving (fig. 34) that the outer case, n, standard, and base plate are in one casting, so that the bed plate may be bolted to the floor, or framing, of the intermediate motion. But details in fixing the separator will depend upon the motive power, the position of the separator itself in the dairy, and other circumstances which dairy farmers will have no difficulty in determining, as the whole is simple and capable of any application, so that each dairy may have its own plan in fixing the intermediate motion and separator if necessary.

In the engraving (fig. 33) A is the rotating chamber in which the separation of the milk and cream takes place. It is made of best Swedish steel forged into the form of an oblate spheroid, and then turned truthfully inside and outside.

The chamber, A, is fixed on the top of the vertical shaft, k,

the lower bearing of *k* is on a small piece of cork in a friction cup, *r*, in the top of the spindle, *h*, of the driving pulley, which has an adjustable bearing, *i*, below, as shown in the cut. The upper part of the shaft, *k*, rotates in the stuffing box, *g*, provided with an elastic packing ring, *o*, and self-lubricating cup, *v*. The bearings of the pulley spindle, *h*, are also self-lubricating. The cover, *c*, of the chamber, *A*, is in the form of an inverted funnel, the mouth of which is bolted to the top of the chamber by four bolts, two only of which are seen in the section (fig. 33). To prevent the atmospheric action on the nuts of the bolts inside the case, a cap (not shown in the cut) fits neatly over them. Immediately below, *c*, is another funnel, *w w*, with a pendant tube, *b*, from one side, as shown in the illustration. The former, *c c*, is the milk funnel, and the latter, *w w*, the cream funnel. A broad collar, *m n*, fits loosely on to the top of *c c*, for the purpose of guiding the milk into the receiver, *g*. The top of the cream funnel, *w w*, is also surrounded with a collar, *n*, for guiding the cream into the receiver, *h*. The receivers, *g* and *h*, are of the nature of funnels, *p* and *q* being the discharge pipes. They are made separately of white metal, the pipes forming handles. *g* fits on easily to the top of the lid, *E*, of the outer case, *B*; and *h* fits on to *g*, whilst a cover, *r*, fits on to *h*, best seen in the profile

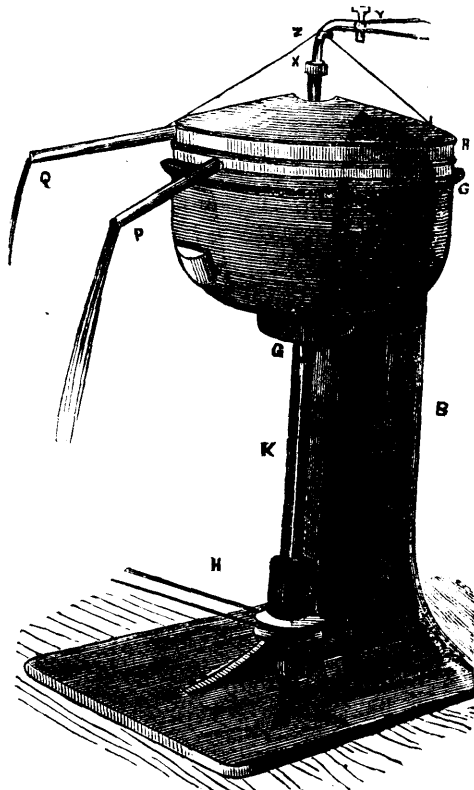


Fig. 34.

(fig. 34). The receivers, *g* and *h*, being circular, the discharge pipes, *p* and *q*, can be placed to deliver the milk and cream on any side of the separator. Thus (fig. 34) shows both set for discharging on one side, and (fig. 33) on opposite sides.

The supply tube, *a*, is screwed into the bottom of the chamber, *A*, centrally with the shaft, *k*. It has two discharge pipes, *s s*, opposite each other. The upper end, *x*, of the supply pipe rises a little above the cover *r*, best seen in the profile, with sufficient space all round for the escape of animal odour.

The vessel for supplying the whole-milk is not shown in the cut, but the cock, *y*, will be understood as proceeding from it. The mouth of the cock is held in position by a three-legged stay, not shown in the section.

In the internal arrangement of the separator there are three concentric tubes, to which special attention requires to be called. First, there is the central tube, *a*, down which the milk flows, with its two exits, *s s*. Second, there is the cream tube, *w w*, which surrounds *a*; and third, the milk tube, *c c*, which surrounds *w w*. All the parts, tubes, collars, and funnels are so designed

as to be easily taken to pieces for being cleaned and put together again for work by any unskilled labourer—the only education required being to see the thing once done.

The action of the separator is as follows:—When the power is turned on, the application being by friction gear throughout, the speed gradually rises, and when the chamber, *A*, attains about 6000 revolutions per minute the tap, *y*, is opened, when the milk flows down into the chamber, *A*. The calculated speed is, of course, determined by the intermediate motion, and it is easy to see when this has been communicated to *A*. Thus at first the mouth, *x*, of the supply pipe is seen to move, but when once the desired speed has been attained it appears at rest, like a top when spinning at full speed; and, like the top, too, it stands vertically erect, as if at rest, without any vibration, although making 8000 revolutions per minute, which is about the maximum speed. But to effect this, in fixing the separator, the common axes of the pulley spindle, *h*, and shaft, *k*, must be vertical. To insure this, the mouth of the outer case, *B*, on to which the lid, *E*, fits, is turned true at right angles with the central axis. This being done, the outer case can be properly fixed by a spirit level across the mouth of the case, as will readily be understood from fig. 34. The work of fixing is thus simple, but it has to be accurately done.

The separation of the milk from the cream is effected within the chamber, *A*, by centrifugal action. The supply pipe, *a*, has a head pressure equal to *x n* on the cream, and *x m* on the milk, but no head pressure is required until the close of the work, when the remainder of cream has to be forced out as subsequently noticed. The separation of the milk from the cream and the cream from the milk being continuous, the centrifugal action of the effluent tubes, *s s*, has a greater effect in throwing the milk beyond their mouths than head pressure when they are making from 6000 to 8000 revolutions per minute. The cream and milk mixed together as they come from the cow are thrown towards the walls of the chamber, where the separation commences; close to the small supply pipe, *a*, about an inch in diameter, centrifugal force *nil*. It is necessary to bear this closely in mind in order to comprehend the course which the globules of butter take on their way to *w w*, from the place in which they are first deposited in the chamber, *A*. [The (so to speak) skim-milk tube is fed from the outer portion of the revolving contents, and the cream tube from the inner portion next the axis. It is there the cream finds itself, owing to the denser milk being thrown outwards; and the escape being urged both by centrifugal action and head pressure alike, the outer and inner portions of the contents are delivered by two different tubes at two different spouts, the one of them rich and the other poor in butter globules. Ed. A. G.] The milk, thus delivered free from cream, yields in fact less butter than skimmed milk when the cream is raised in the common way. Thus according to an extensive course of experiments made at the Royal Agricultural College of Alnarp, Sweden, during last June (1879) by Professor Hjalmar Nothorst, Principal of the College; and Dr. Nils, Engstrom, Professor of Chemistry, the general result was that by the iced method there was always used about 1.5 lb. more milk to make 1 lb. of butter than by de Laval's separator.

Without going further into the consideration of the subject, the path of the butter globules is no doubt an upward curve towards *w w*. Were a chamber made with side walls of glass sufficiently strong to bear the speed of 8000 revolutions per minute, the path of the cream would be seen, whilst the more important question would be determined as to whether the form of Mr. de Laval's chamber is the best that can be made in its minor details. In principle its construction appears to be sound, and the small percentage of butter left in the milk may be taken as presumptive evidence that the whole may yet be removed by the inventor. The principle of construction practically is twofold, first the separation of the milk by the tube, *b*, at the extremity of the radius of an oblate spheroidal chamber revolving on its minor axis; second, the removal of the cream centrally by the tube, *w w*.

The milk is discharged over the collar, *m*, and the cream over the collar, *n*, each in a very thin sheet by centrifugal action. The receivers, *g* and *h*, with their respective collars, *m* and *n*, are stationary, and incline each downwards, in the form of an obtuse cone, to the spouts, *r* and *q*. Down these inclines the milk and cream flow, spreading thinner and thinner towards the perpendicular rim of *g* and *h*, thus affording a ready means of escape for animal and other odours and gases, and without the milk coming in contact with the atmosphere, which is objectionable, especially

when it (the atmosphere) is loaded with microscopic germ life, as it generally is.

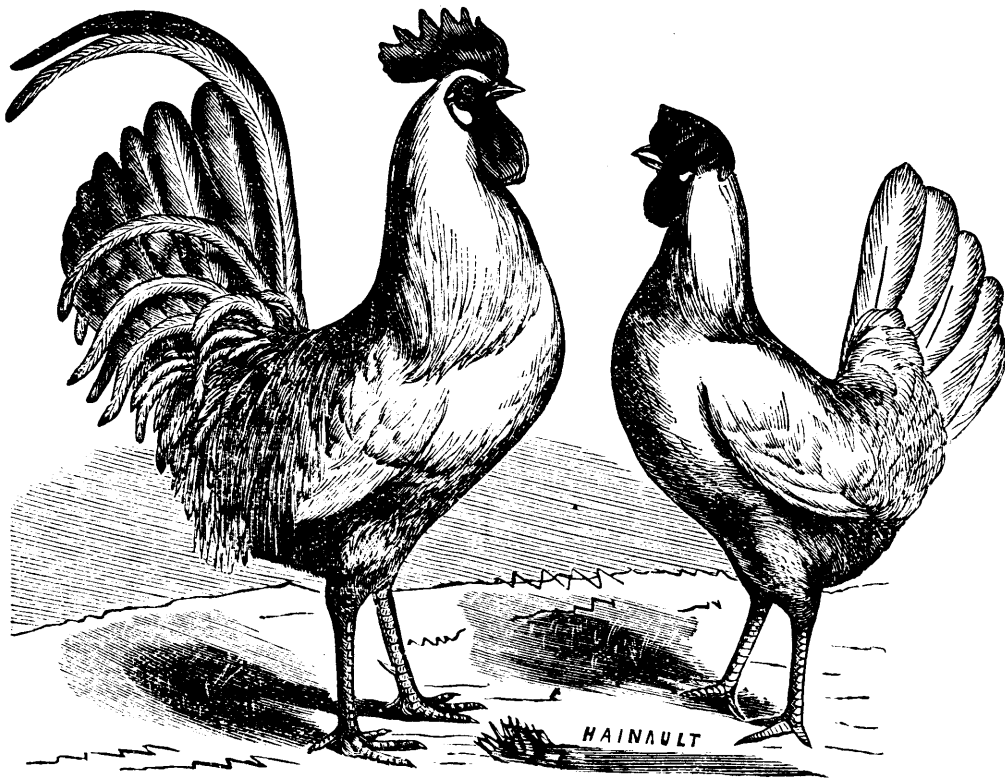
When all the milk has been separated from the cream, the speed of the rotating chamber is allowed to slacken. A portion of the separated milk is then put into the supply vessel, and as this flows down through *a*, into the chamber, it forces up the cream in *w*, by head pressure as formerly indicated.

The advantages of Mr. Gustav de Laval's separator may be summed up as follows:—1. It will do away with the bother and expense of setting up cream in pans. 2. Less capital will be required in the erection of butter dairy-houses, as a separator occupies very little space. 3. The cream can be separated as fast as the milk is withdrawn from the cows, and the cream churned immediately. 4. It will effect the commencement of a new era in the commerce of fresh cream for our tea, coffee, and strawberries; compared with the sky-blue compound which townspeople are now compelled to use the advantage is incalculable. 5. It will be the commencement of a new era in the manufacture of skim-milk cheese, or what will be termed under the new system sweet-milk cheese. The milk comes from the

separator sweet and pure, all the animal and other odours so detrimental to cheese-making being removed, and life germs of the atmosphere excluded, so that it can be made into pure sweet-milk cheese immediately. 6. It will enhance the intrinsic as well as the commercial value of whole milk, sweet milk from which the cream has been removed, and the cream itself. 7. and lastly, it will increase the consumption of and demand for dairy produce.

Separators are made of different size. The size shown at Kilburn is 11 inches by 4 inches inside, and holds ten pints. It separates about 30 galls. per hour, and the price, £28, is exclusive of the intermediate motion, the cost of which will depend upon how the separator is fixed. Hand machines are so easily driven that they can be worked by a foot treadle like a spinning wheel.

Besides separating cream and milk, the machine will separate other liquids of different specific gravities, such as tar from water, &c. The English patent is No. 4459, November 4, 1878, and the patent has been extended to America, and all other States where patents are granted. On the continent and in the United States of America, the project is exciting the same lively interest as in England.



White Leghorns.

POULTRY DEPARTMENT.

Under the direction of Dr. Andres, Beaver Hall, Montreal.

White Leghorns.

DISQUALIFICATIONS.

Comb falling over to either side, or twisted, in cocks, or pricked, or duplicate, in hens; red ear-lobes; legs other than yellow; plumage other than white, or with colored feathers in any part thereof; crooked backs; wry tail.

THE COCK.

Head.—Short and deep; color, pure white; beak, yellow, rather long, and stout; eyes, full and bright; face, red, and free from wrinkles or folds.

Comb.—Red, of medium size, erect, firmly fixed on the head, single, straight, deeply serrated (having but five or six points—five preferred), extending well over the back of the head, and free from twists, side-sprigs, or excrescences.

Ear-lobes and Wattles.—Ear-lobes, white or creamy white, fitting close to the head, and rather pendant, smooth and thin, and free from folds and wrinkles; wattles, red, long and pendulous.

Neck.—Long, well arched, the hackle abundant, and flowing well over the shoulders; color, pure white.

Back.—Of medium length and width; color, white, as free as possible from yellowish tinge.

Breast and Body.—Breast; full, round, and carried well forward; body, rather broad, but heaviest forward; color, white.

Wings.—Large, well-folded; color, white.

Tail.—Large, full, and somewhat expanded, and carried very upright; sickle-feathers, large and well curved; tail covers, abundant; color, pure white.

Legs, Thighs.—Of medium length and rather slender; plumage, white; shanks, long, and in color, bright yellow.

Carriage.—Upright, and proud.

THE HEN.

Head—Of medium size; color, white; beak, rather long and stout, and, in color, yellow; eyes, red, full, and bright; face, red, and free from wrinkles or folds.

Comb.—Red, of medium size, single, drooping to one side, evenly serrated, and free from side-sprigs.

Ear-lobes and Wattles—Ear lobes, white, or creamy-white, fitting close to the head, rather pendant, smooth and thin, and free from folds and wrinkles; wattles, bright red, thin, and well-rounded.

Neck.—Long and graceful, and pure white in color.

Back.—Of medium length, full, and, in color, pure white.

Breast and Body.—Breast, full, and round, and in color, pure white; body, deep, and broader in front than in the rear, color, white.

Wings.—Long, well folded, and clear white.

Tail.—Upright, full and long, and, in color, pure white.

Legs, Thighs—Of medium length, rather slender, and, in color, white; shanks, long, and slender, and in color, bright yellow.

Carriage—Not so upright as that of the cock.

Points in white Leghorns :

Symmetry.....	10
Size.....	10
Condition	10
Head.....	7
Comb	15
Ear-lobes and Wattles	15
Neck.....	5
Back	5
Breast and Body.....	8
Wings.. ..	5
Tail.....	5
Legs	5

100

NOMENCLATURE.

1. Comb,—2. Face,—3. Wattles,—4. Ear-lobes,—5. Hackle —6. Breast,—7. Back,—8. Saddle,—9. Saddle-feathers,—10 Sickle,—11. Tail covers,—12 Main Tail-feathers,—13 Wing-bow,—14 Wing covers, forming wing bar.—15. Secondaries,—16. Primaries, or flight feathers,—17. Point of Breast bone,—18. Thighs,—19. Hocks,—20. Shanks, or Legs,—21. Spur,—22. Toes, or claws.

To Keep food from Rats.

A plan which has worked admirably and is very simple is to take a round tin pan, punch three holes at equal distance near the rim, and fasten a piece of wire or cord fifteen inches long in each hole; secure the ends together, and attach them to a simple cord, and suspend the pan from the ceiling of your poultry house so that the bottom of it is about six inches from the ground. Your fowls can easily eat out of the pan; but the rats are unable to, on account of the swinging motion—the pan moving away as soon as they touch it. It is of course necessary to suspend the food trough or pan, clear of any boxes, or anything from which the rats can get into it.

Useful hints.

Now is the time to get your winter quarters ready. Supply clean dry earth for the floor and dusting box, and gather dry leaves to throw upon the earth on which to scatter the grain which you give your birds, so that they busy themselves scratching for it, and thereby be kept in good exercise. See that the nest boxes are thoroughly cleaned and fresh straw supplied, the perches washed with kerosene, and well scraped. Provide green food in the shape of cabbage, mangold-wurtzel, potatoes, to give when confined in the winter months, with scraps of meat and bones from your table, instead of throwing them out to be wasted.—During confinement, through the winter months, rake out the droppings from your birds from the earth on the floor at least twice a week. Put a dust box, containing any earth, about three foot square and eight inches deep, in a sunny place, putting carbolate of lime



in the earth, which destroys all vermin and keeps the birds from being worried. In fact be clean and keep clean, in all your poultry appointments, and your birds will pay you for all this trouble.

Give up the idea that any place is good enough for your chickens, that running all over your sheds and roostings, on the side of the stall, over your horses, feed box, or on the harness, wagons, and wheel barrows, and perhaps on the horses' backs, is just as good as anywhere else that you can give them. If that is the best you can do you had better give up keeping birds for profit, for it will cost you more for repairs in the spring upon your damaged property, than they are worth. When our farmers will provide proper places to keep their fowls through the winter,—and feed properly—they will get for these pains a well filled eggbasket—and clear, fat fowls for market—that will command good prices, and pay better for the amount of money invested than any product of the farm.

Be careful to keep your quarters dry. Dampness has done more to bring on disease and death among poultry than any other thing, particularly when they are confined in close runs.

If the earth on the floor becomes wet from water being spilled upon it, it should be removed and dry earth put in.

Work for young men.

There is plenty of it, and the field is low open, if those who in earnest desire occupation that will prove remunerative will only look at it in the right spirit and go about it in the proper way.

One of the drawbacks to success in life among young men is their fastidiousness, and their unwillingness to do anything for a living, except it be to engage in their own chosen calling or profession, which they so frequently find is being overdone by others when they are ready to enter upon a given career.

But our young men grown up, or growing up, must have occupation, for it is work, employment, business, that makes people prosperous and contented. Without this—in some way or shape—they can never become good members of society, or be anything to themselves or their kind. Steady employment for hand and brain is what makes a nation of men happy among themselves and their families, as well as useful to their neighbors and the community at large.

This is true, though it is not generally appreciated by the young men who are just about starting out in life, and especially among those who are bred in the country. The great desire of boys and youths who are brought up on a farm, or whose early years are passed in rural pursuits, is to get into the city, to go West or South, or to try near fields, in which their brains and talents shall enable them to conquer fortune.

Now and then we hear from one or more of these young men who do not succeed in this way as they anticipated, and who next ask us if there is any chance for willing hearts and strong hands in the poultry business.

Ours is a business that, when properly followed, never yet has been overdone. Men fail in their expectations, as in other branches of trade, to a great extent. But where some persons are unsuccessful (through lack of the right sort of management) hundreds make money in this calling, and thousands get a good living for themselves and their families by pursuing this work in the way it should be done.

No enterprise offers to the man bred in the country such promise of reward—in a limited way and considering the amount of capital and labor involved in it—as poultry raising does. But there is judicious management needed in its prosecution; and every part of the business must be appropriately economized to make it fairly remunerative.

Poultry World.

Pedigree Breeding.

We concluded our introductory remarks on this subject last week by the inquiry as to what it was that any celebrated breeder had done, which made his stock specially valuable, on account of the certainty with which it represented certain characteristic features. It is of some importance to consider this, since what one man has done, another may do. And there is, indeed, no secret in it. The longer we live the more we realise the almost bare *simplicity* of the principle which makes "breeding," in any scientific sense of the word, a possibility. But we think the phrase "like produces like," in which it is often supposed to be embodied, by no means puts it in a proper form, and has indeed tended directly to throw many off the track entirely, by leading to such vague and erroneous notions as to the value of stock merely bred "from prize-winners," as we alluded to last week. Let us look into the matter more particularly.

What is known as the "family likeness" in children to their father and mother is familiar to all of us, and it is a singular fact, which deserves consideration, that this likeness is, as a rule, more readily seen by strangers than by members

of the family itself. However, there are more or less striking resemblances in most cases, by which the likeness spoken of can undoubtedly be traced. But this likeness varies very widely, and often, even when clearly visible, cannot be traced to any one feature particularly, but is due to some general undefinable impression which the whole face somehow produces. In other cases a strongly-marked feature can be very clearly seen in the offspring, and in some other cases, no likeness can be traced at all. Thus, supposing the head of the family to have a strongly marked Roman nose, it is probable this prominent member may be recognised in at least a portion of his posterity, while not in others, in whose faces, nevertheless, others of his lineaments can be traced, complicated with those of the mother, and even with those of other members of the family.

And this leads us to another well-known fact—viz., that in numerous cases where no resemblance can be traced in children to the immediate parents, a startling resemblance can be traced to the grandparents, or even to ancestors still further back; from which it appears that resemblances have a more or less strong tendency to be transmitted to posterity, even beyond the next immediate step in the pedigree. Very peculiar, or even extraordinary features—such as, for instance, the possession of six digits on each extremity instead of five—are often, when they occur, thus transmitted very strongly. From these and similar facts, which we need not specify in detail, it is nearly certain that every feature has a tendency to repeat itself, and would do so, more or less, were it not modified or counteracted by other tendencies. Thus, if of two parents one have black hair and the other brown, it is probable that the black haired parent has a tendency to transmit the peculiarity, but that it is counteracted, or modified by the other parent having hair of a different colour, or by the colour of the hair of the ancestors further back. We say this is probable, but we might rather say that the researches of Mr. Darwin have it almost certain it is the case; at least, every argument founded upon such a supposition has been hitherto found to hold good.

Now, scientific breeding consists in throwing the strength of all these tendencies into one definite channel—the causing the tendency of the great grandparents and the grandparents, as well as of the immediate parents to transmit peculiarities to their descendants, to combine towards one object. For instance, going now to our poultry yard for an illustration, it is by no means uncommon for a bird, through some remote cross with the Dorking of which all traces beside have long since vanished, to appear with some signs of the fifth toe. Though, strictly speaking, this is owing to a tendency inherited long since from the cross, we may for present purposes call it an accidental variation, occurring, perhaps, only twice amongst a thousand chickens supposed to be pure from all Dorking taint. If one of these chickens be bred from, it is probable that a few of her progeny, but still few, will also show this fifth toe, the greater part, however, reverting to what we may call the usual type of the yard. If we mate this hen to a cock showing the tendency in the same way, the number of five-toed progeny will be somewhat increased, but still (supposing, as we do, that there is no appreciable Dorking taint in the yard at all) they will not be many, and the four-toed chickens they produce will have little tendency to breed birds with five toes. But now suppose we select from the chickens produced from these two five-toed parents a pair also five-toed, and breed them together. We shall now find the tendency vastly increased; so much so, that very likely a full half of the produce will be five-toed, and even those which are not will show a evident tendency to breed five-toed birds. We have accumulated into one direction—that of producing five toes—the transmitting powers of two generations—pr

rents and grandpatents. If we breed from this third generation again, still selecting five-toed individuals, the tendency to produce the peculiarity will be increased enormously; and in a generation or two more, a bird *not* five-toed will be as rare as the five-toed specimens originally were. We now have what is called a *strain*, so far as regards this one point of five toes—that is, we have produced a race of birds which we can depend upon with almost absolute certainty, to produce nothing but five-toed birds. Such a strain is the Dorking breed itself.

Now let us put this instance in another light. Supposing the pair, which showed the feature accidentally, to have been kept alive for ten years, as might easily be the case, whilst their descendants have been successively selected and bred from in the manner supposed. It will readily be seen that it may be very easy to select from the tenth generation a pair of fowls which to the eye appear precisely like the original pair from which operations were commenced. In plumage, in comb, in shape, and in the toes, the closest scrutiny may fail to find any essential difference. But, as we have seen, the difference in breeding value is tremendous. The first pair have scarcely any tendency that can be relied upon to produce the desired five toes; the other pair can be depended upon as regards nearly every one. The first pair presents nothing to a breeder save the foundation upon which he may, by care and perseverance, found a structure hereafter; the other represents work fully done, and a “strain” which, as regards the one point we have considered, is perfected and established, and only needs ordinary care to preserve it in the same perfection for an unlimited length of time.

We have selected one feature as an example; but to any other the same reasoning would apply. Single or double combs in fowls, colour, or carriage of tail or of ears, or any other point in a dog; speed or endurance in a horse; all are subject to the same laws, and can be “fixed” in the same manner. So far, we think we shall have been easily understood; but it will readily occur to most of our readers, if not to all, that every animal is bred for many points, and not solely for one such as we have been considering; and that here the difficulty in breeding successfully begins. On the next occasion we will look a little into that part of the subject. *Fanciers Gazette.*

Poultry on the Farm.

I have just threshed, and sold at 41s. 6d. per quarter, a crop of Rivett wheat, grown after white wheat, and it yielded seven and a half quarters per acre, tail included. This field is open to and within thirty feet of the fowl-house, from which emerge every morning some 150 head of poultry, and they have been free to roam at large in this field from the time it was sown to the day of carting the crop. As it was drilled with something under five pecks per acre, and as the said poultry, immediately after sowing, took possession of the field and made a most searching and continuous examination of its contents, the prospect of a crop would appear alarming to those who were inexperienced in the matter; and I confess that in the early days of my confidence and belief in poultry, I have felt somewhat nervous as to this and the next particular fields, knowing how sundry opponents of thin sowing would triumph and rejoice over a failure of the four pecks per acre. Well, but there is the fact of the sixty bushels of crop per acre, and by no means the first, second, or third instance of the kind, for, however shabby and scratched the plants may appear in their early growth, their ultimate development is grand, and the thickest part of the crop is always that nearest to the fowl-house. They not only cultivate the crop but manure it, just as sheep do. But the great benefit is, that not

an insect has a chance of injuring a plant, while, at the lower end of the field, less used by the poultry, there was injury from wireworm. In fact, a long and close observation of the habits of birds and poultry has convinced me that they are the farmers' and gardeners' best friends. It has been jocularly said that nothing in the shape of live stock makes so large a return as poultry do, as “for every grain they gave a peck.” It is interesting to watch their operations. Having, with their active claws, pulverised every clod and unhoused the plant destroyer, he is at once appropriated and converted into food for our table. Winged insects also have a poor chance with them. How neatly they “nab” the fly from his place of settlement, whether on the legs of our horses or cattle, or on the walls or boards. A sensible cart-mare in my stable would not lift a foot so long as her favourite chicken was watching for and appropriating every fly that settled on any of her legs. I have also been amused at seeing a blackbird on the lawn making a vigorous effort to withdraw from its hole a stout worm, and tumbling over backwards by an ultimate and suddenly successful result. We should, as farmers and gardeners, remember that, for probably eleven months, out of twelve, birds have to live upon the insect tribe, and that it is only during the the ripening or ripened period that we must by netting and other means, protect our fruit and crops. The good they do vastly exceeds the injury; I therefore strictly forbid bird-nesting, and strongly advocate that there should be at least one per cent. of shrubbery to every 100 acres of farm as a home for birds. This is a very different affair from great trees and ugly banks, fences and ditches in the corn-fields, which are (particularly this dry season) so greatly detrimental to the farmer's welfare. As regards the question whether poultry are profitable, I have long since proved the affirmative. All live stock consume in proportion to their weight, and as we obtain nearly twice the price of meat for our poultry, it is not only the dearest food to the consumer but the most profitable creature to the producer.

Weigh a sheep or bullock immediately before slaughtering, and ditto a fowl, and ascertain how much per lb. live weight you obtain for each when sold. In one case you have to get rid of nearly half the weight in skin, entrails, and their contents and general offal. In the other (the poultry) the takes all offal, internal and external, except the feathers, which sell at a better price than the meat. I enlarged on this matter in my second volume, “Profitable Farming,” p. 283. Besides, poultry convert into good human food the insect tribe and a large amount of grain and seeds that would be wasted. They never do better than with free access to the land. Our French neighbours have done wisely in preventing by legislation the destruction of small birds. I found by experiment that a fowl or a pig consumed alike in proportion to their weight, but sold at very different prices live weight. The management of poultry is an art which, like all others, should be learned. As to gardens, I know of a case in my neighbourhood where the crops were destroyed by insects. The new tenant stocked it with his poultry, and soon had abundant and uninjured crops. A little slovenliness of appearance is amply compensated by increased produce. I breed from pure Brahmas and Game crossed; sometimes Cochin and Game. Dorkings find our soil and climate here unsuitable. Poultry are almost or quite as gross feeders as pigs—in fact, carnivorous and omnivorous. The contents of the pig pail is most acceptable to them, and they will kill and eat mice, or even a helpless juvenile duckling. They enjoy red-herrings, and cooked fish; and I know at my breakfast-table, sometimes, when they have had access to it, for the flavours of fish, also red-herring, are strongly evidenced in the taste of the egg. The same remark holds good in the case of sheep, also of cows. Turnip-flavoured mutton and milk are not unfrequent. J. M.

Fish Guano.

Sir.—While reading the last Journal of Agriculture (August) I was particularly struck with the observations from the Transactions of the Highland and agricultural society, in reference to Fish Guano, and also that the said manure had attracted great attention in Italy.

My object, sir, in writing you this letter, is to enquire how and in what manner we should use fish, and fish offal, so as to produce fish guano. Many farmers in this district, myself included, have great objections to using fish, and fish offal, in its fresh state, and for the reason, that although it forces a crop, it hardens and injures the land unless kept up year after year. If some idea of the value of fish guano could be conveyed to the farmers of these lower provinces, through the columns of your valuable journal, it would be of immense benefit to agricultural pursuits in this part of the Dominion, and, in course of time, would give rise to some enterprising men on these shores, to establish firms for the manufacture of fish guano out of the thousands of tons of fish, and fish offal, which are thrown away, and wasted annually.—*Barachois de Malbaie.*

We are preparing an article on the manufacture of fish manures. In the mean time we think all so situated would do well to heap up the fish offal they can secure and compost the same with dry earth, beach mud, stable manure, and, in fact, all material worth carting on the land. Such composts make the best of top-dressing for all crops. What makes the soil compact is the fish oil. This can only be removed by the process of oil making, which may not prove profitable, except on a large scale. (1)

Good or bad.—"I want more of your butter," said the merchant to a first-class butter-maker, whose product always came to his counter in splendid style, "for I can hardly get enough to furnish my customers." "No, sir," he said the next day to a farmer whose butter came to market in an old tub, with not a very clean cloth over the top of it, and in a rather soft condition, "no, sir; butter is very plenty, and I have a good supply on hand." And he had—of that kind! *Ex.*

(1) My own belief is that if the fish refuse is composted with earth, and allowed to remain 2 years before it is used, all dangerous qualities will be found eliminated. We have heard of whale-blubber compost burning up grass when applied too soon.—A. R. J. F.

The farmer, more than any other, must be a man of broad views and not be confined to one idea, and that idea the one which happens to please the fancy for the time being. It is well enough in the mechanical world, and doubtless is altogether best, that one bend his energies entirely in one line or direction, to the exclusion of all else. By that process some of the most brilliant successes have come. But the farmer, to be all that he should, must see some advantage, some good, some income in every branch of his calling, and strive to have as many irons in the fire as he can safely keep from burning.—*Vt. Watchman.*

Vermont Winter Wheat.

The following results are worth looking into even in the Province of Quebec: Mr. David Drummond, of Petite Côte, Montreal, obtained this year 120 bushels of fall wheat from less than 4 acres. He sows again this fall.

Henry Lane of Cornwall, in the *New England Farmer*, says: "Last year I raised eighty-four bushels of the Clawson wheat on one acre and one hundred and forty-three rods of ground. This was the first crop of Clawson wheat raised in this section. Last fall I sowed four acres, which I harvested last week. The crop is nearly or quite equal to that of last year. I sold my last year's crop for seed, mostly to my neighbors, and there are some very fine crops of it harvested—I think quite forty bushels per acre. When the country was new the clay soils in the Champlain valley produced abundant crops of winter wheat, in fact it was the principal crop raised for an income on the farm. Some thirty or forty years ago the wheat crop was troubled with the weevil. In a few years this insect was so destructive that raising winter wheat was abandoned. A good growth of straw could be produced, but little or no wheat. For the past five years farmers have been sowing winter wheat, and with good success and no trouble from weevils. I have examined my wheat very thoroughly, and fail to find a single one of these insects. The area sowed to winter wheat is on the increase from year to year, and the clay soils that, fifty years ago, produced such abundant crops of No. 1 winter wheat, are again growing crops equal in yield and quality to those grown when the country was first settled. We hope that destructive pest, the weevil, will not again trouble us."—*Vt. Watchman.*

FARM FOR SALE—WATER POWER SAW mill, &c.—A bargain.—1300 acres, (400 acres in cultivation, in Lugwick (Compton, Q.) within a few miles only of three different railways, with 3 horses barns, &c. An excellent water power crosses the property on which there is a good saw-mill. Beautiful natural meadows, which gave 100 tons of hay this summer. Price, this fall, \$9000—} cash—balance in from 6 to 10 years, at 7 1/2% interest.—This property can be easily subdivided. Apply to

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