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THE ILLUSTRATED JOURNAL OF AGRICULTURE

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No. 4.

What are the best means to be taken to improve the Agriculture of this Province? (1)

No one will expect to find, in this essay, a treatise on the art of farming with profit. This would be utterly out of place, and not at all what was intended by the rules laid down, for the regulation of this competition, by the "Institut Canadien de Québec." It will be my duty, then, in this part of my work, to point out the best means of improving the system of farming pursued in this Province. At first sight, they may appear a little subversive of old established ideas, but, looked at carefully, they will be found easy to be put into operation.

As long ago as 1850 the Legislature of Canada officially described, in a precise and well digested report, the defects of the cultivation existing in the Province of Quebec. As the consequence of this report the grants in aid of Agriculture were doubled; Agricultural societies were encouraged; schools of Agriculture were established; and at Quebec after Confederation, a special department, having, as its head, a Minister of Agriculture and Public Works, was instituted. In 1869, the "Council of Agriculture" was created, to replace the old "Board of Agriculture" of Lower Canada. For the last 40 years, the publication of Journals of Agriculture has been assisted, and, latterly a few lectures on the subject of farming have been given in different districts. The annual expenditure for these, and other purposes connected with cultivation, has exceeded \$70,000, and the total sum spent, during the last 30 years, amounts to more than \$2,000,000.

Let us now see what is the actual state of our agricultural organisation, and try to point out its weak side.

The Agricultural Act of this Province gives to the "Commissioner of Agriculture and Public Works" the complete direction of the Council, of the schools, and of the societies of agriculture, and it is he who is responsible for their proper functioning.

Nevertheless, it appears from the official reports published by the commissioner's authority, that, up to the year 1875, the laws governing agriculture had remained inoperative, particularly as regards the state of the agricultural societies. The sums expended would seem to have been expended almost uselessly, and one might almost say that, what progress has been made would have been made without the aid afforded so liberally by Government.

What says the Commissioner in his report for 1874? "Beyond the usual administrative routine, our department exercises very little direct influence on the organisation of agriculture, this seems to be the business of the Council of Agriculture."

Observe; the *Minister of Agriculture and Public Works* declares that he does not pretend to direct that branch of his department which, at least, is not the more unimportant of

(1) Third part of Ed. A. Barnard's prize essay on *Agriculture*, translated from the french by A. R. Jenner Fust.

the two, he leaves that to the Council of Agriculture, a direct infraction of the law! (1)

Thus, it clearly appears that the Commissioner ought to guide the Council of Agriculture, as well as the societies, and that no act of the Council should be put into operation without his approval.

Nevertheless, as we see by p. 29 of the general report of the department for 1875, during the six first years of the existence of the council of agriculture not one act of theirs has been officially approved. Lands have been bought; buildings have been erected; rules for the guidance of agricultural societies have been laid down, and all without the sanction of the authority declared necessary by law!

What says Mr. Browning, late President of the Council of Agriculture, in one of his reports?

"Deliberations of the Council.—It is my duty to call the attention of the council to a matter of the greatest importance connected with the 39th clause of the act regulating agricultural which reads as follows:

"Every regulation, rule, or measure, passed by the Council of Agriculture shall be submitted to the Lieutenant-Governor in Council for his approval before it is put into operation.

Now, when I have informed the Council that, in spite of all the pains taken to conform to the law, and, after copies of the resolutions passed at each meeting of the council have been sent to Quebec, not one of their rules or acts have been approved by the proper authority, I leave it to them to decide if it would not be wise to try and get the clause abolished, since it is clear that we are acting in a most irregular fashion, as we may, perhaps, find out some day to our cost, by the entire disallowance of all our acts and deeds."

Signed: J. M. BROWNING, Pres. C. A. P. Q.

As regards the working of the Agricultural Societies, M. Lesage, assistant commissioner, says (see the report of 1874) to his principal:

"According to your instructions we have not inserted the financial reports of the agricultural societies on account of the irregularities they contain." He says further on: "It is a pity that the farmers do not take more interest in the ploughing matches and in the competitions for prizes for the

(1) Sec. 32 Vict, c. 15, cl. 40. "All the duties and powers belonging to the direction and control of the societies and schools of Agriculture are assigned by the present act to the Commissioner who shall receive their annual report, pay them their yearly grants, give them proper instructions to insure the entire and thorough accomplishment of the rules, general or special, adopted for their guidance by the council of agriculture; and he shall have the power, in case of any infringement of these rules, to suspend the payments of the grants, and, the authority of the Lieutenant-Governor in Council being first had, to withhold them altogether.

The preceding clause says: "Every regulation, rule or measure, passed by the Council of Agriculture shall be submitted to the Lieutenant-Governor in Council for his approval before it is put into operation."

best cultivated farms. The majority of the societies, instead of looking upon these trials of skill as tending to advance the art of agriculture, try to escape from them altogether."

At page 156 of the same report it is shown, that though holding ploughing matches is made a necessary preliminary to the reception of the governmental grants, only 19 out of 80 societies have them. In fact it is easy to see that, if these reports mean any thing, hardly any inspection over the societies is exercised; that considerable sums are lost for want of it; and that a good many abuses have crept in. All the same to them! They receive the grant yearly, just as if they strictly obeyed the law!

For his part, Mr. Browning, ex-president, C. A., admits, in his annual reports, that the state of things is unsatisfactory: see p. 23, general report dept. ag., 1875. "The agricultural societies do not pay sufficient attention to their annual reports. Some have sent in none at all, while those of others are most incomplete, and irregular in form."

He goes on to say that many inconveniences arise from this neglect, and advises that the law should be amended, if it is not to be executed.

This is enough to prove that neither the commissioner, nor the council of agriculture exercises an efficacious superintendence over the societies, and it even goes far to prove that the law governing agriculture is that worst of laws, a dead law.

We will now see what results have flowed from the expenditure of \$2,000,000 in thirty years for the improvement of our farming.

Thus writes the Assistant Commissioner on the subject, in his report for 1874, page 1:

"The Revd. J. Buteau, formerly manager of the school of agriculture at St. Anne's, in an introduction to his report on the operations of that institution, asks, if the grants accorded to societies of agriculture during the last 20 years have produced a proportionate result; and he arrives at the conclusion that they have hardly done any good at all to the great mass of farmers, and that, *whatever improvement has been made would have come about without the aid either of the societies, or of the Government grant.* A sufficiently bold assertion, and one that the legislature should mark well; seeing that it is not likely that the able director of the College of St. Anne would have hazarded it lightly."

It is clear that the Assistant Commissioner, who ought to know the state of agricultural affairs better than any one else, and who without doubt, has done his best to improve them not only cannot deny the statement of Mr. Buteau, but actually calls the attention of the Legislature to this terribly serious subject. If we return to the year 1850, and try to find out what was the then state of farming, and what the societies of agriculture were doing at that time, it can be easily proved that neither the official organisation, nor the sums spent by Government, has had anything to do with the progress of agriculture since that time. For example see an extract from the report of the special committee appointed in 1850, for the purpose of enquiring into the state of agriculture in Lower Canada, and, more particularly, charged with the duty of finding means to improve it, and to facilitate the establishment of farms on the uncultivated soils of the Province. This report will prove the truth of what we have, previously advanced. (1)

"The inquiries which the committee" so runs the report, "have made enable them to state that agriculture has made great progress during a certain number of years; the state of apathy is passed; the beginning of energetic action has already arrived. It is precisely at this conjuncture that the cycle of

good harvests seems to be returning, and now is the time for us to profit by the experience that our former misfortunes have afforded us, by persuading the country population to make use of the means which their present prosperity offers them to avoid all danger of a return of their calamities."

That a sufficiently notable beginning of improvement had taken place, in 1850, is evident from these extracts. This improvement is still going on, but there is nothing to show that it is due to the official organisation. On the contrary, we have only to look at the then state of the agricultural societies to see that those existing at present are, in general, no better than those which were in operation 30 years ago, and we may say that most of the present societies are of, decidedly, an inferior stamp, the errors of former days having been, not eradicated, but strengthened, by the impunity from disturbance they have enjoyed.

This is how the inquiry we have been quoting speaks of the societies and their manner of carrying on the duties entrusted to them:

"There is no doubt that the societies of agriculture as they exist to day (1850) have done, and are doing, good, but far less good than was expected of them. In many cases the contingent expenses and the cost of management are out of all proportion to their means."

Again, see report of the Society of Lower Canada, 1850.

"Those who possess farms in good condition, and men in easy circumstances, generally profit by the exhibitions of stock &c., to the exclusion of those who are really in want of instruction and encouragement."

Here is the evil! The entire Legislature has seen and appreciated it, but what steps have been taken to remedy it? We have spent \$2,000,000, with hardly any resulting good, and, from our apathy and carelessness, the evil is more deeply rooted than ever.

Look at our provincial exhibitions. They cost us nearly \$20,000 each, and a deficit is, almost invariably, left of \$12,000 to \$15,000, which the Legislature, and the cities interested, have the pleasant task of paying off. In 1877, Quebec, already over head and ears in debt, voted \$6,000 for the show held in that town, the receipts ran short \$8,000 of the expenditure, and the Province had, as usual, to supply the deficiency. And to whose benefit went these large sums? Not to practical farmers, they were few in number among the exhibitors, not to men of French origin, there were few of them among the contestants. The prizes were, chiefly, offered for animals of foreign breeds, and the winners were principally, the great breeders; men who, for the most part, have made their fortunes in trade, or by commerce. How many animals, what agricultural products were exhibited from the districts of Quebec and of Three-Rivers? Next to none! Why? Because the farmers of those places have never been encouraged to improve their cultivation and their products, and no means have been taken to attract them to these shows.

The report I have just been quoting applies accurately to the present state of the country exhibitions. It is well known that, if a *bona fide* subscription of \$266 be raised, each county society will be entitled to a grant from Government of \$666. It would be mere mockery to talk of the *bona fides* which exists in certain counties as to these subscriptions! These behind the scenes know well what sort of *good faith* prompts the oaths taken by those who testify to the reality of the subscriptions necessary to make up the sum required to obtain the grant! Still, the shows are held every year, or almost every year; and what is the ordinary result? The majority of impartial men must admit that these exhibitions only serve to distribute, as equally as possible, under the cloak of prizes, the government grant among, at most, 30 or 40 people, to bribe them to subscribe again the next season

(1) See the appendix T. T. Documents of the Session 1850, No. 2, vol. 2.

about a tenth of the value of their receipts. No fraud existing, the rest of the subscriptions are obtained by distributing gratis, seeds of forage plants, paid for out of the grant; and, if the required sum is not completed by this means, the absence of fraud being always presupposed. the begging-box is carried round door to door; to the Senator, to the two members, to the Priests, to the shop-keepers; and the tavern-keeper must not be left out of the list, at whose house the grand dinner, with which the Directors repay themselves, and their friends, for all their trouble, always out of the Government grant *bien entendu*, is to be given. Thus are matters carried on in sixty societies of agriculture out of the eighty which exist! It is only right to add, however, that, of late years, the societies keep, at their own expense, a few stallions, boars, &c., the use of which is allowed to members at a nominal charge. And this, with the gratuitous distribution of forage-plant seed, is by far the most useful expenditure incurred by them, always, again, presupposing that honesty presides over the distribution.

In 1869 there were, in the Province, only 7,000 men of French origin who were members of the County Agricultural Associations. Since then, the endeavours which have been made to circulate, gratuitously, the Journal of Agriculture have resulted in doubling the number of members; but, in spite of every thing, it appears by the report of the Committee on Agriculture of the Legislative Assembly of the 27 February 1878, that about one third of the parishes in the country do not reckon one member of the societies, each, and that of the rest, many can only reckon ten, each." It adds: "The greater part of these parishes neither benefit by the money granted, nor by the Journal of Agriculture. As they are among the less advanced of our parishes, they need, in a great degree, the encouragement, and the aid, so freely offered by Government.

I have, I think, sufficiently shown that little improvement has been made by our societies since 1850, although the grants of each year have been large. Still we must not, on that account, decide that the agricultural associations are useless and ought to be suppressed; for there are certain societies in the Province which, especially during the last few years, have done a vast amount of good. Thus in several counties, prizes are offered for the best cultivated farms; for the best ten acres of autumn ploughing; for the best kept meadows, and pastures; for the best orchards, and for the best practice in preserving manure, &c. There, the purchase of good seed-grain is rendered easy, and good male animals are kept for the use of each parish. The result? The members of the societies of agriculture, since the introduction of these improvements, amount to 500, 600, and 700, in each of these counties. The subscription list is higher. This, joined to the revenue derived from the stallions &c., and to the government grant, enable them to hold, every two years, exhibitions which are attractive enough to induce the presence of foreign purchasers; thereby, not only exciting emulation among the exhibitors, but converting the show into an agricultural fair. This is what has been done, in many places, by those societies which have been wise enough to listen to advice. We cannot, it is true, expect such success everywhere, but, in the majority of instances, if the people were well looked after, and guided by an organisation, the chief of which was a man in whom the country had confidence, a man who understood its wants and was thoroughly up to his work, much might be done. What, indeed, could not be done by such an one possessing the power, as well as the desire and knowledge, requisite for his part, devoted to the interests of agriculture, and imbued with a heartfelt wish to improve the condition of the farming community.

We must proclaim it aloud: what is wanting to the whole

of our agricultural organisation is a wise head, a head, responsible indeed to the Legislature, but entirely free from any danger of being embarrassed in his free action by the trammels of politics.

Could the Minister of Agriculture & P. Works, situated as the country now is, act as this much to be desired head? In reply, I can only say, that no one acquainted with the exigence of politics in this Province can expect, generally, from the Statesmen who may be called upon to fill that office, the special qualifications which are indispensable to the proper discharge of the duties of superintendent of the farming interest.

The Commissioner of Agriculture and Public Works is, it must be confessed, so overloaded with business that it is impossible for him to fulfil even his proper functions.

He has the sole management of the Q. M. O. & O. railway, and all that belongs to it, an enterprise that, costing, as it will, eleven, or twelve million dollars, demands enormous attention and watchfulness on the part of its manager. The Commissioner has to superintend the new buildings for the public departments, the expense of which will exact constant supervision and care. The repairs and preservation of all the prisons, courts, and other public edifices, are in his charge. He directs the distribution of grants in aid of colonisation, and has the management of the colonisation roads, from Pontiac, in the west, to the Saguenay in the north; from Compton, to Gaspe. The direction and control of the immigration agencies in Europe, as well as of the grants to seven, or eight railroads, are all in the hands of the same Commissioner, and how much more I know not! What time can one so overburdened brain have, when these duties are discharged, to spend upon the other branch of his office, agriculture? Is it not too much to ask of him, even if he had no other work to do except what I have mentioned, that he should meddle with it? And yet, this is not all, he, the same functionary, is also Prime Minister of the Province! Now, it is clear that the Premier is bound to give the best and greatest share of his time to the general affairs of the country, in fact, the occupations of a constitutional minister often trench upon the affairs of his department. It is then, I think, proved beyond a doubt that this personage cannot and ought not to undertake the control of the agricultural affairs of the Province.

But, it may be said, why, if the commissioner is not able to conduct the agricultural business of the Province, is not that duty entrusted to the Council of Agriculture? We have already seen that, in reality, that duty has been assigned to the council since 1869. Before that time, for more than 30 years, the Board of Agriculture of Lower Canada had the sole control of the matter. After Confederation, the Council of Agriculture was instituted to replace the Board, which was judged to be inefficient. But it produced no beneficial change; the present system has been in actual operation for 40 years, and with what result we have seen from the testimony of Mr. Browning, and of the Assistant Commissioner himself. The former, one of the most active and devoted presidents that the Council has ever had, has expressed himself clearly on the subject; and we think no one can now doubt that it has been sufficiently shown that the improvements which have supervened, during the last 30 years, in the state of agriculture in this Province, are due neither to the old Board, to the Agricultural Societies, nor to the Council.

Let us now see of what elements the Council is composed, that we may the better judge whether it is, or is not, capable of conducting our general agricultural organisation.

According to law, the Council should consist of twenty-three members, named by the Lieutenant-Governor in Council, and they are supposed to represent the different territorial divisions of the Province, or nearly so. But, really, they do

not; seven live near Montreal, six near Quebec, a solitary one (1) Mr. Gauvreau, of l'Île Verte, represents the country below Quebec, both on the north and the south side of the river.

The members, except as to their travelling expenses, are unpaid. They meet, for a few hours, three or four times a year, and, to an attentive reader of their reports, it will be dubious if they remember, at one meeting, the decisions they arrived at during the previous one. (2)

It must out: the Council of Agriculture gives me the idea of a body composed of twenty-three members having no intimate connexion with each other; a body which has, indeed, the power of motion, but neither informing soul, nor guiding head; a body, lastly, which is utterly incapable of dragging out the torpid carcass of our agriculture from the deep burrow of routine in which it has, for so long, reposed.

TREATMENT OF MEADOWS.

Most good farmers are now convinced that hay should be cut as soon as possible after the blossoming of the plants. It is the only way to secure the largest percentage of nutriment in the hay. Early cutting will also save the roots from drying up, and thus force an earlier growth of the aftermath. Should meadows thus treated be allowed to grow unmolested and safe from the trampling and gnawing of farm stock of all kinds, they would necessarily improve from year to year, provided they be rolled every spring, if possible, as soon as they will bear the horses' tread. Thus will the injury done by the uprooting from the winters' frosts be repaired, and vitality added to the plant, by the pressing of its roots into the frost-loosened soil.

As soon as possible after haying, the roots of the plants should receive a good mulching. There is generally speaking no operation in farming which gives a better and more direct return for the labour expended. The roots will thus be saved from drying up in the hot sun, and the slight covering they receive is so much plant food which goes to strengthen them immediately, causing the grass to shoot up with renewed vigour. The best mulching consists either of leached ashes or well rotted manure. However, a thoroughly digested compost made of any vegetable material mixed with rich earth, from the cleanings of ditches, ponds, &c., and yard manure, in equal parts, will do remarkably well. Even old straw, left over from the previous winter and partly decomposed, applied as early as possible after mowing, will repay the trouble taken to spread it.

There is however an additional operation which is indeed very seldom practiced but which would have an immediate and excellent effect on the following crop; it is re-seeding. In nature the grass matures, sheds its seed and reappears in the following spring in ever increasing richness. Without re-seed-

(1) I reckon Mr. Price, who, moreover seldom attends, among the residents of Quebec. The late Honorable J. Beaubien, and Mr. Landry, both of Montmagny, used to represent the south shore, but they have not been replaced in the Council. (Since the above was written Messrs Beaubien and Landry has been replaced by Dr. Tetu of Rivière-ouelle, who has just died, and by Mr. Blais of St. Thomas, Montmagny.)

(2) It were an easy task to show that profound discouragement reigns among a large number of the members of the Council; they make no secret of their dissatisfaction. Some of the most active and best known rarely attend, and it must be acknowledged that others are not, as regards their own farming, models for imitation, even to the most humble *habitants* of their respective parishes. In passing over their farms, we see bad roads, bad even in summer, pastures bare, or covered with couch-grass and other weeds. Their meadows and grain fields are thick with rubbish which sheds its seed on every side to the great injury of their neighbours. No doubt there are many good farmers among the members of the Council, but it is precisely among these men that the greatest discouragement at the present state of things exists.

ing, there is nothing to make up for the plants destroyed by the winter's frosts, by insects, &c.

Re-seeding meadows every year, with about one sixth part of the seed required for full seeding, has, where tried increased the hay crop from year to year in a surprising manner. It may be done in early spring as soon as the ground has settled down after the frosts, when a bushel of plaster to the acre may be given with great advantage. However, we should prefer partial re-seeding immediately after haying is over. It is the time selected by nature for the re-seeding of natural meadows, and, in all her lessons, nature may be followed as an unerring guide.

We should be happy to hear from any of our readers, who have had experience with the re-seeding of meadows, as to the results obtained.

Assisting Conception in Horses, Cows, &c.

Dr. A. D. Newell, in the *Country Gentleman*, gives his experience with a costly, high-bred cow which he purchased at a low price on account of its having been repeatedly served without success. He says: "I had her regularly served for ten months by three of my bulls in turn, yet she did not prove in calf. Thus she had been served by four different bulls. Knowing the time she would be in season again, I kept food and water from her for twenty four hours, and put her in a large stall by herself; I then made a large loop in one end of a strong half inch cord, threw it over her back in front of her hips, brought it up in front of her bag to the middle of her side, put the loose end through the loop, and made a loose half-hitch. As soon as she was served, the cord was drawn and tied so tight that she could not strain or step. I left it on for five hours. She proved with calf that time. After she calved she took the bull regularly for nine months, as before. I then put the cord on her when served, and was again successful. I have succeeded with other cows in the same way."

Veterinary surgeons assert that the same process has been entirely successful with mares. We had already heard of this process as a sure one for the required object. It would most likely succeed with other farm stock in similar circumstances.

When animals do not come into heat at regular intervals dilatation of the vagina is recommended, after which the male may be given in a few days and conception secured.

FOURTH ANNUAL REPORT OF THE ONTARIO SCHOOL OF AGRICULTURE.

As a general rule men have been inclined to look upon Agricultural schools and colleges with an eye of suspicion. In too many instances they have been made subservient to the perpetration of "jobs"; and, to tell the truth, as far as the work done in them, up to the present time, is concerned, they have hardly answered the purposes of their institution.

We remember the opening of the Cirencester College and its horrible failure. Every farthing of the original stock was lost, an entirely new system had to be begun; and, even now, after some 30 years of trial, intestine war is being waged between the Principal and the Professors; the prospects of the establishment, so fair a year ago, are again clouded, and an attempt is being made to establish a new school, in another place; an attempt which will probably turn out to be fatal to the interests of both the contending factions. But, judging from the report before us, there seems to be little danger of any such jealous quarrels disturbing the peace of the Ontario School of Agriculture. A pleasant

harmony seems to reign throughout the staff, and the greatest care is evidently taken that the duties of no one member of the faculty should interfere with those of his brethren.

The arrangements for the comforts and convenience of the students leave little to be desired. There is a library, a museum, a reading room, and a smoking room; smoking being, very properly, strictly forbidden on the farm, and in the buildings.

The objects of the institution are well set forth in the prospectus—"First.—To give a thorough mastery of the theory and practice of husbandry to young men of the Province engaged in agricultural or horticultural pursuits, or intending to engage therein.

Second.—To conduct experiments tending to the solution of questions of material interest to the agriculturists of the Province, and publish the results."

A perusal of the examination papers set last Easter by Mr. Brown will show to any one interested in the subject, that the course of instruction followed to gain the first end which the college proposes to itself is fully competent to answer its purpose. Any lad capable of giving an intelligent answer to the majority of the questions in "Practical Agriculture," must possess a good foundation on which a structure of unlimited extent may be subsequently raised, by his own study and observation, in the daily scene which his future life will afford him. We give one example.

Question 7.—Minutely detail the management of a turnip crop from the first ploughing to harvesting.

Now, the reply to this involves a thorough knowledge of the art of fallowing land, both as regards the extirpation of weeds whether propagating themselves by roots, by joints, or by seed, and the preparation of the land for the due reception of the manure and the seed of the proposed crop. Neither does the proper effect of this important process end here—the whole of the success of all the crops contained in the rotation depend upon it. And a very improved state of things would follow, to what is seen on most of our farms, if the arc a of the root crop were extended. The succession, at proper intervals, of ploughing, cross-ploughing, grubbing, harrowing, horse and hand hoeing, complete, in a shorter time, and with a certain profitable return from the consumption of the roots, the process of disintegration which was the object of the old system of "summer fallowing," in which, during eighteen months, the land lay idle, producing nothing, but the return for which was looked for in the following crop of grain.

The papers on "Agricultural Chemistry," too, show that Mr. Bryce, who, we believe, has accepted, unfortunately for the college, another position, understands the art of mixing the practical with the theoretical branches of his teaching: for example:

Question 8 (a). Show why a good clover crop is generally followed by a good wheat crop.

And we remark, moreover, that particular attention is paid by this gentleman to that most necessary branch of a farmer's education, the science of meteorology.

But, perhaps, the most interesting passages in the report are the details of the experiments with different manures and seeds conducted by Mr. Brown the Professor of Agriculture. Forty plots are laid out and sown every year with cereals, grasses proper, green fodders &c., and the results carefully tabulated with a view to their subsequent dispersion among the farmers of the country. The successful prosecution of this useful work will do one sure piece of good service; it will put a stop to those blatant advertisers of impossible seed-wheats, and thousand-fold yielding barleys, whose brazen, faced lies delude the innocents of our more retired districts.

The subjoined table is a good specimen of the careful way in which the experiments are conducted at Guelph.

Some varieties of FALL WHEAT, as regards produce and liability to disease.

QUANTITIES PER ACRE.

| KIND. | Plot. | Straw. lbs. | Grain. lbs. | Grain. Bushels per bushel | Weight per bushel | Rust. | Hessian Fly. | REMARKS. |
|-----------------------|-------|-------------|-------------|---------------------------|-------------------|------------------------------|------------------|----------------------|
| Soule | 31 | 6,000 | 1,935 | 33 | 61½ | Least affected..... | Least attacked | Best standing straw |
| Clawson | 22 | 7,000 | 1,980 | 33 | 57 | Worst affected..... | Third | Worst lodged. |
| Arnold's Victor | 23 | 5,000 | 1,165 | 27½ | 57½ | Third position. | Fifth | Fair standing straw. |
| Gold Medal..... | 21 | 5,750 | 1,970 | 33 | 58 | Second best..... | Fourth | do do |
| Silver Chaff | 27 | 2,750 | 700 | 11½ | 55½ | Third (with Arnold's Victor) | Second best..... | Altogether poor. |
| Means..... | | 5,302 | 1,650 | 27½ | 57 4-5 | | | |

Now what do we learn from this? The lesson is easy and clearly taught—short and unmistakable—viz: Don't sow *Silver Chaff* wheat!

Again in, Experiment No. 4.

Spring wheat under fall and spring manuring. We find that, on October 25th 20 tons per acre of farm yard dung were ploughed in on plot 4 a, and the same quantity, on April 15th following, on plot 4 b., Russian wheat was drilled in at the rate of seven pecks per acre and the result was as follows:

Fall manuring, 4,580 lbs. of straw and 19½ bushels per acre.
Spring do 4,120 lbs. of " and 15½ " " "

Or, one tenth more straw and one fourth more grain by fall manuring.

It is to be remarked here that the enormous loss of nitrogen, caused by the rains in the fall and winter in England, which was noted in the Rothamsted experiments on autumn manuring, and which amounted to something like 15 lbs. per acre, (we quote from memory), will not, practically, amount to much in our very different climate. Still, unless a repetition of the experiment should give an equivalent result and place the matter beyond a doubt, we should not feel inclined to follow the practice extensively. Of course one principle involved is that, as wheat prefers a firm seed bed, its wants are gratified by the gradual subsidence of the earth on the autumn buried manure; whereas, when the dung is interred immediately before sowing, the roots of the plant find no strong hold in the soil until some time has elapsed, and the growth is delayed in consequence.

The crops of Sugar Beet grown on the farm are enormous. While the average of France is 30 tons, and of Germany 20 tons, per acre, at Guelph it varies from 46 tons to 50 tons. Of course the quantity of sugar contained in this great produce depends entirely on the cultivation that the crop received; so Mr. Brown, very sensibly, retains 2 tons in store for subsequent analysis.

Of plants for mowing green, commonly called "fodder crops," Lucerne, Thousand headed Kale, and Rape, seem to be the favourites; they yield from 17 tons to 24 tons per acre. The earlier sown rape yielded the better return, beating the later sown by about 5 tons per acre.

We fear that much dependence cannot be placed on the results of the trials of different manures. The soil is confessedly of a very varied nature, and, from the extraordinary discrepancy between the results arrived at by Mr. Brown and those brought out by the Rothamsted experimental plots, we conceive that a long succession of trials would be necessary to reduce the value of Mr. Lawes' conclusions. At Guelph, superphosphate gives 26 per cent more grain than nitrate of soda, whereas at Rothamsted, during 24 years of patient experience, it was found that superphosphate, without nitrogen, was perfectly useless, and this rule was invariable, as applied to all grain crops. The decision must be, and very properly is, taken into consideration by Mr. Brown, but no amount of season changes could so largely affect the yield of barley and oats as to contradict positively all former deductions.

An excellent idea seems to have been put into practice by appropriating five acres of land, in bare fallow, to the instruction of the pupils in ploughing, harrowing, and the other works of tillage. It is quite clear, as Mr. Brown remarks in his letter to the Minister of Agriculture for Ontario, that, "thorough instruction in outside work is not possible on a farm managed partly with a view to profit—giving few chances to 60 or 80 students, because the work has to be pushed, season, and crops will not wait until *all* have had a turn at the various operations."

Five acres of land are therefore set apart as an "Instruction plot." A good ploughman, with a team of suitable horses, is kept, for educational purposes, constantly at work, on this plot. Whenever not engaged in teaching students, of course the farm benefits by the services of the tutor-ploughman and his team. Here the young men learn to clean harness, and manage the horses; to plough, cultivate, roll, and drill up the land, and to use all the implements for harvesting, such as the scythe, the mowing machine, and the horse-rake. When fairly skilled in the general working of the "Instruction plot," the labour of the student becomes available on the actual farm land, a system of marks having been kept during his apprenticeship by which the time of his transference thither is regulated.

Upon the whole we cannot but congratulate the Province of Ontario on the vein of sound common sense which runs through the whole of the plans under which the working of its school of agriculture is carried on. We have no space to mention the labours of the gentlemen who conduct the departments of Veterinary-Surgery, Horticulture, &c., but we do not doubt that, in their line, they are as efficient instructors as those professors whose work we have more particularly referred to.

At all events, the difficulties of the first starting seem to be overcome, the institution is fairly launched, and there can be no doubt that, with the liberal fund voted to it yearly by the Ontario Assembly, it has sailed on its voyage with every prospect of arriving safely at its desired haven.

We see with pleasure amongst the numerous students at the Guelph Agricultural College several names from the Province of Quebec.

The engravings in the report are carefully executed, though one or two of the portraits of animals which we reproduced in our last journal are, perhaps, a little exaggerated in points of details, e. g. the wool round the face of the Oxford, Down, Ram, and the extreme shortness, below the knee, of the legs of the sheep in general, and particularly, those of the Southdowns. We beg to call particular attention to the fulness and rotundity of the "legs of mutton" in the Southdowns which, we assure our readers, are not in the least overdrawn.

ARTHUR R. JENNER FUST.

Transactions of the Highland and Agricultural Society, 1879.

William Blackwood and Sons, Edinburgh.

One thing is certain, a book written by a Scotchman, or, by a body of Scotchmen, provided always it does not meddle with metaphysics, is sure to be practical.

The work mentioned at the head of this article is a model of what should be the style of composition used by farmers writing to, and for the benefit of farmers. There are no attempts at wit to be found in it, no rhetorical graces, and very few long words. The chief object of the essayists seems to be, throughout, to convey their meaning in the simplest fashion, and in the shortest possible space.

Most of the articles were selected as worthy to receive the gold medals of the Society; and, short as some of them are, an attentive reader will not rise from their perusal without gathering some hints that are likely to be of use to him, whether his lot be cast in Scotland, or in Canada. As our space is limited, we will try to give, in as a concise a form as possible, some idea of the general scope of these essays.

Reclamation of waste land.—Premium £5. Land only grow heather, annual value 1s. 6d. per acre. Stones all dug out for drains—drains 21 ft. apart, 3½ ft. deep, cost £6. 3. 9 per acre. Ploughed by 3 horses abreast, furrows 7 in. by 10 in.—Manure, 72 bushels of lime & 2½ cwt. of Peruvian Guano, cost £2. 16. 9 per acre. Seed oats, *eight bushels per acre!* The land ploughed in spring gave 7 bushels less oats per acre when compared with that ploughed in the previous autumn. Crop, 36 bushels of oats, 40 lbs per bushel, per acre. Straw worth £2. 18. 6.

Expenditure on the 10 acres reclaimed, £270. 10. 9. In come from the 7 years cropping viz., three oat crops, one of turnips, and three years grass-fed, £362. 11.—a profit made in the shift, deducting the original annual value, £86. 0. 3; equal to about £8. 12 per acre.

Observe, oh cultivators of the clay lands in the valley of the St. Lawrence, the quantity of seed oats! Eight bushels per acre and on the very poorest land. Either your quantity,

or the one mentioned here *must* be wrong. Is it not worth your while to try and find out in which of the two practices the error lies?

Observe, again, the small profit with which the reclaimer of waste land is satisfied, and the spirit of improvement visible in the large outlay. And yet the land is not his own. He has a horrible creature called a Landlord to whom he is obliged to pay rent; still, during the currency of his lease of, probably, 19 years, he is not afraid of being out of pocket by his expenditure.

On experiments with lime and various artificial manures. Premium, Medium Gold medal.

Farm about 250 acres, soil, free black loam of very poor quality, turnips could hardly be grown on account of the finger-and-toe disease. Potatoes rotted very much, and the grass got thrown out in spring. A hard-pan kept the surface water from sinking, and manure was, therefore, half wasted.

Reclamation,—drainage £1300—lime 3 tons per acre, the shells laid down in heaps on the fallows, quickly slaked, and after spreading, harrowed in.

First crop oats after grass. Artificial manures used sulphate of ammonia, Peruvian guano, dissolved bones, superphosphate (mineral) and nitrate of soda; 1 cwt. of Sulphate ammonia, gave, when mixed with $1\frac{1}{2}$ cwt. of dissolved bones and 1 cwt. of superphosphate $35\frac{0}{100}$, from 12 to 24 bushels of oats per acre more than the unmanured land; and, in one season, when the crop on the latter was almost destroyed by the wire-worm, the neighbouring piece sown with 3 cwt. of Peruvian guano per acre was uninjured. So thoroughly does the reclaimer believe that artificial manures pay in the oat crop, that, for years he has never omitted their use.

If sulphate of ammonia were not dearer in proportion than Peruvian guano he would, on his soil, always prefer it, "as being more trust worthy, more uniform in composition, and less liable to waste." On heavy clays he would prefer guano.

As to the mineral superphosphate, this medallist's opinion agrees with the experiments of Messrs Gilbert and Lawes, that, "on my farm, it is not *at all* suitable for oats when used alone, the results being *very little better* than where no manure was used, thus proving conclusively that oats demand some nitrogenous manure to stimulate them in their earlier growth."

Observe the Scotch caution evinced by the phrase "on my farm"! If some of the correspondents of the Agricultural papers in the United States would copy this feature of the character of the Scottish race, they would not be so rash in the conclusions they so eagerly draw from hasty and ill conducted experiments.

For barley there is always danger in too great a quantity of the ammoniacal manures; not so much as regards the barley crop itself as the grass sown with it. Sulphate of ammonia $\frac{1}{2}$ cwt., dissolved bones 2 cwt., bone meal 2 cwt., mixed; or Peruvian guano 1 cwt., dissolved bones 2 cwt., bone meal 2 cwt., are found to be the most useful dressings for this, and the subsequent grass crops. Dissolved bones are better the first year than bone meal, the ammonia and the phosphates in the latter not acting so soon as when treated with sulphuric acid, as in the former. These artificial manures have "given results nearly alike on an average of seasons, so far as grass is concerned, and the barley, as compared with the unmanured land, was, in several seasons, *double* that grown without manure, and, even when the unmanured portion came closest up, there was margin enough left to pay for the artificial manure twice over. In fact, my firm conviction is, that, to take an average of five years, the unmanured did not grow crop sufficient to pay for labour,

seed, and rent. I have no hesitation in saying that the artificial manures I have used for barley have paid me at least double."

As to the Wheat crop, in addition to from 15 to 20 tons of town or farmyard dung, the writer "always gave it a top-dressing of 1 cwt. of nitrate of soda, or 2 cwts. of guano, in the spring; for quality of grain I prefer guano, as the nitrate is apt to make the crop a little later, and the grain a shade darker; but for straw, both of them, on an average of seasons, give at least a fourth part more."

The all important crop in Scotland (would it were a little more regarded in Canada) is, as every one knows, the turnip crop. Finger-and-toe is a disease which destroys many a hundred tons every year, and, no doubt arises from the too frequent repetition of the growth of the same plant on the same soil. How to describe it, I hardly see; the name ought to give some idea of its appearance; excrescences form on the fibrous roots and, gradually increasing in size, divert the nourishment from its proper task of enlarging the mass of the unfortunate bulb.

The drainage of the farm, however, combined with the application of lime, seems to have eradicated this pest, though no doubt some credit must be given to the farmer for his shrewdness in "growing half my fallow break in potatoes, and substituting Swedes where yellows had grown five years previously, and yellows where potatoes had been grown. I have seen no finger-and-toe for the last ten years."

The same difficulty that appeared in getting a good start for the oats, repeated itself with the turnips. They "would hardly come to the hoe without the application of some nitrogenous manure above the farmyard dung." Many experiments were tried to get at the proper quantity of nitrogen, phosphoric acid, and potash which a turnip manure ought to contain, and the following are the results.

In the first place a number of mixtures containing the three principles in small proportion were tried, and then the quantities were increased till the theoretical limit was reached.

Thus, fish guano, sulphate of ammonia, Peruvian guano, and nitrate of soda, combined with various weights of superphosphate, dissolved bones, and sulphate of potash, were used with success. Of the mixtures the most successful was this one; 2 cwts. of fish guano, 2 cwts. superphosphate, 2 cwts. of dissolved bones, 2 cwts. sulphate of potash. Twice as much ammonia being used as usual produced large tops, but bulbs stringy, small, and rough-necked.

Fish guano, as a source of ammonia, was found to be preferable to any other, but after all it is a mere matter of price. It contained 9 per cent of nitrogenous compounds and 14 per cent of phosphates. Nitrate of soda "caused the dry rot and made the bulbs soft." The best way to apply the artificial manure to the land was to sow it broad-cast over the dung in the drills, and then cover up by splitting the drills as usual.

It is worth while to consider here if we have done wisely in retaining the Scotch fashion of sowing our roots on the raised drill. The weeping climate of its origin favours the practice; it is doubtful if, in the undrained parts, the land could be cleaned in any other way, and it must not be forgotten that the principal object of root-growing is to clean the land; they are emphatically *fallow crops* that are sown in this way. Still, if, even in the south of England, we found sowing on the flat preferable to the drill culture, the climate being dry and the soil shallow, we are sure that here in Canada, with our scorching sun, if the plan were tried it would answer. Only yesterday we were informed by a farmer that he found his swedes, where the seed had been accidentally deposited at the bottom of the drill, the machine having glided down, or slipped, far better than those on the top.

The fish guano might be easily made at Gaspé, or along the coast wherever the fisheries are carried on. We observe in some of the Italian papers kindly forwarded us by the Cav. Angelo Gianelli, His Italian Majesty's Consul General in Canada & Co., that the Fish Guano has attracted great attention in Italy. The agriculture of that country has undergone a thorough revival of late years, and the general stir, so plainly visible in France and Germany, has not left Italy unmoved.

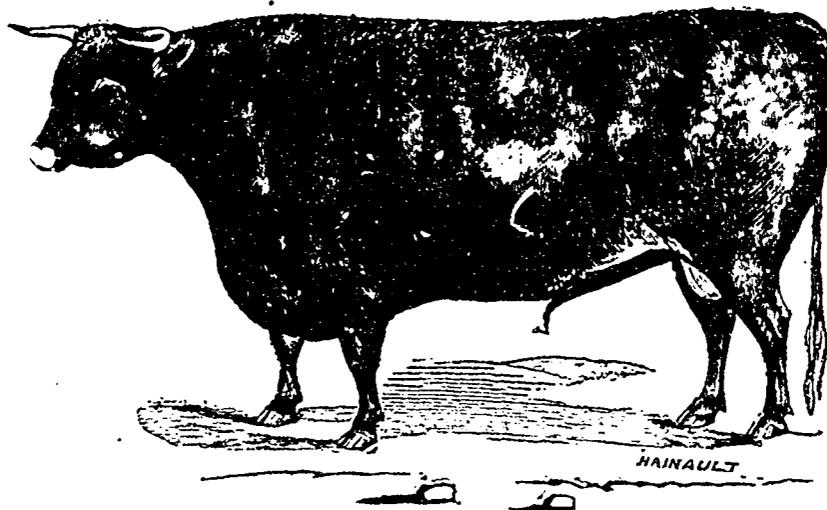
The use of Potash does not seem to have had any effect on the turnips except that of keeping the tops green; but in the potato crop it was far otherwise. On this poor moory farm the original potash had, probably, long ago disappeared, and, consequently, the mixture of 2 cwts. of dissolved bones with 2 cwts. of muriate, or sulphate of potash, or 5 cwts. of kainit (the mineral potash) sown on the 25 tons of dung per acre before splitting the drills, gave from 17 cwts. to 27 cwts. more potatoes per acre than where dissolved bones alone were used, with the dung of course.

In conclusion we join with this most careful experimenter, and, which is quite as important, this most careful recorder of the results of his experiments, in recommending all those

who intend buying artificial manures to attend to the following advice; "Buy only on a guaranteed basis of so much a unit for the manurial ingredients contained in the manure, and, if possible, buy only of the importers or manufacturers direct." Large quantities of the most absolute trash is being daily foisted on the farmers of the Province, and, of course, this, falling as it does on those of them who are more advanced than the rest, will prove a double curse to the whole body. To the above we should add, count the cost! What pays in Europe might leave no profit in Canada.

It should be borne in mind that the writer from whom we have just been quoting is, like the farmer, a tenant farmer, and yet he finds it to his advantage to borrow £1300 at 6½% to drain his Landlord's land, and does not hesitate to spend 30s to 50s per acre in artificial manures in addition, to drawing 200 tons of town manure &c. And what are the results? Take them in his own words; "The productive power of my farm has been increased from 10% to 70%, it used to be the latest in the district, it is now one of the earliest."

A. R. J. F.



Devon Bull.

VETERINARY DEPARTMENT.

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

THE DEVONS.

From time immemorial this breed has been celebrated as the working ox par excellence. Of good size, intelligent, and active in his movements, the Devon ox stands unsurpassed as a worker; at the same time he possesses many points of excellence besides: combining beauty of form, a soft mellow skin, and fine wavy hair: he feeds readily and often attains a large size. Youatt thus describes him: "the head of the ox is small, very singularly so relative to his bulk, yet it has a striking breadth of forehead, it is clean and free from flesh about the jaws, the eye is very prominent and the animal has a pleasing vivacity of countenance distinguishing it from the heavy aspect of many other breeds. Its neck is long and thin, admirably adapting it for the collar or the more common and ruder yoke. It is accounted one of the characters of good cattle that the line of the neck from the horns to the withers should

scarcely deviate from that of the back, in the Devon ox however there is a peculiar rising of the forehead, reminding us of the blood horse, and essentially connected with the free and quick action by which the breed has ever been distinguished. It has little or no dewlap depending may from the throat, the horns of the cow are longer than those of the bull, smaller, and fine even to the base, of a lighter colour, and tipped with yellow; they are light on the withers, the shoulders a little oblique, the breast deep and the bosom wide and open, particularly as contrasted with the fineness of the withers. The fore legs are wide apart, looking like pillars that have to support a great weight, the point of the shoulder is rarely, or never, seen. There is no projection of bone but there is a kind of level line running on to the neck. The legs are straight, the breast projecting far in advance of the fore legs, the legs somewhat long but well covered with muscle, the fore arm particularly long, large, and powerful."

The line of the back is straight from the setting on of the tail, the hind quarters particularly long and well filled up. The tail is set on high, and is always long, fine, and tapering,

ending in a round bunch of hair at the bottom; the skin thin and soft, the prevailing colour is deep red.

It is said of the Devons that, where the ground is not too heavy, they are unrivalled at the plough; they have a quickness of action which no other breed can equal and few horses excel, with a docility and goodness of temper, and stoutness and honesty of work to which many horses cannot pretend.

The fattening qualities of the Devons are now becoming better known than formerly, for, until very recently, they were bred almost exclusively for working cattle. Of late years however, it has been found that on many soils, not rich enough to support the Shorthorns, the Devons will thrive admirably: their beef is now much prized in the English market, owing to its convenient size, beautifully marbled appearance, and delicious flavour, and it is stated that they will convert a given quantity of food into beef in as short a time as any other breed, Shorthorns excepted.

For dairy purposes they do not stand very high, as yet, although Mr. Bloomfield, an English agriculturist, says that they can be made equal to any breed as milkers, and offered for a bet to milk forty of his Devon cows against forty of any

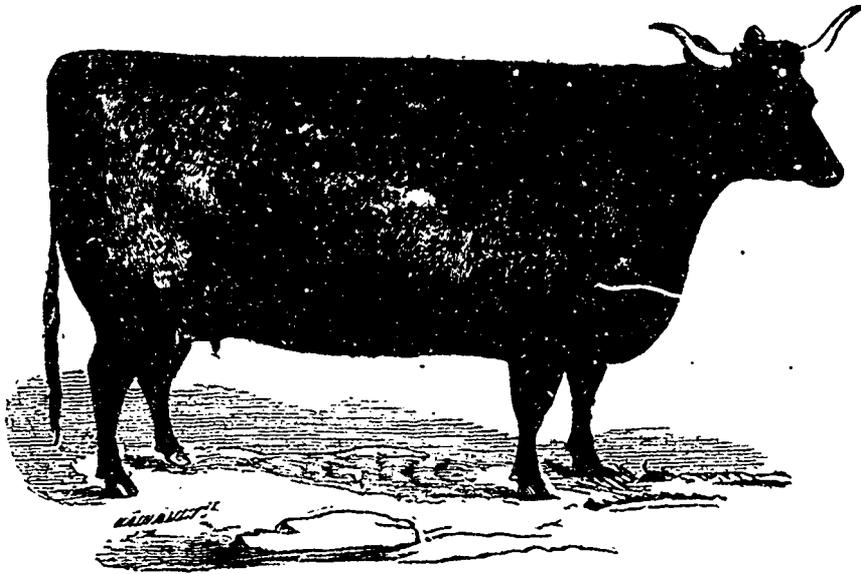
other breed owned by any one man, and found no competitors.

Governor Hyde, of Connecticut, says he believes strongly in the Devon breed as dairy cows. One of his cows, Gem 154, made one hundred and thirty-six and one sixteenth pounds of butter in sixty days, her food during this time was two quarts of corn meal and the ordinary pasture. He adduces several other instances of remarkable butter production by Devon cattle: Beauty 25, in ninety-five days from August to October, made one hundred and ninety-four and fifteen sixteenth lbs of butter. Devon cows, he says, certainly have a rotundity of form and beauty not possessed by any other breed. When put on the scales they were disappointing in the right direction.

A neighbour of his, Mr. Wm. Mattoon, had a bull, thirty-six months old, which weighed two thousand two hundred and twenty pounds.

He knew of a Devon breeder who could produce a pound of butter for five quarts of milk.

With these facts before us concerning this valuable breed of cattle, our readers will see in them much that will recommend them for our new settlements. They are very hardy,



Devon Cow.

will stand rough usage as to feeding and housing, and do more work than almost any other breed, and, as stated above, are good feeders, and, with care, can be made good dairy cows. We think next to the Herefords they are suited to the great majority of our farms in this Province, more particularly on new land where oxen are used for work.

We know of only one small herd of Devons in this Province, that is at Mr. Whitfield's extensive stock farm at Rougement. On a recent visit there we were shown a small herd of imported Devons, from which, as they are good breeders, we expect soon to see both males and females offered for sale.

It might be as well to notice the fact that there are two sorts of Devons—the small, fine North Devon with limbs like a race-horse, which, when fat, will weigh from 700 lbs to 800 lbs (the four quarters), and the larger, coarser cattle, to be seen in perfection in the richer soils of the south of the county, and in Somersetshire about Petherton, and the South Hams, where, in the marsh lands, they attain to much greater weights than their cousins, and resemble, very closely the useful Sussex beasts. The Devons are not a *breed*, but a *race*, having sprung from an

original stock—the Shorthorns, Ayrshires &c., are *breeds*, having been made by man's ingenuity in crossing.

The milk of the Devons is not great in quantity, but very rich in quality, in fact inferior only to the Guerneys in butter-yield. Any one who, like the writer, has seen a herd of Devons in December feeding on Bodmin moor in a drifting rain, wind N. E., as if they were enjoying the amenities of a southern land, will never doubt their power of enduring climatic changes. We have often recommended them as the best possible stock for this province.—Ed.

Several Reasons why our Farmers should Breed Cattle.

We believe, and our opinion is derived from observation, that stock raising is the most profitable and the least uncertain of any kind of farming, but, like any other business, it must be properly understood, and carefully and judiciously managed. Our Lower Canadian farms as a rule want rest; they have mostly been cropped year after year, from time immemorial, and but little returned to the land, hay and oats

being the staple product, which are almost invariably sold off the farm, thus, year by year, impoverishing the land, till at last many excellent farms are nearly exhausted of the elements of plant nourishment, and bare fields, thistle patches, stunted, half starved stock, even in the early summer when vegetation is at its best, and grass should be abundant, have taken the place of luxuriant vegetation and thriving herds. To restore your lands, turn your attention to cattle breeding and feeding, select the breed best suited to your soil, keep only what your land will feed well, and you will soon find that you can manure your land, by consuming your crops on the farm and returning them to the soil, increasing its fertility, and thus your cattle will become a double source of profit.

Look at the advantages you possess! Our country is entirely free from contagious diseases of cattle, while almost every other cattle producing country in the world is scourged by cattle plagues which ruin the breeders, and have rendered stock raising an extremely precarious occupation.

The direct effect is that our cattle are at a premium in all European countries. We have the very best facilities for carrying on a large export trade; our rapidly developing railway systems, our increasing transatlantic steam navigation, all favour our cattle raising, and offer great inducements to change our system of farming. At the present time, owing to the existence of Lung Plague in the Eastern States, American cattle are not admitted to Canada at all, and to England only to be slaughtered at the port of entry, while our Canadian Cattle can be taken to any market in Great Britain. At present we are not in a position to supply the demand for any great length of time, consequently, if we would keep the trade, with all the superior advantages we now enjoy, we must go to work at once to develop our cattle production, which we are convinced can be done with advantage both to our farms and farmers.

At a low computation we are safe in asserting that 500,000 calves are killed in Canada every year, simply because hitherto there were no inducement to rear them: now, with a certain market at paying prices, it is clearly the duty of our farmers to feed their calves, and thus increase their incomes and develop a most important trade for the country.

DISEASE IN HOGS.

Owing to Typhoid Fever, or Hog Cholera, having been found among American hogs at Liverpool, a recent order in Council issued by the Privy Council in England compels all hogs arriving from the United States to be slaughtered at the port of landing. As this disease is a very contagious and extremely fatal one, we cannot exercise too much caution with regard to it. It is clearly our duty not to introduce American hogs among our breeding stock, and, as the Canadian Government has not yet included them in the prohibitory order, large numbers are allowed to come into the country for packing and exporting. Our farmers should therefore be extremely careful in purchasing breeding pigs not to get any that have been carried by railway from the West, or even that have been for a short time in infected yards, otherwise they run a great risk of losing their entire stock.

We have a sufficient number of healthy stock among our own breeders to supply our demands, and it will amply pay the farmers of this Province to endeavour to keep out this dreadful scourge. It is the interest of every farmer to report the existence of this, or any other contagious disease among their stock whether of horses, cattle, sheep or swine; in fact, the recent act passed during last session of Parliament intitled "an act to prevent infectious or contagious diseases in animals" makes it punishable for any person to fail to report such diseases to the Department of Agriculture at Ottawa;

the object being to enable the Government Veterinary Inspectors to take the necessary steps to prevent such diseases from spreading.

Foot and Mouth Disease in Sheep.

Since writing the above, the Contagious Foot and Mouth Disease has been discovered in a cargo of American Sheep at Liverpool, from Boston and Buffalo, which were in consequence ordered to be slaughtered at the port. This must necessarily be followed by an Order in Council prohibiting the entry of American sheep other than for slaughter at the port. The direct result of which will be at least twenty-five per cent increased value of Canadian over American Sheep. Some idea of the vast proportions this trade is assuming will be gathered from the fact that, during the first fourteen days of July, there were shipped no less than 12,914 sheep, from the port of Montreal, and the profits realized from previous shipments are such as to cause an increase rather than a decrease in this trade.

POULTRY DEPARTMENT.

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

POULTRY HINTS.

In the care of poultry there are two essential points to be considered, first cleanliness, to insure complete immunity from lice, which can only be secured by the frequent use of limewash, sulphur, and carbolic acid, or kerosene, upon the roosts, together with frequent cleaning of the floor, and occasionally the use of fresh earth or sand, and, secondly, the importance of plenty of fresh grass, or green vegetable matter, for food. If these are adopted as of prime necessity, there will be little difficulty in raising poultry successfully; roup, and other diseases, will be scarcely ever known. From careful watching, the giving of (in grass runs), young grass, cut, and put into the pens has been found indisputably necessary to the well being of fowls and young chicks, particularly when kept in confinement in small yards, or pens, to prevent them from destroying gardens, or, from necessity, in the cities where yard room is scarce. A flock of sixty chicks has been raised by ourselves in a yard, or gravel run of 10 by 30 feet, kept in perfect health through the summer months by giving them cut grass, lettuce, young beet leaves, carrot tops, once a week, onions, and raw potatoes, chopped and mixed with soft food, with a supply of meat twice a week. A cheap enclosure may be made by farmers who have the room for a grass run, by using tarred twine netting. A good fence, about eight or ten feet high, may be made with it round gardens and the birds may be allowed to roam over the farm after the seed is well started; they can do no harm but rather good, in destroying vermin that would otherwise damage the crops. A flock of turkeys would keep a large field of potatoes almost free from the ravage of the potato beetle.

As the warm days come on the nests used by your laying hens for the last few weeks should be thoroughly cleaned out, and fresh straw, or hay, provided occasionally.

Vermin will collect about the nest and roosts, in the best appointed fowl houses, and a few hot days will bring the lice out in swarms in old nests.

Wash the nests thoroughly, outside and in, with common kerosene, as soon as they are empty, and keep every thing sweet and clean; your birds will be comfortable, and pay you for your trouble by a well filled egg basket. Wash the roosts too once a fortnight, or even every week, if necessary. Do not allow the lice to get the better of you.

Keep your young broods well protected from rain, and cold; provide a place for them, so that, during a few days of continuous rain, they may be kept dry, and leave as much light as possible; giving them plenty of good, sweet, healthy food for the first three months; this will develop your chicks into good, healthy, well formed birds, but, if they are neglected, they will become scraggy, long-legged, deformed, and unfit for any thing but the manure heap. A little carelessness now, when the young stock is growing, will ruin a whole season's work.

Many a prize has been won by just the proper care for only one day. You have protected your young broods, perhaps, and they have been allowed a run on a pleasant morning in the sunshine; when a sudden change has taken place in the weather; perhaps a cold rain set in and you have taken the precaution to see them well protected, and kept from getting cold, and wet, thus saving them from ruin by a little foresight.

Plough or dig up the poultry yards thoroughly, so that your fowls may have a spot of fresh earth to run upon, or to dust and burrow in, during hot weather. There are always a good many worms in freshly turned earth that the fowls will pick up and eat with avidity, and the old earth being turned under, will be purified from the noxious matter it contains, caused by the birds running upon it for months previously.

Fowls will follow the farmer when ploughing and turning over the ground for cultivation, and pick from the soil the vermin which are detrimental to it, invisible as they are to him; thus ridding him of his worst enemies, insects and other injurious denizens of the soil.

SOME QUESTIONS

As we are asked many questions as to the best breed to start with, and the number of eggs to expect from them, &c., &c., we give questions and answers taken from, and asked by a subscriber to, the American Poultry Journal.

1. What breed is best to select as good both for laying and sitting, or what two breeds, one for laying, and one for sitting?

Answer.—Light Brahmata, P. Rocks, Black Cochins and Games, are all good layers and mothers: for layers only, Leghorns, Houdans, and Hamburg.

2. The hens being kept in a house artificially warmed in winter, and systematically fed and cared for, how many eggs may each hen be expected to average per annum (assuming that she sits as well as lays).

Answer.—About 125, if of pure breed.

3. How many broods should each hen hatch per annum?

Answer.—A hen can sit and hatch all the summer, but one brood is enough for health and comfort.

4. How many cocks are necessary for each one hundred hens?

Answer.—Five to ten, according to age and vigor (1).

5. Would the advantage of starting with the whole stock of pure bred fowls from regular breeders be worth the expense or would it be judicious to have only pure bred cocks and common hens picked up from farmers or others?

Answer.—Only pure bred by all means.

(1) All the best English breeders allow one cock to four, or, at most, five hens, if good table fowls are their object. For eggs, one cock is plenty for forty hens. All the fine fowls, from Surrey and Kent, which are sold in London during the summer, are capons. As Cobbet says, "a cock, after it is three months old, is not worth eating." The process of caponizing is a very easy one, and a small apparatus, which renders it still easier, is sold for a mere trifle. Cramping in a dark room, is absolutely necessary to produce really fat fowls. The following mixture we have used, most successfully, for many years:—Two pounds of barley-meal, one pound of oat-meal, half a pound of fat (any grease will do), with a quarter of a pound of sugar, and half a gill of spirits—gin, or whiskey. Few birds will stand it more than ten days, but, at the expiration of that time, they will be found ripe for fat.—*Ed*

6. What size of yard is necessary for each hundred fowls?
Answer.—If the fowls are to have range enough to pick up their own vegetable and animal food, a hundred fowls to the acre is the rule, if they are to be supplied with green food and meat, one quarter of that space will keep them in health, if kept clean.

7. At what age should a well fed chicken of an early maturing breed be fit for the table?

Answer.—For broilers, from 10 to 13 weeks.

LIGHT BRAHMAS.

We give this month a cut of a matched trio of Light Brahmata, from which J. F. Scriver of Montreal has raised some very fine chickens.

There has been a good deal of discussion in regard to this famous breed, but it is generally conceded to have originated from Chinese stock, Mr Burnham of the State of Massachusetts claiming to have shown the first birds of this kind ever seen any where in 1849, and 1850.

But they have been bred largely in all parts, many of the best breeders in the country having given their exclusive attention to raising this favorite breed, and have successfully competed against him, Messrs Plaisted, Comey, Felch, and Williams, were among the earliest breeders, and few breeders on this continent have been more successful, or have so well sustained their reputation, as Messrs Felch and Williams of Massachusetts. There are others who have in later years been engaged in this specialty and have done their share towards sustaining, as well as improving, this fine species, notably Messrs Costen and Scriver of Montreal.

From the beginning, they have procured the best stock to be found of the purest blood, have mated carefully, and with good judgment as to points, and succeeded in bringing out good results. We give below the characteristics of the breed.

THE COOK.

Head.—Head, of medium length slightly projecting over the eyes, color of plumage white, Eyes large and bright. Beak, short, stout and, in color, yellow, with a dark stripe down the upper mandible. Comb: pea, small, lower in front and rear than in the centre, firm on the head and distinctly divided, having the appearance of three small combs pressed together, the largest and highest in the middle, and each part slightly, and evenly serrated—color, rich, bright red.

Wattles and Earlobes: of equal length, the wattles being well rounded—color rich, bright red.

Neck.—Rather long and well arched, the hackle flowing well over the shoulders; plumage of the upper part white, the lower two thirds being distinctly striped with black, the stripe tapering to a point at the extremity of the feather.

Back.—Broad, flat between the shoulders, and as long as is consistent with the size and symmetrical proportion of the bird, saddle feathers well developed: surface color, white, or bluish-white.

Breast and Body.—Breast full, broad, and round, and carried well forward; body round at the sides, and deep; color of both, white.

Wings.—Small, the bows covered by the breast feathers, color of bows, white: the primaries closely folded under the secondaries; color of primaries, black or nearly so, color of secondaries, white, on the outer web, and black, on the inner web.

Tail.—Full, well spread, carried tolerably upright, and well filled underneath with rich curling feathers, color of tail, black: sickle feathers, short, spreading laterally, and in color black; covers glossy, greenish-black, lesser covers, black, with white edge.

Fluff.—Abundant and soft, giving the bird a broad appearance behind, color, white.

Legs and toes.—Thighs, strong and well covered with soft, white feathers: Shanks, strong, standing well apart, of medium length, and well feathered on the outside; color of scales, yellow; inside of the legs, yellow, or reddish yellow, shank feathers white, or white mottled with black; Toes straight and strong, the outer toes being well feathered to the ends, the feathering of middle toes optional with breeders.

Carriage.—Bold and attractive.

THE HEN.

Head.—Same as cock, with, or without, dark stripe down the upper mandible.

Comb.—Pea, small and low, with delicate, but distinctly defined serrations firm and even upon the head, color, bright red.

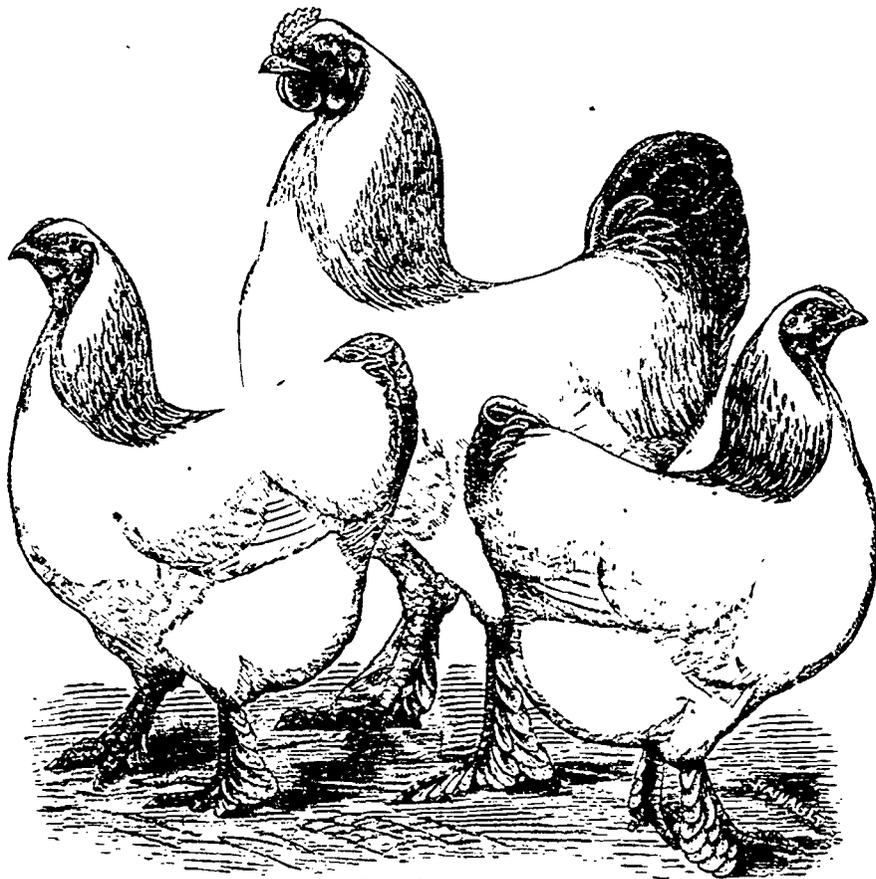
Wattles and earlobes.—Wattles exceedingly small. Earlobes well developed. color, rich red.

Neck.—Of medium length and well arched, hackle-feathers white, with broad black stripe down the centre, the edge of the black running nearly parallel with the edge of the feather, and reaching well over the shoulders.

Back.—Broad, flat between the shoulders, and as long as is consistent with the size and symmetrical beauty of the bird, feathers, broad and soft, and rising to the tail, surface-color, white, under-color, either white, or bluish white.

Breast and Body.—Breast full, broad and round, and carried well forward. Body, round at the sides, and deep; color of both, white.

Wings.—Small, the bows covered by the breast-feathers; the primaries smoothly folded under the secondaries; color of primaries, black, or nearly so, color of secondaries, white, on the outer web, and black, on the inner web.



Light Brahmias.

Tail—Rather small, and spreading; color, black; the two highest, or main tail-feathers, edged with white. tail covers black, edged with white.

Fluff.—Abundant and soft, giving the bird a broad appearance behind; color, white.

Legs and Toes.—Thighs, strong, and abundantly covered, with soft white feathers; shanks strong standing well apart and well feathered on the outside with white feathers, or white mottled with black. Toes straight, and strong the outer toes being well feathered to the ends, the feathering of middle toes optional with breeders.

Carriage.—Low, in comparison with that of the cock.

DISQUALIFICATIONS.

Birds not matching in the show-pen; comb falling over to either side; twisted feathers in the wings; shanks not feathered down the outer toes, or of any other color than yellow; vulture hocks; under color any other than white, or bluish white; crooked backs; wry tails; cock not weighing nine pounds; hens not weighing seven and a half pounds; pullets not weighing six pounds.

ROUEN DUCKS.

The question is often asked; can ducks be raised, with profit, without the accommodation of a pond?

I answer they can; I have raised the *rouens* two years

without any water except what was given them. When young, I used a common pie-tin, and, as they grew, a milk-pan was placed in its stead, thus saving any from being drowned. I have had good success, seldom losing one. *Rouens*, under ordinary circumstances, will be found as profitable as any variety for the following reasons:

First.—The rapidity with which the young ducks grow. It is not uncommon to see them in full feather, and weighing four pounds when eight or ten weeks old, yielding very fine flesh for the table, which makes them valuable for early market.

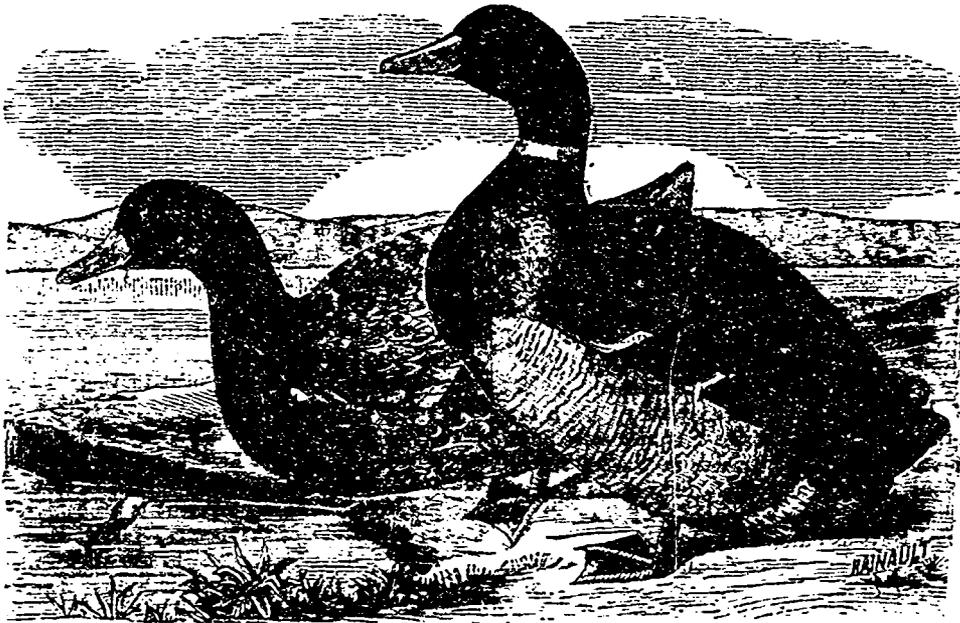
Second.—When full grown they often weigh eight to ten pounds each.

Third.—As egg-producers they rank with the best, laying in the fall a good number of Eggs, then with a little cessation in mid-winter they recommence in spring when other varieties have only just begun. They make a nest, and are jealous in keeping it, saving the trouble of shutting them up at night.

Fourth.—The eggs are large and rich, making them valuable for culinary purposes.

Fifth.—They are the most determined stay-at-home birds imaginable, seldom, if ever, rambling beyond sight of home never troubling the neighbors' crops, or giving you trouble at night to bring them home.

C. JOHNS: in *Poultry Journal*.



Rouen Ducks.

FRUIT TREES FOR QUEBEC.

I well remember the time when "iron clad" apple trees were introduced into the western parts of Ontario. It was believed then that nothing else could grow here, but those sly tree agents did not always stick to iron clads; when delivery season came round, they gave a pretty wide variety of stock, and, in a few years, the orchardist discovered, to his intense delight, that instead of two or three varieties, as ordered, he was the possessor of some six or ten varieties of fine fruit, bearing trees. Gradually people became more and more speculative and ventured to risk a few dollars in more tender varieties; as a rule these ventures were rewarded with fruit in the course of time, and thus, from step to step, we have grown, until now Ontario can proudly boast of as fine fruits as any section of this continent. But, after a large and very varied experience here and in the North Eastern States, I conclude that a great deal depends on the quality of the nursery grown stock, in short whether such stock has been naturally, or unnaturally grown. Many people think that if they get fine looking trees from a nursery they require no more, but this is a very great mistake, as any observing grower who has experience in fruit growing in some of the colder sections will readily testify to. Any one will readily admit that forced stock is more tender, more liable to contract disease, because more open and undeveloped. Now, nurserymen like to make money as well as any other class of business men, and they like to get as quick a return for outlay

as possible. In order to grow trees, more especially apple trees, to be ready for market in a shorter time than nature dictates, nurserymen make use of immense quantities of potash, which gives apple trees a fine, light-colored, healthy-looking appearance, and they also use chemical compounds to rush the growth. American trees are nearly all grown in this way, and I would not give orchard room to them. Canadian nurserymen also are following the example of our Yankee cousins, and I am sorry to see this. I noticed a nursery in Welland county where ashes are regularly forced alarmingly into the tree trenches. These trees will show the usual results. When transplanted into virgin, or natural, soil, they will never compare favorably with trees grown on a naturally manured soil. In Maine, and the other Eastern States, I have known orchards grow to maturity with small profit to the owner in the shape of fruit. These trees were magnificent specimens when first planted, but alas! poor Yorick how low you have descended in the lapse of years. In one section of Vermont, an experimental lot of trees were imported from Canada, from a nursery in Toronto, the trees, it appears, were grown on cold soil and no sort of stimulant was used in growing them; the result has been extremely beneficial, the growers have orchards that completely outstrip all others in that part of the States for good fruit, and steady-bearing trees.

I was told a short time ago by one of these orchardists that he had visited the nursery where these trees were purchased, and will make arrangements to buy a large number of

trees, all from soil such as described and grown naturally. I believe growers in Quebec might grow many of our Ontario varieties if they could get trees whose early education has not been fancy, fine, and forced, but natural and solid. I can point out orchards in Maine, New Hampshire, and Vermont in which are grown as fine specimens of Hubbardson's Nonsuch, Northern Spy, King of Tompkins' County, Baldwin, Twenty Ounce, and others, as any one would wish to see. The grower I referred to above has Bartlett pears in Vermont, and three varieties of plums, all doing admirably, and he has such confidence in these trees that he will, next fall, launch out into many varieties that have never yet been tried successfully in these eastern cold sections. I regret that it is so hard to find naturally grown stock, but in Ontario it is hard. I hope you are better favored in the East.

If those who are planting orchards see to this point, I believe that a new era will dawn for the fruit growers of Quebec. The country is overrun with agents representing all sorts of concerns, but the fact is that only one agent in about fifty is reliable, and the grand difficulty is to find out that one. There is but one nursery at London, Ont., whereas agents go about representing three; there is only one at Toronto, and still there are four other firms who advertise as nurserymen, and send agents out to represent them. It is in this way so much mischief is done, farmers and others are gulled, large prices are extorted for mere trash, and swindles of every possible description are perpetrated. Let planters deal direct if possible with a reliable local man who will certainly do as he says; let them choose only naturally grown stock, never mind how dark the apple trees are in the skin, never mind how rough and scraggy they look, a few years will prove them to be by far the best and most profitable. I see no reason why our good friends in Quebec should not enjoy a delicious Spitzenburg apple as well as we can here, why their cellars should not be stored as full of Rhode Island Greefings and Spys as ours, and why they should not enjoy the luxury of a few pear and plum trees of our popular sorts. Nay, I believe those hardy peach trees that some friends of mine succeed with in the colder sections of Ontario would succeed also in Quebec. Any one can destroy a tree when young, just as easily as a child can be injured; the constitution can be ruined by over kindness, by forcing to eat that which is not suitable and which a kinder nature would never prescribe.

A city grown boy is not naturally fit for the life of a country chap, no more is one of these fast grown, fine looking trees fit for anything but hot house care. But perhaps I am going too fast, Quebec may not be as bad as my pencil would appear to paint it. I am not posted, and only judge from some articles in news papers, and a very limited information gathered from other sources. However that may be, all I aim at is to lay down what I consider facts in the choice of trees, and my experience has been very large.

A couple of copies of the Journal were sent me by some friend, and I can endorse the movement as one most praiseworthy to the government that instituted such a scheme for the benefit of that great class, the agriculturists and horticulturists.

The Journal will do a great and good work in the Province, and should receive the unanimous support of the class for which it is established. I shall be glad at any future time to write on any horticultural subject for the Journal that may be of interest then, and to answer any queries that may be put, so far as I can

LAHRAX.

Goderich, June 18th 1879.

We must say that King of Tompkins' County and Baldwin apples have already proved failures, as grown on the ordinary

soils of this Province, while N. Spy are planted with very varied results. Spitzenburg have proved an utter failure under slow growth in the nursery, and exceptional trees that reached the orchard failed there, and that in the better fruit growing regions. Vermont taken as a whole is no criterion, as it is a State of most varied climate.

We shall be glad to hear, at all times, from our able correspondent.—*Ed.*

GLEANINGS FROM AGRICULTURAL PRESS

A new Animal Poison.

In addition to what we have already written in relation to means for destroying moles, mice and other field vermin, by means of trapping, we give the results of experiments made at the Royal Agricultural Academy at Proskau, from which we find, of all the materials experimented with, the most efficacious proved to be precipitated carbonate of baryta. This occurs as a heavy, fine, white powder, devoid of taste or smell, and can be purchased at any ordinary drug store. In the experiments at Proskau, a portion of it was mixed with four times its weight of sound barley meal, and made into a stiff paste with water, and small pellets of the soft cake introduced into the holes of rats, of house and of field mice. One great advantage of this preparation is that the smallest quantity of it proves fatal. Further, it appears to cause immediate and complete paralysis of the hind extremities, so that it may be assumed that mice eating of it in their holes will die within them, and thus not prove destructive in their turn to domesticated animals that might otherwise devour the carcasses. It was found in practice that neither fowls nor pigeons would touch the paste, either in its soft state or when hardened by the sun, so that its employment is probably free from danger to the occupants of the poultry yard. Some rabbits on the other hand, that got access to the paste, ate heartily of it, and paid the penalty with their lives.—*The Prairie Farmer.*

A gold mine in a Cow. — What the "tenth Duchess of Airdrie" has done for her Owner.

One of the most remarkable cows on record is the "10th Duchess of Airdrie," owned by the Hon. Mat. Cochrane, which has just given birth to her ninth calf, a red heifer, to be named the "8th Duchess of Hillhurst," by 3rd Duke of Oneida. Of the 10th Duchess and her daughter's calves, Mr. Cochrane has sold the following animals at the prices named:—In the winter of 1875 the bull calf, 4th Duke of Hillhurst, at \$7,000; at public auction in Toronto, June 16th, 1875, the bull calf, 5th Duke of Hillhurst, two months old, at \$8,000, and the heifer Airdrie Duchess 5th, eight months old, at \$18,000; at auction sale in Toronto, June 14th, 1876, the cow Airdrie Duchess 2nd, at \$21,000, and the heifer Airdrie Duchess 3rd, at \$23,600. In August, 1877, privately, the heifer 6th Duchess of Hillhurst, at \$12,000; and at public sale at Bowness, Windermere, England, September 4th, 1877, the heifers 3rd Duchess and 5th Duchess of Hillhurst, at 4,100 and 4,300 guineas each, or \$20,500 and \$21,500 respectively: making a total of \$131,600 for eight animals sold. He has still in his possession, besides the 10th Duchess, Airdrie Duchess 4th, 7th Duke, and 7th and 8th Duchesses of Hillhurst, five animals, and has lost four animals by death. The above result has perhaps never been equalled by any one animal at the same age. In December, 1875, an offer of \$25,000 for the 10th Duchess was refused, and the same for her daughter, Airdrie Duchess 4th. Since then the old cow has brought three heifers and one bull; two of the heifers have been sold for \$33,500, and there still

remain the bull, and the heifer just dropped, besides the dam, who will probably breed a number of calves yet.—*Nova Scotian Journal of Agriculture.*

Sheep and Lambs.

(New-York Times).

With the hot weather begins a risky season for the flock and a time when the shepherd's care needs to be constant. Flies abound, and are ready to propagate in any moist filth about the tail or udder. Once a sheep is fly-blown, it seeks a lonely place, and will hide in a fence corner and remain out of sight until dead. The sun's heat and the want of either abundant or of good water frequently bring on diarrhœa, which increases the danger from the fly, and also weakens the sheep. Dysentery follows neglected diarrhœa, and carries off the sickened animals very rapidly. There are many reasons why at this time a flock should be visited frequently, and counted each time, for certainty that all are in good condition. If one is missed, it should be sought at once, and brought home for treatment and care.

One of the greatest pests at this season is ticks. These leave the shorn sheep and gather on the lambs. The young animals are worried and weakened by these parasites, and are sometimes killed by them. It is now easy to rid the flock of them. The pest may be destroyed by dipping the lambs in a decoction of tobacco and sulphur, one-half pound of tobacco steeped in five gallons of hot water, with the addition of eight ounces of flowers of sulphur, well stirred in, make an effective dip. It should be used at a temperature of 112 degrees, and should be kept at that heat by the addition of fresh hot liquid, not water. The lambs only require dipping, and a half-tub large enough to immerse the lamb while held by its head, and its head kept out of the bath, is the best vehicle for applying the dip.

Ewes from which lambs have been taken require special care. If necessary, they should be milked at night to relieve the udder, and this should be continued until they are dried. Garget may occur by neglect; the udder may "cake," fester, and suppurate, when flies will attack the poor animal. Many good ewes are thus lost for simple want of care. Lambs that are weaned should be separated from the older sheep, and a piece of fresh grass reserved for them. A run in a corn-field will be much relished by them; they will eat many weeds and some suckers, but will not injure the corn (1). The shade and coolness will be agreeable to them. Those ewes that are intended for market should be fattened and disposed of as soon as possible. Every day lost is a loss of food without return. Store sheep may run in a stubble, or a piece of waste land, and will do very well with a small allowance of bran, or mixed oats and rye. Half a pint daily will be sufficient. Foot rot is caused by the accumulation of filth or sand under the loose horn which grows from the walls of the hoof and turns under the sole. Neglect to properly pare the hoof assists it. The sole is kept moist and soft, is irritated, rots, and communicates the irritation to the sensitive portions of the foot under it. Then follow inflammation, gangrene, decay, and a fetid, purulent discharge which conveys contagion to sound feet. The rot is most frequent upon wet pastures, which encourage growth of horn and keep the sole soft, and is rare upon dry,

(1) We must enter a protest against lambs, or any other animals, being allowed to run in a corn field. It is, to say the least, a slovenly practice, and would not benefit the lambs nearly as much as good, dry clover ley, on which no sheep have recently been. In the Chalk Districts of England a change to *Sainfoin* is a specific against diarrhœa in lambs.

Tapeworms are often unsuspected cause of "green-skitt" in very young lambs. Turpentine, a tablespoonful, in a little gruel made of linseed, will help the evacuation of the worms, and the grass-feed would be assisted by a little cake, or bran. Ed.

gravely land, which keeps the hoof worn down. The feet should be examined, and the flock not neglected until some are found crawling painfully upon their knees. The hoof should be pared and all loose horn removed. Any diseased feet should be dressed with quiklime paste, all decayed horn having been first removed, and if any serious cases are discovered and fungoid excrescences found, these should be removed by applications of strong solution of blue vitriol, and the foot dressed with an ointment composed of one ounce of lard, one tablespoonful of turpentine, and half an ounce of acetate of copper (verdegris) (2). The feet should be banded and the sheep kept in a floored shed. Neglect verifies the adage of the ancient poet: "Sheep are always an unhappy flock," but care and attention are sufficient to avoid all the disasters which too frequently fall upon the helpless animals, and keep them in a thrifty and profitable condition.

The best time to castrate the male pigs is at from four to six weeks of age; or, at least, before weaning time. They seldom suffer any perceptible check in their growth when the operation is performed at this time, and they will be much more easily managed than if permitted to run entire. The sexual desire is developed very early in the male pig; and, when a lot of young boars are permitted to run together, their fretting not unfrequently seriously retards growth. Besides, the danger from castration increases with the age of the pig after he is six weeks old. (MASS. PLOUGHMAN.)

The currant worm may be destroyed by scattering over the bushes a mixture of a pint of white hellebore, a pint of flowers of sulphur, and a peck of sifted coal ashes. (IBID.)

Sweet corn for fodder.

[Philadelphia Press.]

A trial of several varieties of sweet corn for fodder for milch cows, the past season, has resulted very successfully. Many good farmers have for years past considered sweet corn fodder to be worth more than that from field corn. The large quantity of sugar contained in sweet corn makes it a highly nutritious food, sugar being as much a nutriment as starch—indeed it is strongly believed by some physiologists that the starch of the food is changed, in great part, to sugar during digestion. But it will be found in practice that the most valuable fodder is that which is grown so widely apart that the juices of the stalks are matured, and the ears are considerably developed before the crop is cut. Small early varieties planted in May and afterward, may be gathered in July and August; and the medium late varieties, such as the Triumph, will come in in August and September; while the late Evergreen will last until frost stops the growth.

CORRESPONDANTS.

TO THE EDITOR OF THE JOURNAL OF AGRICULTURE.

Sir, I should be glad to know why Superphosphate of Lime is so dear in this country? I believe all the materials are home-grown that are used in its manufacture. In England, as you may see by the enclosed advertisements, it sells, guaranteed to contain from 27 to 29 per cent of soluble phosphates, for £4.10 per gross Ton of 2240 lbs., in quantities of two Tons. Here (see "Journal d'Agriculture" for May) the price seems to vary from \$30 to \$40 per Ton of 2000 lbs., equal, in sterling, to from £7 to £9 per gross Ton! There should be a considerable per centage of Ammonia to account for this difference in price. I am, Sir, your obedient servant,

AGRICOLA.

Answer.—We see no reason for the high prices ranging here. The

(2) And butter of antimony. Ed.

bones are sold in Quebec for about \$15 a ton, and exported at that price to Europe, for the manufacturer of superphosphate. Mineral phosphates can be had for about \$8 a ton. Although sulphuric acid costs more here than in England, the low price of the bones and apatite should enable manufacturers to sell their superphosphate at a lower price than in Europe after realising a reasonable profit.—Ed.

For several years, the crows picked up my Indian Corn in spite of Scare crows, and twine suspended over the field.

Five years ago finding my crows had attacked the corn, I placed an empty barrel in the corn field putting in it some pups a day or two old. The mother attended them, they made a slight commotion in the barrel—the crows deserted the field.

Every year since, I have placed a hen, or a duck, in a small coop in the corn field, when the grain was springing up, and kept the animal there for 2 or 3 days, and the coop for ten days, with like success.

A restless animal, or poultry, concealed in a box will effectually deter crows from visiting newly sown crops.

Lennoxville, P.Q.

L. E. MORRIS.

BEE CULTURE.

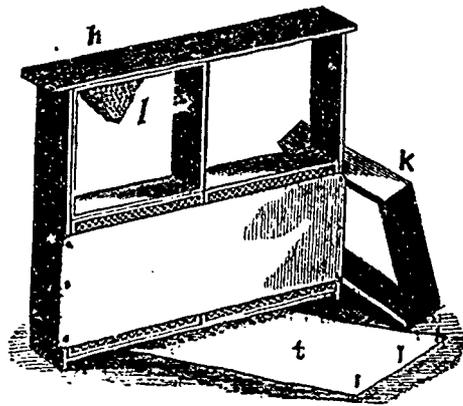


(FIG. 1.) Wax Secretions.

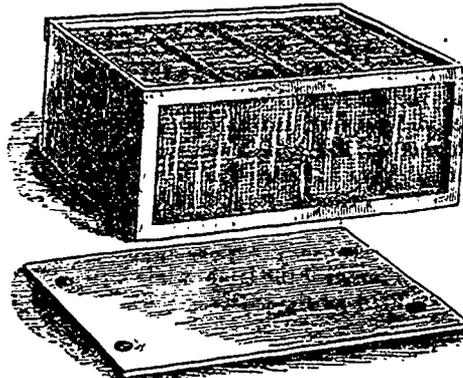
As soon as the swarms have issued from the hive, the bee-master should exert himself to induce the bees to produce the greatest possible quantity of honey, and, to this end, the hives and sections should be fitted with empty combs, or with foundation. It is very interesting to see them working at the erection

of their waxy abodes and piling them up, one above the other, in the most exact fashion. After the bees have absorbed

a certain quantity of honey, they collect in a crowd on the platform of the hive, clinging to each other by the feet. After a few hours rest, polygons of wax begin to appear under the abdomen of the bees (fig. 1); they are then detached for the purpose of forming those wonderful cells desired for the reception of the brood and its provision.— Each hive ought to be inspected at least once a week, to take away the sections that are full. Having injected a little smoke with the "fumigator," raise the frame and shake it smartly before the hive. The bees will fall out, and enter the hive: then take out the combs (fig. 2) and replace them by foundation. The value of the best combs will be greatly increased by their being placed in glass boxes (fig. 3).



(FIG. 2.) Movable frames in sections.



(FIG. 3.) Glazed Shipping Box of movable frames.

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