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THE CANADIAN LIVE-STOCK AND FARM JOURNAL

DEVOTED TO THE INTERESTS OF THE STOCK-RAISERS AND FARMERS OF CANADA.

VOL. V.

HAMILTON, CANADA, AUGUST, 1888.

No. 58



The Ontario Agricultural College.

This institution we regard as absolutely indispensable in an educational point of view to the farmers of Canada. It consists of a college proper, experimental grounds and farm, and is situated one mile out of Guelph, in the County of Wellington, Ont. The number of graduates, or associates as they are termed, is 164, of which 27 graduated this present year, 17 of them being farmers' sons. A much larger number, however, have not been able to return the second year, or the number of graduates would have been much greater. These are, however, actively engaged in farm work in all parts of the Dominion, turning to good account the large store of valuable knowledge gained at the College.

The course covers two years, with a post-graduate course for any desiring it. October 1st is the usual time of entrance, and June 30th the time of release, although there is a summer term for the advantage of students not well up in practical farming. Every student is required to do a certain amount of practical work, for which he is paid. This enables him in part to pay his way, and prevents the decay of the old love for the practical work of the farm.

The course of study is divided into five departments: These are (1), *Agriculture, Live-Stock, Dairy-*

ing. Living specimens of the stock are brought into the class room when lectures are being delivered. (2). *Natural Sciences*—those which bear directly on farming, as chemistry, geology, botany, etc., with the special and practical study of insects, grasses, smut, rust, etc. (3). *Veterinary Science.* Horses are brought regularly into the class room and examined for soundness, and pupils are practically taught how to administer medicines. (4). *English Literature and Political Economy,* where the practical branches receive chief attention. (5). *Mathematics and Book-keeping.* Here, as in all the other departments, practical subjects, as arithmetic, mensuration, farm book-keeping, etc., receive the larger share of attention. Where else, we ask, in all Canada, can young men of the farm receive an education approaching this in utility, and who can take a full course at this institution without receiving immense benefit? The charges are so very moderate that an industrious student not afraid to work can get through at an outlay of from \$40 to \$60 a year. The tuition is \$20 a year, payable in advance. It should be borne in mind that each county has the privilege of sending one student free of tuition fees.

The present staff of professors is composed of men of marked ability and unimpeachable character. The

professorship of agriculture is vacant at present, and it is to be hoped that the man best qualified to fill the position will be sought out, regardless of all other considerations.

For the advantages that will accrue to students attending see page 213, also see advertisement on another page.

An Easy Way of Getting a Start in Improved Stock.

In the March issue of the JOURNAL, p. 66, occurs the following quotation from a subscriber: "Don't you think if you would offer the boys who would get you enough subscribers, some kind of pure-bred stock, that it would be drawing them in the proper channel?" We promised at the time to give the matter our attention, and now that the canvassing season is coming on we proceed to redeem that promise. We have accordingly drawn up a list of live-stock premiums to be captured by canvassers, which will be found in one of the closing pages of this issue. It was our intention to defer publishing this list until later in the season, but circumstances which would take too long to explain have induced us to take the step at once.

Canadian Live-Stock & Farm Journal

PUBLISHED MONTHLY BY

THE STOCK JOURNAL COMPANY,

48 John Street South, Hamilton, Ont.

Terms, \$1.00 per Annum in Advance.

THOMAS SHAW, RIVERSIDE FARM, EDITOR.

To Subscribers.—Subscription price, \$1.00 per annum in advance. Single copies, 10 cents each; sample copies free. No names will be removed from our subscription list when in arrears and without we receive instructions to that effect. Those in arrears will be charged \$1.25.

Clubs.—Any person is at liberty to form clubs. Clubs of five copies to any address, for one year, \$4.00. Clubs of ten copies to any address, \$7.50.

To Advertisers.—Advertisements of an appropriate nature will be inserted in the JOURNAL at the following rates: For a single insertion, 18c. per line, nonpareil (12 lines makes one inch); for three months, 15 cents per line each insertion; for six months, 12c. per line each insertion; for one year, 10c. per line each insertion. Cards in Breeders' Directory, not exceeding five lines \$1.50 per line per annum. Copy of advertisements should reach us not later than the 25th of each month (earlier, if possible). If later, it may be in time for insertion, but often too late for proper classification. Transient advertisements payable in advance. No advertisement inserted for less than 75c. Contracts broken by insolvency or otherwise will revert to the usual rate of 18 cents per line per insertion.

To Correspondents.—All communications intended for publication in the JOURNAL should reach us by the 20th of each month—sooner if possible. We do not hold ourselves responsible for the opinions of correspondents.

Remittances may be made in registered letter at our risk. The receipt of the JOURNAL will be sufficient evidence to subscribers that their remittances have been received.

All communications to be addressed STOCK JOURNAL Co., 48 John Street South, Hamilton, Ont.

HAMILTON, CANADA, AUG., 1888.

THE interesting papers of "Agricola" on the Shire horse have called forth a criticism from the well-qualified pen of Mr. A. McNeilage, the secretary of the Clydesdale Horse Society of Scotland. This criticism will be found on another page. It is with no little pride that we refer to other original papers in each issue of the JOURNAL by regular contributors of a character that will survive the ephemeral life of ordinary newspaper articles. Some of them will, without a doubt, be embodied permanently in the agricultural literature of Canada. The high character of these contributions in the past are the pledge and foretaste of what may be expected in the future. At its inception we determined that the JOURNAL should lead the van, and through the aid of the many kind friends who have viewed our effort favorably, we have been enabled to carry out this determination. It is still our settled purpose that the JOURNAL will continue to lead. We shall not look grudgingly on the success of those who are attempting to follow.

AN article on "Sheep-washing" will be found on another page from the pen of Mr. D. McCrae, Guelph. It will be observed by the reader that the trend of Mr. McCrae's remarks are rather against the continuance of the practice. As Mr. McCrae is himself engaged in the manufacture of wool, his remarks on this subject carry with them a weight which they could not otherwise possess. Sheep-growers would hail with much satisfaction the abandonment of the practice. As the only difficulty in the way of manufacturing it quite as well when marketed in the unwashed state is a lack of suitable appliances, it will be only a matter of time until this is removed, when the disagreeable practice will no doubt be discontinued for all time. From Mr. McCrae's letter we glean what was obscure to us before, the reasons for the hostility of many buyers who are exporters, to the purchasing of unwashed wool. With a tariff bearing more heavily against unwashed wool going into the United States, it is only natural that it should be so.

THE battle still rages in Britain as to whether it is safe to cure fodder in stacks by means of the roller pressure process. In some instances failures are reported, but it is thought that most of these, or all of them, have been caused by some departure from the instructions given by the Messrs. Thomas Pearson & Co., of the Midland Works, Wolverhampton, who manufacture the rollers. We should greatly like to see the attempt made in this country. We admit that curing hay by this process is of less moment here than in Britain, where the climate is so humid, but even here, if it could be made to succeed, it would in many instances be attended with advantage. The action of the frost upon it in winter would, so far as we can see, interfere with feeding it, especially on the outer portions of the stack, but one is not safe usually in pronouncing very definitely on what has not been tried. The importance of curing feed by that process which will best conserve its natural feeding properties is very great, and cannot receive too much attention at the hands of those who are experimenting for the advantage of the people.

THE man who engages in stock-keeping without an ideal is like a mariner at sea without a compass. Like a reed shaken with the wind, he is likely to be swayed by conflicting opinions, and changes his methods so often that high achievement is impossible. He may get up some low Laurentian slope, but will never reach the Alps or the Appenines, and will, during his whole life fail to get a glimpse of the Himalayas. It is no pathway of velvety down which he treads who has an ideal before him, and constantly keeps his eye upon it. Like the traveler on the narrow way, he is traveling a difficult path, but there is a goal before him. He is likely to make some mistakes, but is wise enough to look at them and profit by them. Like the little child learning to walk, when he falls he gets up again. But it is of much moment what the ideal shall be. It is not sufficient that he be able to establish a type with distinctive features. It is all important that the type should possess ability in a marked degree. It is not simply that the Holsteins are black and white in color that they are so highly prized, but because of their great milk and butter-producing qualities. We can fancy one producing a type most perfect in its characteristics, but lacking in intrinsic merit. Like the gourd of the prophet, it will flourish for a day, and when the sun waxes warm it will wither. Utility is always the measure by which the average man gauges his estimate of what is placed before him, and that which can convince men of its usefulness will always be sure of an enduring popularity.

SOME are loud in their outcry against the system of having the awards at exhibitions based so largely upon the finished condition of the animal as to fat and general fleshiness. Some injury has resulted to breeding animals in this way, and deterioration to the offspring. But has not great good resulted in the stimulus given to the mass of breeders to bring up the general condition of their herds to a high standard? The good, we make bold to say, has far more than counterbalanced the evil. For every good animal thus ruined for breeding a hundred have been improved through the stimulus to which we have already referred. There is a far worse evil than this about which much less is said—we mean the deterioration that results from keeping stock in an under rather than in an over condition. For every one offender in the show-rings there are one hundred in the stable. Stock of any kind cannot be kept in an under-condition without deterioration, and a deterioration also of the offspring.

Nor can the plea be urged in favor of this method of keeping stock that the resultant good more than counterbalances the evil. There is no resultant good. Evil is entamped upon the practice in its every aspect, and only evil, and yet oftentimes those who indulge in this are loud in their denunciations of the evils resulting from making cattle over-fat at shows. These evils are less injurious than those which result from making cattle over-fat fitting them up for sales, for in such instances the flesh is usually put on in a spasmodic way and by less skilful hands, inducing an unusual condition of the animal which leads to general disturbance, and sore disappointment in many instances to the purchasers.

PRICES of good Shorthorns have ruled lower for two or three years past than formerly. Though this may not be as the breeders would like to see it, it is just what the keepers of common cattle should take advantage of, by improving the opportunity to make their purchases. The intrinsic merits of this famous breed are just as good as they were many years ago when they sold, some for more than \$20,000 each. Once the real merit of a breed has been established, the low price that they can be obtained for is a reason for purchasing rather than for refraining from doing so. There will probably never be a more opportune time for investing in Shorthorns than the present. Good ones can be bought at \$100 each, and in all probability the time will never come when they can be bought for much less. Of course, where the breeding is very special, and the merit of a superlative order, the price we have quoted is quite too low. Either Shorthorns are better than common cattle or they are not. We hold they are, and will dispute the point with all comers. If they are better, then why not breed them? Some men will change their potatoes and the various cereals from time to time in the search of what is better, but they go on from generation to generation with the same line of stock, which have assisted in keeping both them and their progenitors poor. Beginners should never launch out indiscriminately in making their purchases, but rather in a small and tentative way, making sure of every inch of ground which they cover. They should commence ordinarily with one or two, and thus avoid the running of any pecuniary risks.

THE relative values of pedigree and individual excellence in the choice of a sire are subjects on which it is difficult indeed for breeders to arrive at a consensus of opinion. Perhaps they will never do so. Some it seems can only look at this matter in the light of pedigree, and base their operations accordingly. Others can only look at individual excellence, and are not unfrequently disappointed. Where a due regard is had to both, success is certain. But this regard must view these qualifications in the right order. That must not be put first which should always come second, and we say it unhesitatingly, that individual excellence should have the place of honor. We want pedigree to render the transmission of excellence measurably certain, and we want individual merit to transmit it in the highest form. Pedigree insures prepotency. Prepotency is the ability to transmit a likeness of self or family features, but in its highest form it is a likeness of self. Now if pedigree is to be exalted above individual merit, then it follows that it is better to run the chances of getting the likeness of dead ancestors than the impress of the living sire. But it is the impress of the living sire that we are more likely to get, and all the more so if he is imported. We hazard the statement that any person

living who gives pedigree in his practice a more important place than individuality, excellence will go down to the grave "unwept, unhonored and unsung," viewing his life in the light of achievement. It is true that some well-bred sires of plain shapes have produced excellent offspring, but this was in spite of their plainness rather than because of it. Such sires should be used as the result of accident rather than of deliberate choice, because it has been discovered that they are good producers in an incidental way.

Not Fair Nor Kind.

The editor of the JOURNAL not unfrequently receives a poster on which it is announced that he will speak at an Institute meeting at a certain time and place where he has not so promised. This is neither fair nor kind. It is tampering with reputation in a way that is inexcusable. In all such cases there has been correspondence on the subject, but usually it is too hurried to get a reply before the public notices are given.

When one consents to address a public meeting he is in honor bound to do so or show good reason why, just as much so as to keep any business engagement where great interests are at stake. We would like all concerned to know that we never trifle with an engagement to meet a public audience. On only two or three different occasions during recent years have we found it necessary to cancel an engagement of this nature, and then it was absolutely necessary.

To advertise the name of a speaker without his consent, and then to tell the assembled audience that he "has failed to attend," is simply outrageous, and yet this is the way in which some sleepy secretaries shield themselves from the consequences of neglected duty. Where the correspondence is timely there will be no such misrepresentations.

It is a matter of regret that we are constrained to decline so many of the kind invitations so constantly arriving asking us to attend Institute meetings, but it is absolutely necessary under existing conditions. Where such assistance is desired it should be requested sufficiently early to admit of definite correspondence before any public announcements are made.

The Ontario Agricultural College and Experimental Farm.

This Institution, which was established in 1874, is the only one of the kind in the whole Dominion. We have a well conducted experimental station at Ottawa, and are soon to have one each in Manitoba and Nova Scotia, but none of these are to be in conjunction with an agricultural college. Our neighbors across the line have many such colleges, and Great Britain and most continental countries have also a number of them, which are usually well attended by students, the sons of farmers. We have given on the first page of this number a short historical sketch of the Institution, with a synopsis of the curriculum of the studies. One object in this paper is to show what should need no demonstration:

1. That the Ontario Agricultural College is a necessity.
2. Some advantages that will accrue to the young men of the farm who attend.
3. The duty of loyalty to the Institution on the part of the farmers.

The Ontario Agricultural College at Guelph is a necessity. Some deny this, but it is usually the denial of simple assertion. When evidence is cited in support of this view it more generally comes in something like this form. "The proper place to learn 'farming is on the farm.'" Up to a certain point

this is true. The best place to learn the manual part of the work is on the farm, and if the average farmer is adopting a system that cannot be improved upon, then the best place to get a knowledge of the system is on the farm. But who of them is indulging in this delusion? The foremost of our farmers will be the most free to confess that they are but children at their work. Then on one farm but one system can be learned, while at an agricultural college, properly conducted, the best systems adapted to the various branches of agriculture are all taught. One might as well argue that the lawyer's office was the only proper place to study law, or that the merchant's desk was the only place to get a knowledge of book-keeping. Apprenticeship in both instances is a very proper thing, but the aid of colleges is fully recognized, because it has been found very helpful. Agriculture may fitly be termed the unfathomable science, the problem without a terminated product like the repeating decimal. For nearly sixty centuries fresh truths have been eliminated from the threshold only of its domain. In its propositions it has to deal with the subtleties of variation, arising from difference in temperature, moisture, and season, and to adapt these by scales of graduation to the determined results of solution which apply to average conditions. The domain of the unexplored in the geographical world is only a little spot compared with that of the unknown in agriculture. Sagest minds of strongest men are trying to penetrate this region in many lands, and if Canada does not send on her contingent of explorers, she will lose all share in the laurels entwined around the brows of those successful in agricultural research and agricultural experiment. For these and many other reasons that may be given, we deem the Ontario Agricultural College a necessity.

Advantages will accrue to the young men of the farm who desire to attend. These advantages will more than compensate the diligent student who attends the college for his time so spent, and the attendant outlay. He will be constrained to study. Young men on the farm may be convinced of the value of the study of agriculture, and may purchase the books, and yet make but little progress in studying. The stimulating power of competition and emulation are absent, and the absorbing power of labor and its subjects divert the mind, so that strong will-power is seldom made to give the home student the mastery in the effort.

He will be enabled to study. The hard work of the farm is, more than anything else, disastrous to home study on the farm. Labor is helpful to study up to a certain point, but with most young persons on the farm this point is far over-past. The most admirable resolutions and the finest intellects have been buried in the deep pit of hard labor that is to be found on very many farms. Attending at the agricultural college gives the young man sufficient exemption from this tyrant master to enable him to enter fields of gathered knowledge that he has but to lay hold of and reduce to practice, when he returns to the farm.

He will be stimulated to study. Like the eastern queen whose spirit failed because of the magnificence of the pomp and wealth she beheld in the city of the wise man, students may also lose heart on going down to the agricultural college when they first look into that boundless domain that is spread out before them. Formerly the virtual rim of their agricultural knowledge was the visible horizon, now they look abroad into an illimitable region of land and sea where the fruits of knowledge may be gathered from every shrub and bush of this fair region, and where no ear-

nest fisher ever lets down his net in vain. Who worthy of the name of man can look upon this realm of treasures without resolving that he will try and possess all he can of them?

He will be helped to study. The advantages that flow from the employment of teachers in the day school apply to their employment in a college. The child at the school must do the studying himself. The teacher simply guides him. The professor at the Guelph college simply guides the student in attendance. But see the advantage of a guide. How would the traveller fare in the attempt to scale Alpine heights or to traverse the intricacies of a Theban labyrinth without a guide? About as well as one would fare who purposes to wend his way through the intricacies of agricultural science alone.

He will be put in possession of knowledge already garnered. We once saw a young man wasting his time in the attempt to construct a churn on a principle far inferior to that adopted in scores of other churns already invented, but of whose existence he knew nothing. It was a half pathetic sight, but not more so than the attempt of hundreds of farmers to produce various appliances already existing in a far more effective form. The course of study at the college puts the pupil in possession of what is known up to the present regarding methods. A magnificent heritage it is, infinitely more valuable to him than all the "treasures of the East" that once upon a time "lay beneath the Doric spear." It begets the habit of acquiring knowledge. Good habits are unending blessings, bad habits enduring curses. This is a good habit which will follow the student through life. The earnest student leaves college with a thirst for more knowledge, only intensified rather than satiated, and so he goes on through life, ever adding to his store of this.

It puts him in possession of valuable knowledge not easily acquired elsewhere. This applies notably to what has reference to chemistry, the prime agent in agricultural processes. Not long ago a man in Scotland lost his life in handling a mixture of super-phosphate and nitrate of soda at the improper stage. The sulphuric acid in the super-phosphate liberated the nitrous acid in the nitrate of soda, producing a poisonous gas which produced the fatal result just chronicled. A college-taught man would not have sacrificed his life in this way. The principle to which we refer may be illustrated in a hundred ways.

It will enable him to distance his fellows, other things being equal, when he goes back to the farm. A man in possession of all the light which an agricultural college can give him will outstrip another man of equal ability and will-power, who has not had these advantages. If he does not, the teaching of the college has been defective. The people of Canada have a right to judge of this educational tree by these its fruits, where the young men, if of the right stuff, have first gone from the farm to the college. You might as well expect the book-keeper who had none of the advantages of a collegiate institute to get ahead of the one who had, and who possessed the benefit of experience as well. One out of a large number might do so, but the exceptions will be rare. These are only a few of the advantages that will accrue to earnest young men attending the Ontario Agricultural College, and those who are not earnest had better stay at home. It will be much more to their credit to be muffins at home than muffins at the Guelph College.

Loyalty to the Institution is therefore the duty of the farmers, if its benefits are such to young men sent there to prosecute a course of study. They should make at least an equal effort to educate their boys

properly for their future life-work on the farm, as to educate those of them properly who turn their face in the direction of professions. Let them send earnest young men to the college, and they will be sent back laden with the treasures of agricultural knowledge, a heritage in the benefits of which an entire neighborhood will participate ultimately. We make no claim to the gift of prophesy, but we hazard the prediction in the entire confidence of its fulfilment, that the day is not far distant when graduates from an agricultural college will be honored by the farmers as those in other lines are now, when they will be chosen as leaders at public gatherings, and will some day be numerous in the halls of the Legislature. Surely more than one farmer in five thousand can find the means next winter to send his son to this Institution. A far larger proportion of them send them to the commercial colleges, medical schools and universities, in the latter instances at more than twice the outlay incurred in sending them to the agricultural college. We are not faulting them for doing the one, but for leaving the other undone.

In all earnestness we ask of our farmers who have the means, are they doing fairly by their sons whom they expect to till their farms after them, if they deprive them of the advantages of the most direct agency we have of giving them an insight into the scientific side of their calling? Are they giving them fair play? Would it not be a thousand times better to start them with a full and vigorous education, and with less of fee simple than with more of the latter and but little of the former? Give the boys of the farm a chance.

How Farmers can Best Protect Themselves Against Combines.

This is a burning question to the farmers of Canada, and is becoming more so every day. It also vitally affects other classes along with the farmer, but in a less degree, for, while the combines only affect the cost of living usually to the laboring man, and, we may add, the cost of burial, they very much enhance the cost of the machinery which the farmer must use in order successfully to carry on his work.

In a recent article in the columns of a contemporary Mr. Jas. Laidlaw, Guelph, discusses the subject with a good deal of ability. He treats of the nature of combines in a historical sense in a masterly way, but when he grapples with the principal idea, that of the means to be adopted in seeking this protection, he is not so successful. Like the wise men who figure in that beautiful prize poem of holy writ, the book of Job, and who wrestle in vain with the mysterious problem of Divine Providence, Mr. Laidlaw seems to wrestle in vain with the means to be adopted in slaying this vile serpent of modern growth, with all her numerous progeny. He stops short where he should go on. He is undoubtedly right when he represents that the beast must be chained by the strong arm of the law, and that men should be elected to parliament who favor such a law, but to wait patiently for this in the ordinary course of events and with unorganized agitation, would lay the present generation in their graves without the attainment of the desired end.

It is true, as Mr. Laidlaw says, that it is not possible for farmers to meet combination with counter combination as to the regulation of production and a fixity of price. This would be wrong if it were possible. Such combinations are the children of unrighteous mammon. They cannot exist where the spirit of the Tenth Command has not first been ignored, nor can they breathe in the presence of the sanctions of the golden rule. Meeting iniquity with

counter iniquity is a poor policy even where practicable, for never in the history of the world were men authorized to do evil that good may come.

But though farmers cannot and should not combine to fix prices, they can and should combine for self-protection, and it is only by this means that we hope to get relief. The Farmers' Institutes are the medium through which this relief must come if it is to be immediate. It is true that Parliament has taken the bull by the horns, but even so, left to itself, the outlook is not reassuring, for many of its present members owe their seats directly or indirectly to the friends of combines.

Let this be one of the burning questions at the meeting of the Central Farmers' Institute next winter, when resolutions can be voted, urging upon Parliament the passing of a law rendering combines illegal, and those engaging in them amenable to punishment in some form. There are now no less than sixty of these institutes in as many of the ridings of Canada, and before the end of the year there will be others. There are also agencies in the other provinces which can be set to work—farmers' organizations which, if not so systematically organized as those in Ontario, may, nevertheless, render substantial aid. These can be communicated with, and their co-operation secured. The pressure which these organizations united could bring upon Parliament, would surely suffice to secure the desired end at its first sitting. If it did not, then, through the same agency, bring pressure to bear upon candidates, that would secure from them assurances of good conduct when the next election season arrives. Whatever help existing granges and farmers' clubs can afford should be diligently sought and thankfully received.

Cattle Running at Large on the Highway.

In newly settled districts where even the pastures are usually unfenced, this may be a very proper thing, but in older settlements where the lands are all enclosed, the practice appears to us to be wholly indefensible. The law at present leaves it with the municipalities to prohibit live-stock from running at large. Where this interdict has not been issued, anyone, from the nabob farmer of the neighborhood to the poorest peasant, has an equal claim in the eyes of the law to the much coveted grass that grows upon the highway.

The battle of prohibitory municipal legislation is being fought in many of our townships with a rancor that is worthy of a better cause. It is provoking life-long enmities, and in many instances ejecting council boards composed of men somewhat in advance of their age. So that for the good of all concerned it seems to us that the time is near at hand when the Legislature should step in and say that in coming time live-stock of any kind may not run upon the highway.

The principal arguments pro and con are these: The advocates of liberty say, (1) That the grass upon the roadsides uneaten is a nuisance to pedestrians in times of wet, when they must either wade through affectionate clay or get bedrabbled walking through the long grass. (2) That it is about the only way in which the poor man can get summer feed for his cow, as farmers usually are unwilling to let pasture. Their opponents argue (1) that now that fencing is scarce and dear, it is not easy to fence sufficiently against the highway stock that is usually of the vagrant character. (2) That it is very inconvenient for the farmers to have to keep the gates closed between the yards and the road, which they must do if stock is allowed to run. (3) That the poor man can

mow grass along the highway for his cow, and so have her better kept than when chancing it with droves of others for a lived hood in search of grass roots.

There is a strong objection to allowing stock to run upon the road, which will be more pronounced in the future than in the past. It is that it is fatal to the growth of young trees that may be planted there. Farmers are offered a bonus who will plant trees along the the highway when they reach a certain age. This excellent law will be almost wholly inoperative unless stock is absolutely prohibited from pasturing on the road. It matters not though a herdsman is along, they will wantonly destroy the unprotected trees.

Those who favor live-stock pasturing upon the road, with or without a keeper, are the enemies of progress. They have never advanced a single argument in favor of the practice, a relic of a bygone age, that is tenable. Their chief reliance is the argument of the poor man's cow, but this argument from the lips of farmers who turn out their own stock to pasture with the poor man's cow, soon loses its virtue, and these are usually the loud champions of the poor man's cause. They are very willing that the poor man's cow may have one chance in twenty with their own stock on the road. Farmers who make a practice of turning out live-stock on the road are so far the greatest enemies of the poor man. Those who oppose the practice are his friends, could he but see it, for they would willingly let him have the whole of the grass upon the highway if he would cut it and take it away. The former show very plainly by their predilections what manner of farmers they are. However successfully they may grow grain, they have an inferior, unimproved class of stock, for never yet in a fully settled country was a good class of stock produced by pasturing on the highway. Good stock is regarded by the owners as too valuable to risk its hazards of accident, or to become emaciated from wandering in search of grass. That farmers are found advocating the continuance of the barbarism in old communities is an impeachment upon their inhumanity to the poor man, an evidence of an avarice that is narrow, and a stigma upon the character of their farming. They put their stock out on the highway either to save their own pastures or because these have failed. Until their own pastures grow their stock should be comfortably housed, and when these fail, a good supplement of oats, peas and vetches, or of fodder corn, will be much better for them than lowing on the highway because the food is not.

The poor man's family cow should be considered, carefully considered. Next to the wife of his bosom, the cow is one of the greatest blessings God ever gave him. To his family she is both meat and drink; but reflection should have taught him long ago that on the highway, fighting for an existence with the kine of half a dozen avaricious farmers, is not just the place for his cow. She wanders so far away in quest of food that if the boy put in half the time searching for her in growing mangolds, the milk supply would be doubled, and the poor beast might spend most of her time chewing her cud in the little yard by the stable. Most poor men who have a cow can rent a small piece of land adjoining the cow stable. Half an acre is enough. Sow this in part with soiling crop and in part with roots, and along with the grass cut on the highway there will be plenty of summer food and the cow always at hand. The poor man has the best right to the grass of the wayside, for if the gleanings of the fig-harvest were his in Palestine, the grass of the roadside should be his in Canada.

We have reached the dawn of an age which is going to revolutionize the appearance of our country,

and for the better, but its advancement will be most effectively held in check so long as live-stock feed upon the highway, either with or without a keeper. The time is coming when fences bordering the roads will generally be removed. The sides of the graded portion will be mown once or twice a year with a mower for the benefit of pedestrians in time of wet, and the borders of the turnpike remote from the track will be lined with trees, thus giving the landscape a beauty of which at present we have but a dim perception. It will be many years before this is general, but the dawning of this period has come, and the great giant still standing in the middle of the road brandishing his club and forbidding progress is the live-stock of the country running at large.

That legislation in this matter should be permissive at the first, was wise; that it should become restrictive gradually is also wise, but that a time must arrive when this restriction becomes universal, is equally apparent, and if this time has not come yet, it must be very near. Thus it was that the question of free schools was established, and that of toll roads being made free is progressing, hence there can be but little doubt that so soon as a majority of the municipalities declare in favor of restriction, the wandering of live-stock on the highway will by legislative enactment be made a thing of the past.

Meantime let all lovers of progress agitate in favor of this reform. Ignorance and prejudice may keep certain townships behind the age for a time, but the reform must come. Councils that are overthrown by means of the darkness of this decaying superstition should not be discouraged. They should be comforted by the evidence thus afforded that they are in advance in this matter of the voters who ejected them, and try again until victory is assured.

Rambling.

One seldom looks upon the fields in the closing days of June without a feeling of hopefulness that drives away all anxiety for the welfare of both man and beast in the near future. There is usually the promise of a most bountiful supply; but it was not so in many portions of Ontario during that June that has so recently left us. Its remembrances call up shadows of anxieties such as were seldom felt during the days of any of the predecessors of the gentle maiden month. Looking upon the landscape only called up visions of coming want. Walking through fields usually so fair and full aroused misgivings as to the extent of the harvest that could not easily be quieted, misgivings that in a measure have been allayed by grateful rains since then, although still there is great necessity for the utmost carefulness in garnering to the utmost the fruits of mother earth. It was at such a time that we made a hurried ramble through North Ontario, a riding strung so far along that the inhabitants of the north are in a sense strangers to those of the south.

Orillia, at the head of Lake Simcoe, is a busy little town. The land beyond on the north-westerly shore, is good and bad, and rough and smooth, with lakes and fens and hills and plains, and marshes alternating in strange variety. The stones lay as nature strewed them or are piled in heaps, or sleep along the highways, waiting for that better time when willing hands will build them into fences and bank barns.

At Brechin, by Lake Simcoe, a number of good representative farmers were assembled, and when the objects of the Institute were explained to them, at least two-thirds of them at once became members, in striking contrast to that inconsiderateness which causes numbers to stand aloof from these organizations so full of promise to the farmer, if only well sus-

tained by those whom they are intended to help. We formed a favorable impression of those men of Thorah and Mara and of their country, still fragrant with the odor of newness.

Some men seem to have a happy knack of turning up just at the right time. Our friend, Mr. A. Gunn, V. S., of Beaverton, is one of these. A delightful nine mile ride brought Beaverton, so called, we suppose, from the extensive beaver meadows in this region lying to the south-east of the lake. It is a fine sheet of clear water with some wooded islets. The light wind that blew across agitated its bosom as the bosom of humanity is ruffled by the little cares of life to prevent the formation of germs of evil through stagnation; and the rays of a declining summer's sun shining down upon the rocking waters turned them into broad leaves of yellow gold, as the little agitations of life produce those golden leaflets of character that men call goodness.

Beaverton, with some 1,600 inhabitants, on both sides of the Beaver river, has a pleasant situation. For some twelve years in succession Mr. Bruce has been elected the chief magistrate of the township or village, which speaks well for Mr. Bruce, and does not speak ill for Beaverton.

There are some admirable farms in the neighborhood, the latter being somewhat disturbed by a ridge of gravel and some strips of lighter sandy loam. The Messrs. D. & A. Gunn own 300 acres near at hand, and pasture a fourth, with bullocks bought where they can be got, and finished for summer shipment on the grass. For some years past they have turned off some 75 head of these, and averaging the prices for a number of years, have reaped a paying harvest. Those turned off for spring shipment brought 5¼c. per lb. Fine crops were growing on these grounds fattened by the manures that cattle-feeding produce. They also keep some twenty horses, some light and rightly built and bred, but more of the heavy types bred from the imported Clyde stallion which they own. Five foals have come to hand this season with no mishaps.

One of the farms owned by the Messrs. Gunn, beautifully situated near the margin of the lake, and bearing the rhythmical name, "Dunrobin," is one of the finest farms in the neighborhood. The cosy untenanted dwelling, with a neat, bachelor-kept yard, is patiently awaiting the arrival of the beautiful bird to be caged some day.

The farm is at present tenanted by Mr. R. Buckler, who, though on a leased farm, is, with his two stalwart sons, making money even in these days of a fettered agriculture, by keeping stock. His grade Shorthorns are very fine and are being nicely evened up by the sensible use of a pure Shorthorn bull, a son of McDuff, formerly owned by Mr. J. Campbell, of Woodville, and now heading the herd of Mr. John I. Hobson, Mosboro. Here we saw yearling heifers of which some had been fed by hand on skim milk, and some suckled. The latter were no better than the former. Of course they had been generously dealt with, but even so, it is much cheaper to raise calves on skim milk and a supplement than on new milk. This method of calf-rearing is soon to become a burning question. Mr. Buckler has also a fine flock of pure Cotswold sheep.

Sunderland is in a good country. The valleys are rich and the hills are not poor. A good many bank barns, some of them very large, have been erected, and there has been a good deal of improvement in stock of late through the use of better sires; but here, as everywhere, there is still room for great improvement.

Mr. Wm. Sheir, of Clear Spring Farm, Sunder-

land, from which he is 2½ miles west, living in a valley protected from the cold north winds, owns 200 acres, and probably the largest herd of Shorthorns in the township of Brock. It is appropriately named Clear Spring Farm. His father, James Sheir, located here 56 years ago.

The foundation of this herd was laid in 1876, when at a sale held by Mr. John Bell, of Atha, the cow Mattie and a heifer were bought, of the Lady Jane (Syme) family, then a cow Maiden, from Joseph Moffat, Saintfield; and in 1877 the 3d Lady of Atha, from Wm. Miller of that place, for which \$450 were paid. The same year Primrose, a one-year of the Lady Elizabeth family, was also bought from Mr. Miller. All these proved prolific and useful, but it may be said they have no descendants in the herd at the present time.

Virtually a new foundation was laid in 1883, when Minnie, calved December, 1875, a Crimson Flower, by Royal Dereham 24715, was bought from William Major & Son, of Whitevale. The same year Crimson Flower, of Greenwood 2d, a red, bred 1877, by imported K. C. B. (34480), dam old imported Crimson Flower by Reformer (24928), was bought from A. Johnson, Greenwood; also two twin heifers, Stamford 12th and 13th, from the dam Stamford 9th, and sire imported Louis Arundel. The former cost \$450 and the two latter \$200 each. Eleven representatives of the Crimson Flowers and seven Stamfords are now in the herd.

As to bulls, Statesman 2d, a Campbell bull, bred by James I. Davidson, a second prize-winner at the last Toronto Provincial, was bought in 1876, and retained for three years. Pride of Ontario, bred at Whitevale, followed in 1880, and next year 2d Duke of Pickering, from the same, followed by Royal Diadem, half brother to the famous 3d Rose of Strathallan. This bull came of course from the herd of John Miller & Son, Brougham, and remained in the herd of Mr. Sheir three years. His successor was imp. Red Knight (53512), bought in 1885, bred at Kinellar of the Clementina family, and sired by Vermont (47193). The major portion of the young stock are from this sire, a son of his named Crimson Knight, two years old, heads the herd.

As brought out in a reference to this herd in the March number of the JOURNAL for 1887, p. 433, during the first ten years of its existence \$3,290 were invested in founding and replenishing it, and during the same period 31 animals had been sold for \$4,207, with 18 animals left for further increase.

Mr. Sheir has shared in the too common experience of stockmen, that of having to sell largely to parties at a distance, although much good has been done in the neighborhood through the medium of his excellent sires.

The township of Brock is picturesque, with much variation of soil. Uxbridge is fresh as the lovely rain that fell there on the 25th June. The senior Mr. Gould, not here now, has done much for the place, as also his family, of which the elder son, Mr. I. J. Gould, represents North Ontario in the Legislature, and Uxbridge has also done much for them. Mr. Gould along with Mr. Allen, the president, has taken much interest in the prosperity of the Institute in this riding.

The Mechanics' Institute building in this town, beautifully furnished with well read books, is the gift of the late Mr. Joseph Gould, a beautiful cope-stone with which to round off a well-spent life.

A start at 4 a. m. overland to Myrtle, gave one an admirable view of the fine country by way of Utica and Manchester, two little typical Canadian villages.

Milton, after the rain, was fresh as the air of the morning, and the big barns, with their stone basements, in the neighborhood, will be all the better stored in consequence. Here, as at Uxbridge, meetings of the Farmers' Institutes, with the usual quota of discussions, were the order of the day. Mr. A. Waldie, the president, is working hard to arouse the farmers.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

The Clydesdale Horse in Canada.

BY D. McCRAE, GUELPH, ONT.

(Ninth paper.)

WELLINGTON COUNTY CLYDES—(continued).

Messrs. J. & R. Hunter, of Sunnyside, Alma P.O., have for nearly a quarter of a century been breeding to Clyde horses their Canadian-bred mares. The brothers are well known as celebrated breeders of Shorthorn cattle. For many years they have taken prizes among the "red, white and roan," but it is only of late years that they have given their attention to pure-bred Clydes. In 1871, when Mr. Young, of Erin, went over for Wellington [289], Mr. James Hunter was a fellow passenger with him, on his way for Shorthorns. They were together some time in Scotland, and Mr. Hunter took an interest in the purchase and arranged that Mr. Young should let Wellington travel his section. In 1881 Mr. Jas. Hunter was again in Scotland, and this time purchased and imported a young stallion and mare. The stallion was Gambetta [43], foaled 20th June, 1880, a bright bay with white stripe on face and white hind feet. He has proved a good, useful horse, and a getter of good stock, several of which have already won a place in good company. He was sired by Brilliant (1598), bred by the late Lawrence Drew, of Merriton. In 1879 this horse was first at the Highland Society show at Perth, second at Glasgow, and was awarded £100 premium for Lesmahagow. In 1880 he gained another £100 for Dumfries district. He was one of the many good sons of Prince of Wales (673). Gambetta's dam Maggie (671) was a winner of several prizes at local shows. At Carmichael she was placed first as a 3-year-old and also first as a brood mare, while as a yearling and 2-year-old she got second place. She is said to be a mare of good size, fair quality and a good mover. The filly Mr. Hunter brought was Queen [8], bred by Chas. Constable, Ballegermie, Perthshire, Scotland; sire Dainty Davie (214), a thick, blocky horse with good legs and feet. He three times won a place in the prize lists of the Highland Society. Dam Sall, bred by Sir William Stirling Maxwell, of Keir, who had at one time the best Clyde stock in Scotland. Queen is now 8 years old, and has brought Mr. Hunter five foals. Her foal in 1883 was Lord Clyde [81], by Gambetta. This colt won first at the Eastern State Fair in Maine last fall. Her next, Douglas [82], when 8 months old, was sold to a buyer from Minnesota for \$1000. Queen 2d was placed second at Guelph Provincial in 1886, and Lady Douglas was first at Waterloo last fall. We hope to see the Clydes of Sunnyside take a leading part in days to come among the heavy draughts of America.

Mr. Andrew Bell, of Drayton, has the Duke of Leamington, a good Clyde, but unfortunately his pedigree has not been entered in the Canadian Stud Book, and I am unable to give details of it.

Messrs. A. & J. Currie, Ospringe, have Lyon Chief [324], a bay with white face and white on feet; sire Fitz Lyon (1656), dam Darling (3877), by Marquis (517); bred by P. McEwen, Auchterarder; imported in 1886, and a very promising animal.

In 1883 Mr. Thos. McCrae, of Guelph, brought out from Scotland one of the largest and best lots of Clyde mares that had come to Canada. There were six mares and one yearling stallion, Blue Bonnet [19], bred by Thomas Biggar & Sons, Dalbeattie. He is a bright bay with white star on face and white hind feet. His sire was Corswall (1420), who won in 1883 the Highland Society premium for the best Clydesdale at their show in Inverness. He was 2nd at the Glasgow Show in 1882, being beaten by McGregor (1487), and was first at Stirling Highland Society Show in 1881. Corswall was by Prince of Kelvin (656), by Prince of Wales (673). Blue Bonnet's dam Kathleen (1008), by Farmer (288), is a very good mare. She traces back to Broomfield Champion (95) and Glancer (335). Blue Bonnet was travelled only one season at Guelph, when he was purchased by Mr. N. Parker, of Simcoe, and exported to the United States. He was an excellent breeder and left good stock. Of the mares, Princess of Kelvin [13] is one of the best, foaled 1878; bred by James Brown, Dalbeattie; sire Prince of Kelvin (656), by Prince of Wales (673), dam by Bootle Laddie (1077). She is a bright bay with white face and two white legs. Has splendid hindquarters, good flat bone and plenty of silky hair; deficient in neck, which is thin and detracts from her other excellent points. Her daughter Princess Victoria [192], foaled 24th May, 1884, has more white than her dam, is a fine big mare, and will be heavier than her dam. She is sired by Macgregor (1487), a noted prize winner and one that has been brought by his owner, A. Montgomery, Esq., of Nether Hall, to the front rank of Clyde sires. Modesty [12], foaled 1880, is a very fine, stylish mare, thick, chunky and compact; a good mover at all paces. She is deficient in hair, being too bare on the legs to suit the modern taste, but is a good type of a draught mare. Both these mares have won several premiums, both at local and Provincial shows. An animal of a different type—smaller, low-set, very chunky—is Glenkens Princess [7], foaled 1882; bred by Captain R. De Barre Cunningham, of Hensol, New Galloway; sire Sir Michael (1530), by Darnley (222). Darnley died last year at seventeen. He was one of the best of Clyde sires. The most celebrated of the Keir stock, for several years past he was leased for \$4000 per season. The dam of Glenkens Princess was Esmeralda (730), by Prince of Renfrew (664), one of the best animals in the Hensol stables. The other mares in the shipment were Brown Bess [11], a big, lengthy animal, sire Strathclyde (1538), dam Nell, by Gladstone (333), tracing back to Jean, by Lofty (456), the dam of Lochfergus Champion (449); Nelly Bly [6], bred by Mr. Ewart, Culmain; sire Lothian Chief (503), dam Sally of Culmain (2194), by Lofty (460), and Heather Bell [10], bred by Mr. Jas. McQueen, of Crofts, Dalbeattie; sire Young Pride of Scotland (1368), dam Nanny of Crofts (850), by Farmer (288).

(To be Continued.)

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Carp Culture—An Important Industry.

BY D. NICOL, CATARQUI.

(First Paper.)

It is now about eight years since the German carp was introduced to the United States. The rapid advance the industry has made seems almost incredible. The accounts given by experimentalists are looked upon by some as being "too good to be true," or as perhaps only "fish stories." Nevertheless, after eight years' trial and criticism, carp culture is progressing wonderfully, and bids fair to become a very important industry.

In the state of Ohio there are now about 3,000

ponds in which carp are exclusively raised; and in almost every State in the Union they are now being raised to some considerable extent.

I have heard that some experiments have been made with them in Canada; but at present I do not know of any other than that which I am conducting. Two years ago last April I imported from the State of New Jersey 100 carp fry, which I deposited in a small pond here; and the satisfactory success, so far, which has resulted from my experiment, leads me to believe that the carp can be profitably cultivated in Ontario by any one who can conveniently provide the necessary conditions, which are so simple that almost any person having low land and running water on his estate may have a carp pond of several acres that will yield more value in fish per acre than it possibly could be made to do by the cultivation of any vegetable crop. Besides this, there is the satisfaction and comfort of having continually on hand an abundant supply of fresh food fish, of good quality, which otherwise is only enjoyed by dwellers near the shores of lakes, rivers and seas. On many farms throughout the Dominion there are low, swampy spots, hardly cultivable, at best producing only a very inferior quality of grass, which could, at comparatively little expense, be made into fish ponds, which would, if properly managed, yield much more satisfactory returns. In forming ponds in swampy spots the muck taken therefrom, after being exposed to the weather for a season, makes an excellent top-dressing for highland meadows, and generally speaking pays well for the labor of transfer, independent of the value of the ponds formed.

I have learned from experience that for the renovation of worn-out land, swamp muck, when it can be conveniently obtained, is the cheapest and best substitute for barnyard manure, of which on most farms there is but scant supply; and for making a bed on which to pile rich manure, there is nothing better. Thus, a pond may be formed which can be profitably utilized by the cultivation of fish, and which cost absolutely less than nothing. Herein is economy of the highest degree.

A prejudice against the carp fish arises from the idea that no really good fish can be grown in warm waters, over a bottom rich in vegetable accumulations, which are the native haunts of the carp. It is quite true that in ponds of stagnant, impure water, the fish may be expected to be found tainted with the water. They are readily affected by their surroundings, and by the food they obtain. It is quite certain that with all kinds of fish the clearer and purer the water in which they are grown, and the more wholesome the food they eat, the better will be the quality of the fish produced.

The carp, when in small ponds, become so tame as to eat out of one's hand. They are said to be the hogs among fish—the more and better the food they are fed, the better and fatter they grow. There are three varieties of this kind of carp, viz., the "full-scaled," "the mirror," which has three rows of scales on each side, and the "leather," which is entirely without scales. The "full-scaled" is a very beautiful fish, which seems to be generally preferred for cultivation.

The carp lives to a great age, perhaps from 60 to 75 years, and attain a large size. I have seen them in ponds in their native country over 20 pounds weight, but I believe 30 pounds is not uncommon. As they become aged their growth is slower. The second year of their growth, under favorable conditions, the increase in weight is from 1½ to 2 lbs.; the third year from 1 to 1½ lbs.; fourth year, 1 lb., and so on, just accordingly as they are supplied with food. The quality of the fish, so far as I have been able to

judge by what I have partaken of, is about equal to the black bass or the pickerel (dore); but some may assert that they are superior to either. Doubtless, however, very much depends on the age of the fish, how it was fed, and on the manner of cooking, which subject will be discussed in another article, but my next will be on the construction of ponds; after that we will consider his enemies, etc.

(To be continued).

For the CANADIAN LIVE-STOCK AND FARM JOURNAL.

Diseases of Sheep.

BY A. W. JACKSON, WOODSIDE FARM, ABINGDON, ONTARIO.

(Continued from July.)

Epizootic apthæ rarely alone kills animals; death usually results from a combination of causes, other organs being attacked. In those subjects that succumb from epizootic apthæ, the immediate cause of death is nervous prostration, consequent upon the inability to take food and nourishment, and loss of absorbent, as well as assimilation. This disease imperatively calls for alleviative treatment—mitigation of suffering, as the disease will usually run a definite course and terminate in recovery.

When suppuration occurs, with separation of the sensitive and insensitive parts, the detached portions should be removed and the parts dressed with mild astringent and antiseptic dressings. Maturation of abscesses should be promoted by hot water, poultices, etc., and all suppurating surfaces kept clean.

When the mouth is involved all that the animal requires is a plentiful supply of cold water, to which may be added the nitrate or chlorate of potassium.

Where extreme prostration exists, with inability to stand from weakness as well as lameness, the animals should be more actively treated. The feet should be vigilantly attended to and stimulants administered internally. In all cases the food should be easy of digestion, and constipation and overloading of the stomach must be avoided.

Of all the diseases to which sheep are liable, there is none regarding the nature and causes of which so much diversity of opinion exists as that troublesome and vexatious one to which the term foot rot (pasonychia ovium) is applied. When so much diversity of opinion exists between so many prominent writers concerning the true character of this disease, it seems evident to me that few searching investigations and profitable advances have been made regarding it. While many experiments made to prove its contagiousness are not very satisfactory, many others are sufficiently conclusive to place beyond a doubt the existence of a virulent element in the disease, and that to this it largely owes its extension. This should be quite sufficient to convince the most biased mind of its direct, decided and uniform contagiousness. But let it not be understood that this disease appears only in the contagious form, for it as surely occurs as a sporadic affection, due to local exciting causes.

As this disease has been subjected to pretty thorough exposition in a previous paper I will pass over it, only noticing a few differential symptoms between it and the disease last considered—foot and mouth disease.

Foot-rot commences either upon the solar aspect of the foot, or in the inter-digital tissues, and by diffusion of the inflammation and burrowing of the pus, extends along the inner surface of the digits downwards to the sole, and sometimes upwards through the coronary structures, forming sinuses and ulcers above the hoof occasionally, but very rarely involving the tendons and bones, and causing sloughing of the whole foot, there being at all times a strong tendency to the growth of fungus from every exposed part of the foot. In foot and mouth disease the local symptoms are first manifested by redness of the skin surrounding the coronet, which commences very often as a mere spot above the inter-digital space, then extending around the coronet, and is succeeded by an eruption of vesicles. The eruptive stage does not continue long; the blisters burst, dry up and form a layer of scabs, which finally fall off and desiccate—the consecutive changes being redness, vesication, scab and desiccation.

In the worst forms of foot-rot, though the horn is detached from the sensitive foot, it still remains attached to its upper border. In foot and mouth dis-

ease the separation always commences at the coronary junction. In fact, no two diseases can be more distinct from each other in local manifestations; but independently of the evidence afforded by the diseased parts, there is in epizootic apthæ clear evidence of febrile action.

In addition to the fever expressed by increased temperature, acceleration of the respiratory movements, and loss of appetite, which precedes and accompanies the earliest local manifestations of foot and mouth disease, another important difference is the lameness of foot rot, which commonly commences in one or two of the feet, whereas in foot and mouth disease all the feet are simultaneously affected.

Though I have already gone far beyond the point where I can expect to be met with appreciation, there are yet many diseases (the pathology and nature of which are very interesting) that I would like to bring before you, but after briefly noticing one more ill of the ovine race, will not further intrude upon your precious time.

Throughout the lengthened category of the ailments of animal life there is probably no form of disease more interesting to the pathologist and sheep-breeder than the affection known as "louping-ill," or "hydro-vachitis (chorea paralytica ovis)—to the first in a scientific as well as utilitarian point of view, and to the second as a pecuniary question, and one of successful stock management.

The symptoms of this disease are confined to the nervous system, manifest by irregular movements, weakness, convulsions and paralysis, which affects one side more than the other—the hind limbs being twisted and dragged about as much as the animal is able in search of food.

Though the causes of this disease are ascribed to a variety of external circumstances, as soil, pasture, geological formation, attitude, weather, influence of ticks, etc.—in these alone we cannot find the true pathology of the affection, and must therefore look upon them only as modifying influences.

Wherein, then, lies the true source of the disease? To answer this we must glance at the part ticks play in the game. That these parasites (ixodæ) are closely allied to louping-ill is believed by the majority acquainted with the disease, but that they produce the disease by the irritation they set up and the loss of blood they occasion, is an error, though popular, for in many instances but few of the parasites are found on diseased sheep, whilst many healthy ones are swarming with them.

Being satisfied that grasses, micro-fungi, ergot, geological formation and weather, were insufficient to cause the disease, and that the parasites has a close connection with it (but failing to see that they cause disease and death by irritation and loss of blood), Prof. Williams and others, acting under the auspices of the Highland and Agricultural Society of Scotland, made investigations to discover if any organism existed in sheep dead from louping-ill, and if so, to trace its source of origin.

By the cultivation of a jelly-like formation (mycelia) found within the spinal canal of diseased sheep (which examined microscopically was found to contain an organism, the bacillum choreæ ovis), and ovids from the bodies of ticks, they were able to reproduce the mycelium and vacilli.

The microscopic appearance of the jelly-like substance found in the spinal canal and the development of the same mycelium, and spores, with motile vacilli from the blood, etc., although not yet clearing up the life history of these organisms, show that the disease is due to the irritation of the nervous system through the spinal cord, in the fluids of which these organisms seem to find a suitable nidus for complete development.

The previous named investigator ventures a speculation that probably the disease is not directly communicable from one sheep to another, and that the organism has to enter the body of at least one other host—the tick, and that this parasite alone is capable of infecting the higher animals.

It seems probable that the louping-ill organism passes one of its stages of existence as a micro-fungus upon some grass (in which the ixodes abound) before entering the body of the tick, which doubtless is the infecting media.

While the most probable process of inoculation is by the ticks plunging their sucking proboscides deeply into the skin, another may be by the injection of the ticks, particularly if any portion of the mucus membrane of the digestive apparatus be abraded.

The great question arises—What is the remedy for the disease?—and the reply is, destroy the ticks and the disease is prevented, in fact, exterminated. Let it also be borne in mind that exhaustion of soil, micro-fungi on grasses, poverty and louping ill are co-existent.

When we consider the ruinous extent of losses which the "fatherlands" have experienced from these and other similar diseases, the importance of this class of stock, and a thorough knowledge of their diseases, recommends itself not only to the veterinarian, but to the careful consideration of all interested in sheep. Therefore, in conclusion, let me impress upon you the necessity of the profession acquiring a more extended knowledge of the "diseases of sheep," that we may be better able to battle against them, and thus preserve that which this continent can now rejoice in—comparative freedom from disease.

(Concluded.)

For the CANADIAN LIVE-STOCK AND FARM JOURNAL.

The Shire Horse.

(Seventh Paper.)

Waltho's Best [51] (4776), bay, white on hind foot; foaled 1879; bred by J. Waltho, Sudbury, Derby; imported by A. Fanson & Son; sire Champion (453); dam Flower, by William the Conqueror (2344).

Waggoner II (4147), bay, white fore foot, stripe down face; foaled 1883; bred by J. Crowther, Harewood, York; imported by J. Bell, L'Amaroux; sire Waggoner (2508); dam Star, by Masterman (1496).

Wanted the Most [104] (3386), black; foaled 1881; bred by W. Heath, Nantwich, Cheshire; imported by Ormsby & Chapman, Oakville; sire Royal George (1892); dam by Champion (427).

Waxwork [132] (2303), bay; foaled 1867; bred by W. Gant, Worksop, Nott.; imported by Geo. Arkwith, Manchester; sire Waxwork (2298).

Weasenhams Tom [91] (2515), chestnut; foaled 1878; bred by H. Overman, Weasenhams, Norfolk; imported by J. Graham, Claremont, Ont.; sire Honest Tom (Overman's); by Honest Tom (1105); dam Bay Mare, by Norfolk Prince (Stanham's); g. dam Brown, by Brown George (Kett's).

What's Wantend [34], dapple bay; foaled 1875; bred by J. Roberts, Langmuir, Scotland; imported by J. J. Bell, Londesborough, in 1877; sire Bryton [36], by Hercules; dam a Scotch mare by Clydesdale Geordie, by Farmer's Fancy (Erskine's). N. B.—This horse, as can easily be seen, is not a pure Shire.

William the Conqueror [32] 570, dapple bay; foaled 1881; bred by J. Brooks, Derby; imported by McLachlin & Longfield, Crampton, Ont.; sire William the Conqueror (2343); dam by King Charles (1206).

Windley [56] (4802), black, white stripe in face, white hind heels; foaled 1883; bred by R. Fowkes, Windley, Derby; imported by A. Fanson & Son; sire Champion (457); dam Brisk (vol. vii., p. 171 E. S. B.), by Invincible (1149).

Young Waggoner [61], red roan; foaled 1881; bred by J. Clark, Buckinghamshire; imported in 1885 by W. Stevenson, Glamis; sire A1 (6); dam Primrose, by Black Prince, bred by Lord Norice.

MARES.

Alice [33] (vol. viii., p. 143 E. S. B.), brown; foaled 1884; bred by J. Jones, Pool Quay, Welshpool; imported by Morris, Stone & Wellington, Welling; sire Adam (65); dam by Pride of Leighton (3261).

Blyth Girl [23] (vol. iv., p. 90 E. S. B.), brown, two white heels; foaled 1879; bred by H. Little, Peterboro; imported by Hendrie & Douglas, Hamilton; sire Royal Oak (1901); dam by Farmer's Friend (798).

Bonnie Lass [22], bred by — White, Sturton, Nott.; imported by Hendrie & Douglas, Hamilton; sire Abraham Newlands (16); dam Charmer, by Conqueror (539).

Bounce, bay; foaled 1883; imported by W. H. Millman, Woodstock; sire Warboy's Brown Prince (2949).

Buckinghamshire Beauty (vol. vi., p. 209 E. S. B.), bay; foaled 1882; bred by Thos. Curtis, Pitchcote, Aylesbury; imported in 1884 by Green Bros., Innerkip, Ont.; sire Brown George (3505); dam by Waggoner (2235).

Cambridge Lass [12], bred by J. Brown, Cambridge.

shire; imported by J. J. Fisher, Benmiller, Ont.; sire Tom (2156); dam Lucy, by Samson (1970).

Chance (vol. vii., p. 181 E. S. B.), bay; foaled 1883; bred by the executors of G. Wythes, Epping, Essex; imported by R. Row, Avon; sire Pride of the Fens (2476); dam Lady Wonder, by British Wonder (278).

Cloddy (vol. vi., p. 16 E. S. B.), bay; foaled 1883; bred by S. Fyson, Warboys, Hunt.; imported by W. H. Millman, Woodstock, in 1887; sire Warboys Brown Prince (2949); dam Diamond, by England's Wader (761).

Crony (vol. v., p. 81 E. S. B.), bay, black spot on near shoulder; foaled 1881; bred by H. Smith, Cropwell Butler, Nott.; imported by Geary Bros., London; sire Welborn Sweep (2315); dam Violet, by Waxwork (2306).

Depper [27] (vol. iii., p. 81 E. S. B.), bay; foaled 1878; bred by T. Brown, Downham Market, Norfolk; imported by F. Coleman, Hill's Green; sire The Yeoman (2377); dam Darling, by England's Glory (733).

Elsie alias Elsie Morin [34] (vol. vii., p. 214 E. S. B.), brown, star on face, white hind leg; foaled 1884; bred by E. Belton, Thorne, York; imported by Morris, Stone & Wellington, Welland; sire Welton Tom (3395); dam by Red Horse Bay (1349).

Faith [24], bred by F. Street, St. Ives, Hunt.; imported by Hendrie & Douglas; sire Somersham Samson (2496); dam by Samson (1976).

Fanciful [25], bred by F. Street, and imported by Hendrie & Douglas, has the same pedigree as Faith [24].

Georgia, chestnut; foaled 1884; bred by A. S. Gibson, Bullwell, Nott.; imported in 1888 by Green Bros., Innerkip, Ont.; sire Royal George II (2485); dam Glad Tidings (vol. vi., p. 269 E. S. B.), by William the Conqueror (2343). Georgia won third at the London Shire Show in 1888.

Guilty (vol. iv., p. 145 E. S. B.), bay; foaled 1879; bred by H. Smith, Cropwell Butler, Nott.; imported by Geary Bros.; sire Oak Branch (2637); dam Mettle, by Champion (392).

Jolly (vol. v., p. 220 E. S. B.), brown; foaled 1881; bred by S. Fyson, Warboys, Hunt.; imported by W. H. Millman, Woodstock; sire Somersham Samson (2496); dam Lightsome, by Honest Tom (1105).

Lacey (vol. iv., p. 157 E. S. B.), bay, white face, white hind feet; foaled 1881, bred by G. E. Rossall, Stapleford, Nott.; imported in 1884 by Green Bros., Innerkip; sire warrior (2689); dam Mettle, by King Erick (1214).

Lady Evelyn (vol. ix., p. 421 E. S. B.), brown; foaled 1886; bred by S. Fyson, Warboys Hunt.; imported in 1887 by W. H. Millman, Woodstock; sire Chatteris Le Bon (3023); dam Smart, by Somersham Samson (2496).

Lizzie [32] (vol. viii., p. 276 E. S. B.), bay; foaled 1883; bred by T. Brown, Welshpool; imported by Morris, Stone & Wellington, Welland; sire Pride of Leighton (3261); dam Diamond, by Woodman (2372).

Princess [28] (vol. v., p. 262 E. S. B.), bay; foaled 1880; bred by R. Knowles, East Plain, Ark.; imported by F. Coleman, Hill's Green; sire Westwick (2955); dam Loggy, by Miracle (Lord Lonsdale's).

Princess Louise [30], imported in dam by Hendrie & Douglas; sire Lincolnshire Lad II (1365); dam Princess Victoria (vol. iv., p. 181 E. S. B.), by Samson (Golden's).

Princess Victoria [29] (vol. iv., p. 181 E. S. B.), bay, foaled 1887; bred by Rose, Ramsay, Hunt.; imported by Hendrie & Douglas; sire Samson (Golden's); dam by Honest Tom (1105). Princess Victoria won in 1880 3d at the London Shire Show, 3d at the Royal, and other prizes.

Smart (vol. v., p. 274 E. S. B.), brown; foaled 1881; bred by S. Fyson, Warboys, Hunt.; imported by W. H. Millman, Woodstock, in 1887; sire Somersham Samson (2496); dam Flower, by Farmer's Glory (832).

Stretch (vol. ix., p. 521 E. S. B.), bay; foaled 1885; bred by S. Fyson, and imported by W. H. Millman in 1887; sire Esquire (2774); dam Fen Trimmer, by Major (1458).

AGRICOLA.

(Concluded.)

"I like the JOURNAL very much and will make it as long as I can spare a dollar to get it."—E. Monaghan, Melissa, Ont.

Breed Draught Horses from Pedigreed Sires.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—Find enclosed \$1. amount of subscription for JOURNAL to January, 1889. We could hardly do without your valuable paper, and look eagerly for each issue, although living in the far West under the stars and stripes. We find a great deal of valuable information and useful reading contained in each number. What we are most interested in, of course, is the horse department, as we are largely interested in the breeding and raising of heavy draught horses, which industry is destined to become vast in its proportions in this country. The people are beginning to see that it will pay to breed and raise good heavy horses, and we find they are beginning to appreciate the efforts of those parties (ourselves among the rest) who have imported good stallions for breeding purposes. But we require a lot of good brood mares—such mares as are possessed numerously in Canada: good, large, roomy and well graded up, weighing from 1300 to 1500 pounds. We find also that there are quite a number of enquiries for registered mares, and that very soon the grade stallion will have to go west or to some other new country, for the people are asking for pure-bred registered stock, and we find that the interests of the Clydesdale horse have been very materially injured by the importations of poor grades, bred for service and represented as Clydesdales. Of these we have seen some sorry-looking specimens. Of course such horses must tend to bring the bred mare more or less into disrepute.

Now, in regard to horse breeding in Canada, I found in looking over the country for stallions and brood mares, that the people had been very careless about breeding their mares. They have Clydesdales and Shires all mixed, and in lots of cases I found where, after having say two or three crosses from pure-bred sires, they had them bred to some grade horse, thereby losing all they had gained in former years. Just see what a market there is now and has been for the last ten years for good pure-bred sires and dams in this great republic, and had the breeders with you been doing as they should have done—namely, using only pure-bred sires and keeping their stock recorded—how much richer the harvest they might now be reaping, for the value of any breeding animal is at least doubled by its eligibility for registration. Of course, some strains are more valuable than others; the better the pedigree and the more fashionable the strain, the higher the price they will command, and for the next few years there will be a good demand to supply the breeding ranches of this great country. We shall want some good grade brood mares, also some registered mares and stallions about September or October.

In conclusion let me say that my advice to the farmers of Ontario is to stick to the breeding of heavy draught horses, use only the best recorded sires, and get the stock all recorded as soon as possible.

The crop prospect is grand here. Stock are doing well, and we are looking forward to a good trade in horses this fall and winter. Hoping that I have not intruded at too great a length on your valuable space,

DOUBLEDEE & BLACK.

Raymond, Nebraska.

Sheep Washing.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—The question whether sheep should or should not be washed is attracting a good deal of attention in Britain. The discussion was begun by an open letter written by Mr. John Scriven to the Bradford Chamber of Commerce. Mr. Scriven urges strongly the total abolition of the custom, which he considers is bad for the wool, the sheep and the shepherd. He points out that in the trade all wool before being worked is again washed by the manufacturer, and that the yolk of the wool is saved and utilized for useful purposes when he receives the wool unwashed. Opinions on the question seem to be much divided amongst wool-staplers in England—wool dealers we call them here—while the bulk of opinion amongst farmers seems to favor the abolition of the practice. In Australia, the great wool-producing country of the world, the great bulk of the clip is put on the market unwashed; and the proportion seems to be much larger than it was in former years. Some sheep masters there, went to great expense to fit up the very best apparatus for washing quickly and thorough-

ly large droves of sheep. Many of these have been abandoned, and a large proportion of the washed wool from that land is now scoured in the fleece after being clipped. In other large wool producing countries—Buenos Ayres, the Cape, etc., etc.—very little of the clip is washed. In many sections it is all marketed in the grease. The great bulk of the wool clip of the world is shorn unwashed. If left for any length of time unwashed, wool is liable to become yellowish, and, therefore, is unsuitable for white goods, otherwise it keeps much better unwashed than in washed condition. As the proportion of wool worked into white goods is small, this is not a very serious drawback. In Canada there are some objections to the clip being marketed unwashed. There are many small mills in different parts of the country, not fitted with any appliances for properly scouring unwashed wool. It is true that many of these do not use any quantity of fleece wool, depending more on that pulled from sheepskins, but unwashed wool would at present not be used by them. Nearly all the clip of long Canadian wool finds a market in the United States. The duty charged by the American government is higher on unwashed than on washed wool, taking values on a scoured basis. For this reason no unwashed wool can, at present, be sent to the States. It is true that many expect from present appearances, that before long the U. S. will have wool on the free list, but that is in the future, and at present the only outside market open to our unwashed wool is that of England. One of the largest wool firms in Canada have an offer this year for Canada unwashed, from a firm in the worsted district of England. The firms in Canada using Canadian wool and fitted with scouring machinery, can use a very great deal more of unwashed than is at present shorn.

Sheep washing is usually a very disagreeable job to the farmer. Very few have close at hand a suitable creek of running water where the sheep can be quickly and comfortably washed. Where the distance is considerable to the river or pond, the sheep are often over heated. If the water is cold, as it frequently is at the time of year, the sheep, especially ewes in milk, are chilled and injured. Many do not get over the effects for weeks afterwards.

Sheep washing is a very good thing for finding out any weak spots in the flock or in the farmer who does the washing. An English breeder and exhibitor of high class stock says: "For the last fifteen years I have not washed any of my most valuable sheep, in fact I would not run the risk of washing, even if I had to give the wool away. Last year I did not wash any of my ewes, and I certainly did not lose anything by not washing the wool." Many breeders in Canada have arrived at the same conclusion, and never wash any of their sheep. The proceeds for the wool are just about the same for selling in the grease. The price is much less, unwashed being worth from 10c to 15c, according to quality and condition, but the weight is much more and much trouble is avoided.

Guelph, Ont.

D. McCRAE.

Mr. MacNeillage Replies to "Agricola."

CLYDESDALE HORSE SOCIETY
OF GREAT BRITAIN AND IRELAND,
46 GORDON ST., GLASGOW, June 29, 1888.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I have been much interested in your paper since it began to arrive here regularly, and trust you will permit me to offer a few remarks on the letter in your June number, which has just arrived, on the subject of horse-breeding. "Agricola" says, "It is not true that there is any trace of Clydesdale blood in any of the registered Shires in the English Shire Stud Book." And further on he quotes from a letter he has received from one of the editing committee of the E. S. H. S. B., in which he says, "In no case is there a trace of Clydesdale blood in any of the registered Shires in the E. S. H. S. B." It is a pity "Agricola" was not better informed before he made so strong an assertion. If he and the Shire Horse Stud Book editor had said there is no record in the Shire Stud Book of any Clydesdale blood appearing in Shire pedigrees, they would probably have written truth, but as it is, what they have written is untrue. Let me refer your readers to the entry of the mare Princess of Wales on page 126 of the second volume of the stud book of the English Cart Horse Society. They will there find that the dam of Princess of Wales was got by Tom o' the Gills, a horse registered in the Clydesdale stud book, vol. v, and numbered 2480.

Of course there is nothing in the Shire stud book to show that Tom o' the Gills was a Clydesdale, but a suppression of the truth cannot make what is true untrue. Again, in the stud book of the English Cart Horse Society, vol. iii. p. 124, there will be found an entry of a mare named Princess Dagmar, a noted prize-winner, which being a daughter of the mare Princess of Wales already referred to, has also a dash of Clydesdale blood in her veins.

Turning now to volume first of the English Cart Horse stud book, a horse will be found entered named Paragon 1707. This horse's g. g. dam was also got by the Clydesdale horse Tom o' the Gills 2480, and his g. g. d. was by another Clydesdale horse named Glendy.

My knowledge of Shire horse pedigrees is very limited, but I think your readers will now agree that it is rather extensive for "Agricola's" comfort.

Tom o' the Gills 2480 traveled for many years in the Fylde district of Lancashire, where the best Shire horses in England are bred, and it is not a little strange that he was eagerly patronized although advertised as a Clydesdale, and with his Clydesdale pedigree fully detailed.

"Agricola" quotes from a statement of Mr. Dykes in support of his assertion that Old Kate, the grand dam of Prince of Wales 673, was a Shire mare. It is remarkable that Mr. Dykes did not make this assertion until after he had ceased to be secretary of this society, and that in the introduction to the Retrospective volume of the Clydesdale stud book, written by him, there is no mention of any such theory; and yet at the time of writing that history he knew all that was, or I think ever will be, known about the mare. There is no evidence whatever that Old Kate was a Shire mare. Mr. Dykes gives none, and one who knew the mare infinitely better than ever he did, viz., her owner, had told me that nothing was known to him about her pedigree, but judging by her appearance she was a Scotch-bred mare. Her color was grey, and it has been publicly asserted, and not contradicted, that her sire was Blyth 79, in the Clydesdale stud book.

In support of the statement that Maggie *alias* Darling, the other g. dam of Prince of Wales 673, was English, "Agricola" quotes further anonymous assertions. Against these I place the testimony of Mr. Wilson, the manager at Wellshot, who purchased the mare for Mr. Buchanan, and exhibited her at the H. and A. S. shows in 1857, when she gained first prize. Mr. Wilson stated to his son, and asked him to inform me that this mare, whose color was also grey, was purchased by him from Mr. Griffin, the horse-dealer, and was bred in Cumberland and got by Merry Tom 532, the grey horse from Cumberland which on one occasion gained the Glasgow premium. Mr. Wilson's son is, or was, lately in Canada, and is doubtless well known to many of your readers. He can corroborate what I have written, as he volunteered to interview his father for me, and gave me the particulars quoted above. As showing the significance attached by many to the term "English" in regard to horses, to this day Merry Tom is spoken of by the older Clydesdale men as the "English" horse. He certainly was English in respect that he came from Cumberland, but not otherwise.

"Agricola's" final witness is Mr. David Riddell. But the same objection applies to his remarks as to the others. They are mere assertions without any pretence to being supported by evidence; and besides, everyone acquainted with the history of Clydesdale breeding knows how far Mr. Riddell's observations on pedigree are to be regarded as impartial. I was, up to the date of reading "Agricola's" letter, in blissful ignorance of the fact that Mr. Riddell was a noted breeder of Clydesdales. Pray, what has he bred? I was also unaware until reading "Agricola's" letter that Mr. Crowther had a Clydesdale stud. He owned one or two Clydesdale stallions for a time, but his mares I have always understood were Shires, and when the Shire stud book was instituted, he gave up breeding cross-bred horses. Would "Agricola" kindly explain how it is that while there is not such a thing as a stud of Shire horses or mares in Scotland, some of the largest Clydesdale studs in the world are to be found in England, e. g. those of the Marquis of Londonderry, Sir Robert Roder, Bart., and the Earl of Cawdor?

Finally, it admits of easy demonstration, that the Clydesdale of to-day is a heavier horse than the Clydesdale of ten or twelve years ago. But my letter is too long already, so I conclude.

ARCHD. MACNEILAGE, Secretary.

"Pure-breds Brought in the Back Way."

H. K. REPLIES TO X. Y. Z.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I see by a letter in the July number of the JOURNAL that X. Y. Z. says it is "absolutely false" for me to say that he "objects to any one else finding sale" for animals that a breeder has not found a sale for. Now I believe any one who reads his letter in the April number will see not only that he does say so, but that it is the main drift of his letter—to condemn the butcher for selling the animal he had bought from the breeder. The other point he charges "as false" is not quite so conspicuously urged, but still I think it is evidently meant that the action of the butcher tends to lower the price of good stock, which is one reason that he condemns it.

Now, as he has been so ready to charge me with falsehood when I am not guilty, it is perhaps no harm for me to point out some falsehoods in his letter, besides the one already shown. No. 1: He says I prefer to buy "in this roundabout fashion," instead of paying a fair price. As I never attempted such a thing, nor had any intention of it, this is a falsehood.

No. 2: I said that the infliction of needless pain was forbidden and punished by our laws, and expressed an opinion that castration at a time that it "would be no advantage to fattening, but rather a hindrance," would be a case of unnecessary cruelty; but he is quite incorrect in saying that I said this castration is forbidden and punished by our laws, and still more so when he goes on dishonestly to infer that I am condemning all castration, when I so plainly limited my objection to these particular cases.

This is falsehood No. 3: I did not profess to be "superior morally and legally to other people," and I said nothing about myself personally, I did not "sound my trumpet," neither did I "apologize for a dirty trick." I said, "So far as there was any deception in the action of the butcher, it was wrong." If the breeder was being deceived, I have condemned the action; if he was not being deceived, there was no "dirty trick." As he does not put this in the shape of assertions, but only as insinuations, I will not count them in the number of falsehoods, but they are just as mean and untruthful as though they were assertions.

He speaks in his last letter of defects in the animals as the reason for selling them to the butcher. If he had given this as his reason at first, I should not have written as I did; but he gives no hint of this reason—indeed, we may infer from his first letter that this was not the case, for he says that this buyer, "as a result, has as good a stock of high-bred cattle as his neighbors who have purchased males direct at high prices." So (unless this is another falsehood), these animals at least were not sold to the butcher because of their inferiority.

As to his vague accusation that I "wax exceeding hot," I think most of those who read his letter and mine will think he waxes as hot as I do.

As he finishes his letter with some fatherly advice, I may as well finish my reply in the same manner. I would advise him to take more pains to distinguish between a real falsehood and something that appears false to him, because he is "exceeding hot"; and also when he is accusing another of falsehood, to avoid all falsehoods in his accusations.

H. K.

P.S.—The editorial article on the subject in last number I can very nearly agree with. So long as the butchering is only practised because the animals are inferior, I consider the principle a good one, though I think it may be carried too far. If the defect is very slight, so that the animal is superior as a breeder to nine-tenths of the ordinary animals around, I should think it would be well to let it live, but deny it a place in the herd-book.

Treatment of Abortion.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I wish to give your readers my remedy for abortion in cows. In 1884 I had eight cows which all lost their calves, the first in November. I stabled her with the others. The disease proved catching. Some calves came at live months, and on to eight months; some came dead, others lived three or four hours. The first cow starting was the last to stop. She aborted three times in succession. This year she has dropped a fine bull calf. I keep her for a trial

in case I or any one else should be troubled any more. I put that cow in a house by herself, away from the others for four weeks. Where I put the droppings I fenced off the manure pile, so that nothing could have the least taint around the buildings. I feel there will be no danger in future. Two of my cows were registered. I lost in that one season \$500 with the disease. I cleaned the stables good and used carbolic acid freely on the floor and walls, and also lime. I also gave condition powders and repeated them a week after.

I wrote to a reader of this journal in Kansas City, U. S., for a remedy. He wanted \$2 a cow, exchange in gold. Eight cows would have cost \$16. I would not give him 16 cents, for I think it strange if one brother farmer can't help another without trying to make money out of him. If that man had been to college and learned a sure cure, I would say then pay him well. The cows that aborted the second time were not served again for six months. I noticed the after-birth usually did not come away until the ninth day. I am not afraid for the future regarding this disease.

G. GOULD, SR.

Rutherford, Ont.

The Ayrshire Herd-Book Controversy.

MR. M'CORMICK REPLIES TO MR. RODDEN.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—With your July number comes Mr. Rodden's reply to Mr. Wade and myself. Some of his remarks would not appear so badly if they had come from a man of rude speech, but coming from a refined gentleman they are surely out of place.

The old lady referred to in Mr. R's letter gave her statement voluntarily, without dictation. Though after a lapse of nearly forty years her memory might fail her, yet her statement is equally reliable with Mr. R's word.

But Mr. Rodden tries to mislead the public in reference to those pedigrees rejected. Rejecting the pedigree of a cow calved 22 years ago counts into the hundreds now in the offspring.

The parties to whom Mr. Rodden refers as having been wrongly placed on the committee are Messrs. Yuill and Guy. He was a party in their selection. I was not present. The characters of those gentlemen are proof against any attempt on his part to saddle on them mean or dishonest transactions.

That Mr. Wade patched up pedigrees is wholly without foundation. The original pedigrees held by me from the parties of whom I purchased were made out either by Mr. Thompson or Mr. Craig, and those sent in to Mr. Wade to be registered were copied from them. To say that I admit that Mr. Wade patched pedigrees for me is absolutely untrue. All the fault that Mr. Rodden could find with my pedigrees was some mistakes in dates of births. I have his letters, in one of which he writes that the pedigree of my stock bull is wrong, and that he had written to Mr. Irvine for information. Again, he wrote that Mr. Irvine had informed him there were two cows named Kate. I suppose that is the one which he corrected. You will find the pedigree to which he objected on page 36, Sirus No. 601.

As to those resolutions which Mr. Rodden says I do not understand—the one was passed by a committee, 1887, composed of equal numbers from the two associations. Mr. Rodden voted with the minority and appealed to the general meeting, where the vote was twelve to four against him. If either of those votes had gone against the Ontario men, they would have submitted. Some of the Quebec men voted with us and others absented themselves. But I suppose that "Wiquefut" will call those "snatch voter" or "brutal majorities." It was at the meeting when a resolution was passed to hold the next meeting at Kingston, as it was more central. We did not "invite," as stated by "Wiquefut."

When Mr. Drury moved at Kingston to complete the work that he had begun at Ottawa, as before stated, one of the famous five voted with the Ontario men.

I must thank Mr. Rodden for advising me to get some person to read and explain the minutes to me. When I require such assistance, I will try and get an honest man to do it.

Rockton, Ont.

JAMES M'CORMICK.

"I like the JOURNAL very much; it should be in the home of every farmer in Canada."—John Fulton, jr., Brownsville, Ont.

The Provincial Exhibition.

The forty-third Provincial Exhibition will be held at Kingston, September 10th to 15th, 1888. Great preparations are being made by the citizens of the old limestone city to render the exhibition a marked success. They have selected new grounds, much more convenient to the city, and put up the necessary buildings for holding a most extensive show in each of the departments. It will be observed that the Provincial is the first in the list of exhibitions this year, that is, so far as the exhibit of live-stock is concerned, hence there is no obstacle in the way of having a magnificent show of this. The stock can, of course, go from Kingston to Toronto in good time for the Industrial.

It should be borne in mind that entries for live-stock close on Saturday, 25th August, in all the classes. The same rule applies to the entries of grain, field roots and other farm products, machinery for other than agricultural purposes and manufactures generally. Horticultural products may be entered up to Saturday, Sept. 1st.

Reference has already been made to the ample prize list in the last number of the JOURNAL, and also to the special prizes offered.

Kingston is very beautifully situated on Cataract Bay, and within easy reach of the Thousand Islands of the majestic St. Lawrence, a trip which visitors to the exhibition should not fail to make who can afford the time. Any information desired can be obtained by writing to H. Wade, Secretary, Toronto.

The Toronto Industrial Exhibition.

The tenth annual exhibition of the Industrial Exhibition Association of Toronto will be held at the usual place, September 10th to 22d, 1888. This exhibition is decidedly without a peer in the Dominion, if indeed on the American continent. Being held in the city of Toronto—the very heart of the railway system of Canada, it is more easy of access from all parts of the Dominion than any other city. The city itself, with a population of 140,000, and its 170 miles of streets, much of which is paved and boulevarded, and its numerous colleges, churches and other public buildings, is a sufficient object of attraction to well repay the outlay incurred in a visit at the time of the exhibition, when fares are so cheap and facilities for travel so favorable. The exhibition drew no less than 200,000 visitors last year from all parts of the continent, and this year the arrangements are being made on a much more extensive scale than ever before. The list of attractions this year has not fully reached us, but Mr. Hill, the untiring manager and secretary, informs us they will be on a grander scale than at any previous exhibition. Prominent amongst these will be views of the siege of Sebastopol.

But what is more important to farmers, the exhibit of live-stock is likely to be one of the best ever held in Toronto, owing to the increased attention given to the production of horses, the stimulus given of late to the sheep industry by the demand beyond our southern border, and the great concentration of energy in the development of dairying.

To give an idea of the completeness of the prize list we may mention that there are twenty-five classes for horses alone, thirteen for cattle, ten for sheep, five for pigs and ten for poultry. The classes for dairy products and products of the field, garden, orchard, vineyard and greenhouse are equally complete. In the industrial department provision is made for the exhibition of almost every conceivable thing that is useful or ornamental. For thoroughbred, roadster,

carriage horses, Clydesdales, Suffolks and Shire horses, special prizes of \$60 and \$30 will be given for best stallion of any age with five of his progeny of any age or sex. It is a wise idea at exhibitions to offer prizes for males and so many of their get. It is to be hoped that soon at our leading shows this will be done in all the classes.

There is also a special sweepstakes for Clydesdale stallion any age, \$40, presented by the Clydesdale Horse Association of Canada. The American Clydesdale Association offers no less than eleven silver medals. Winners of these will be allowed to compete for gold medals at the next show of the Am. Clydesdale Association to be held in Chicago next November. Be up and doing, Clydesdale breeders, bring some American gold medals to Canada.

The cattle classes are very full, and the prizes good. For the herds consisting of one bull and four females, there are three prizes. In the classes for poultry there are no less than 344 sections, while the agricultural product and fruit list contains page after page, with three and four prizes in many of the sections.

Then there are classes for plants and flowers; for honey and apiary supplies; natural history; agricultural and farm implements; manufactures; fine arts, and children's work; indeed everything that is to be found growing from Canadian soil, or manufactured by Canadian hands and brains. The visitor at this one exhibition sees the whole Dominion in miniature more effectively than he would by years of travel.

But let our live stock breeders remember this: there is to be an International exhibition in Buffalo, Sep. 4th to 14th. It will be a mammoth affair, and we wish it every success. But we don't want our stockmen to go there under the delusive idea that they will be allowed to bring their stock back again without quarantining them. We have written to the Hon. John Carling, Minister of Agriculture for the Dominion, in reference to this matter, and have been honored with the following reply:

"Neat cattle cannot be sent from Canada to the International Exhibition of Buffalo and brought back to Canada without undergoing a quarantine of ninety days at Point Edward. The terms of the order-in-council based on an Act of Parliament, and published in the Canada Gazette, are such as to place it beyond the power of the Minister, or even the Government, to make any relaxation. The withdrawal of the order is also impossible, as it forms part of an agreement with the Veterinary Department of the Imperial Privy Council, and is the condition on which Canada enjoys immunity to ship cattle from the United Kingdom without the disability of being placed on the scheduled list, which implies that the animals would have to be slaughtered on arrival, in the same way as those of the United States."

We would also have them remember that entries for live-stock close Saturday, August 18th, and that it was decided at the annual convention of the Canadian Association of Fairs and Expositions, that no entries be received after the date published in the catalogues of the respective exhibitions. Secretaries, stand to your guns. Don't take in one entry after the date advertised. The doors, too, where live-stock are stabled are, by similar enactment, to be kept open two hours at least in the forenoon, and two in the afternoon of each day.

Give Mr. Hill a chance to get up a good exhibition catalogue, by sending in entries early, and complying with all the requirements of entry with a jealous carefulness. Let horse-owners secure faithful attendants, or failing to do this, chain them near the stable doors, that visitors may get information that may be required, and when animals are brought into the ring this year let them bear their catalogued numbers.

Veterinary.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Horse Breeding.

BY F. C. GREENSIDE, V. S., GUELPH, ONT.

(Continued from July.)

The generally held opinion that the legs and feet are the most important parts of a horse in influencing his usefulness and durability, is, no doubt, in a large measure correct, particularly in an animal required for continual use on the road.

But ask the man who has been unfortunate enough to own a shallow, narrow-chested, flat-sided, long-middled, short-ribbed, loose-coupled and slack-jointed horse, and it will be found that he has very pronounced ideas as to the importance of a well developed middle piece. Nature has willed that there shall exist a pretty regular relationship between the external volume and form of the walls of the chest and abdomen, and the functional power of their contents.

We frequently hear the remark that some particular horse has good wind, which means that he can undergo a considerable amount of violent exertion without becoming suddenly depressed. What is the cause of this sudden depression? It is not because he has exhausted his nervous energy and requires lengthened rest to recuperate, for he may be himself again in a few minutes if allowed to remain quiet, but it is because the blood is laden with an impurity which renders it unsuitable to supply the nervous centres with wholesome nourishment, or in other words, the blood contains a poisonous substance in undue quantity, which interferes with the production of nervous energy. The important function of the lungs is to remove this constantly produced matter (carbonic acid), and to supply a sufficiency of oxygen from the air to keep the blood pure.

The larger the lungs are, other things being equal, the greater their breathing capacity. Capacious lungs insure a sufficient supply of pure air and the elimination of impurities, so that under reasonable exertion the blood maintains its purity and no exhaustion is experienced.

The practised eye can generally determine whether the chest is of proper size and form, in order to give place to large and dilatible lungs, but the tape line is sometimes called into requisition to take the girth or determine the volume or circumference of the chest.

The tape line is apt to mislead, particularly in an animal that carries much flesh, and more dependence can, as a rule, be placed upon the experienced eye to determine whether there is proportionate chest development or not.

Six feet is a good girth for a horse weighing eleven hundred, and in moderate condition. I think an increase of an inch should be expected for every fifty pounds over the eleven hundred.

In horses required for slow work, breadth of chest is desired as well as depth.

One occasionally finds amongst the heavy classes undue narrowness, but shallowness of chest is a much more common defect. A deep chested horse is, in the experience of the writer, always a good winded one, and one that seldom, if ever, suffers from heaves; whereas, round-barrelled, shallow-chested horses are often good feeders and keep fleshy, but appear to be predisposed to broken wind.

In horses intended for fast work, a broad chest is usually considered fatal to high speed, although there are some notable exceptions, the explanation being that the blade bones cannot move as rapidly and free-

ly upon a round, broad barrel, as upon a surface inclined to flatness. The blade bones may have a deep, flat surface to work on, yet, in such a horse, the sides may not be flat.

In some horses the ribs appear to pass down almost straight from the backbone—vertebral column,—while in others they pass out straight or at right angles for some distance, then abruptly turn downwards.

Horses possessing this latter formation are usually good winded, well constituted and muscled animals, although they lack what is called the round barrel. We have in the short ribs—false ribs—pretty reliable indications of a horse's durability and thrift.

What is vulgarly called the herring-gutted horse, is often an excitable, fretful animal, easily worked off his feed, and not till he has attained maturity, and often not then, can he be induced to thrive without careful saving, but is prone to scouring on exertion.

Associated with the short rib we sometimes find the loose coupling, which makes matters worse. Some loose coupled horses, or those with a more than ordinary amount of space between the point of the hip and last rib, are long enough in the ribs and are often good feeders, but are apt to scour when not in good condition, and require a very considerable amount of flesh to make them look well.

Shortness of false rib particularly, and to some extent loose coupling, are pretty reliable signs of poor constitution in the horse, not only insofar as indicating a poor feeder, but, as has been already pointed out, these defects are usually associated with a poor, nervous organization, shown by fretfulness and irritability.

Why this shortness of rib and loose coupling have the influence upon the animal economy of the horse that they undoubtedly appear to have, cannot be definitely explained, unless we accept the usual explanation, that the digestive organs are not well developed. Certainly the ribs in these subjects seem to stop short of that development noticeable in other points, and if the ribs, why not the organs they invest.

How common to see extraordinary development of hind quarters with a very slight middle in front of them, evidencing very clearly, disproportionate development.

It would appear that the digestive organs in these cases are not only small, but weak as well, they are very susceptible to irritability and consequent disease. A large per centage of our heavy draught stallions in this country show this defect to a very marked extent.

A careful observer in standing around a show-ring and taking a broadside view of the horses on exhibition, will readily see that this is a very common defect. The attempt to mask it is frequently made by pampering, so as to induce fleshiness, and this is to some extent successful, particularly in matured horses, but the young animal of this build often refuses to take on flesh, when the defect is very apparent.

Breeders will do well to be on the alert for this very serious shortcoming in a sire, for it is one that is very faithfully handed down to the progeny, and detracts in a large measure from their perfectness and consequent value, either for use or for sale.

There is less excuse for using a sire with this fault than the dam, for there is always a choice of entire animals, but having a mare that is deficient in this respect, one has to either run the risk of perpetuating this fault, or not breed. The latter is the safer alternative, unless the defect can be overcome by the use of a well formed sire.

(To be continued.)

Swelling on Bull.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I have a young bull that is troubled with a swelling or gathering on the inside of hind leg on the hock joint, there is not much inflammation about it, nor is he lame at all with it. There was one in the same place last winter, and after a good deal of poulticing it broke and finally healed up. What can be done to prevent these swellings coming? The animal is in good condition and seems very healthy in every respect except what has been mentioned. I imagined on the first appearance of swelling that he did not feed quite as well. I may say also that he was in very high condition when I purchased him, having been shown at the leading shows in Ontario. I am feeding him now on cut grass and about five or six quarts of meal, oats, bran and shorts, with a little peas and oil cake. He was fed the same in winter, except hay and roots instead of grass. I used to let him out every day in winter for exercise, for an hour or two, at the present time he runs out every night. Any information with reference to it will be gladly received.

Ashdown, Ont.

READER

ANSWER BY F. C. GRENSIDE, V. S., GUELPH, ONT.

It would be advisable to feed considerably less grain under the circumstances. As soon as there is any indication of the return of the swelling, remove the hair over the swollen part and rub in a liberal application of iodine ointment daily, until it either dissipates or gathers.

Laxativeness of Digestion.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I have a four-year-old mare that was raised on cow milk, and ever since she has been loose in her bowels—not diarrhoea—which keeps her thin and miserable looking, and weak as well. I have tried several remedies, but of no avail. If you could give me some remedy through the columns of your valuable JOURNAL, you will greatly oblige.

G. B.

ANSWER BY F. C. GRENSIDE, V. S., GUELPH.

It is quite likely, after the process of teething is completed—when she has attained five years of age—that considerable improvement will be noticeable. No doubt she is constitutionally weak, and her digestive organs particularly so, the result of not receiving her mother's milk.

Careful treatment may, however, be productive of some benefit to her.

She should be fed well on ground oats and good hay, and have constant access to salt.

Drachm doses of sulphate of iron, and half drachm doses of powdered nux vomica, mixed, should be given in oats three times a day for ten days, and after a couple of weeks have expired, may repeat the same treatment for another ten days.

The Farm.

GIVING a field with a rolling surface an even supply of manure is a feat that we have seldom ever witnessed, especially when the manure is drawn freshly from the stables, some of it being coarse and other portions finer. It requires no little judgment and constant watchfulness, simple as the work may appear. A farmer instructs his workhand to lay the manure down evenly over the field. The latter commences at one side and dumps off the piles in rows about equidistant all over the field, and so considers that he has done his whole duty. This he may have done if his instructions have only been in the general way indicated above, but he has by no means succeeded in manuring the field evenly. The hills of that field want more than the hollows, and the piles there must be larger to do as much good as the smaller pile laid down in the lower and richer ground. Again, some heaps contain much more straw and less manure, when they should be made proportionately larger than the heaps in which the manure is more concentrated. These two facts, simple as they are, are very often

neglected by those drawing the manure to the field, but without giving due heed to them, it is impossible to have a field evenly manured.

It is claimed by some farmers who are in a position to speak with authority, that certain soils can be tilled for an indefinite number of years with a positive increase of fertility without the application of either barn-yard manure or artificial fertilizers. The rotation usually practised is wheat and clover alternating. In some instances the clover is cut for seed, and cut high, taking away but little more than the heads. The residue is then ploughed under, well cultivated on the top, and sown to wheat, but no additional clover seed is sown, there being enough of this in the ground after the first year or two. On some soils this method of cultivation may be adopted with advantage. It will succeed best on those which are friable, fairly porous in the subsoil, and rich in lime. Very stiff clay with a retentive subsoil will not give results so satisfactory. In very dry seasons the clover is apt to perish. When the land so cultivated is far away from the barns and the soil otherwise suitable, this rotation may be adopted with much advantage. The straw of each wheat crop may be used as a top dressing for the clover about the time it is starting nicely in the spring, but care must be taken to spread it evenly over the surface.

THE stream of inter-migration at present is all from country to town rather than from town to country. Many, discouraged with the meagre returns from the farm, are trying to part with the same, and looking forward with no little anticipation to that easier life which they expect to lead in the city. Such persons are forgetting that it is never wise to give up a sure thing for one that is uncertain. There is a world of wisdom in the fable of the dog dropping the bone for the shadow. There may be good reasons for some leaving a life in the country for the same in the city, but these do not apply to the average farmer, much less to the one who has reached the meridian of life. In nine cases out of ten the man who leaves the farm for business is doomed to failure. It is not unnatural that it should be so, for the best time to learn any business is early in life. On the farm, with average management, one issues of a living for himself and family. He can usually give them a fair share of education, if not under circumstances so favorable to their intellectual development, these are more favorable to a healthy moral growth. Stick to the farm. It is a good place on which to live, and with its pure air and healthful food should certainly tend to prolong life.

MR. T. B. TERRY, of Summit Co., Ohio, has for a long term of years grown wheat, clover, and potatoes very successfully without keeping much stock. He lived on a small farm of but 35 acres, and was within easy reach of a good market. His subsoil was rich in nitrogen, which very largely accounts for this success. The clover roots found it there and brought it to the surface. Some have supposed that Mr. Terry's success goes to prove that stock-keeping is not absolutely essential to sustain the fertility of soils, even where artificial fertilizers are not produced. But this by no means follows. Mr. Terry's subsoil is poorer by the amount of fertilizing elements extracted from it by the clover, less the nutriment carried down into it by percolation of water from the surface. Mr. Terry might not have made so much money had he kept more stock in the past, but his lands would have been in better condition for the work of the next period of equal length, when in all probability the deficiency

would be more than accounted for. Mr. Terry's money came largely through the carbon and nitrogen arrested in the air by his clover, but more particularly by the quantities of these brought up from the sub-soil through the same agency. An equal amount of each may be extracted from the air in future, but not from the subsoil, hence without stock or the purchase of manures from some source, Mr. Terry's clover must come to an end if not in his day, in that of some successor. Clover without manure is not a safe reliance to maintain fertility for all time, though it is one of the most useful agencies in the world for this purpose.

Prof. Pantan's Weed Plot.

One of the most interesting and useful plots at the Experimental Farm is that in which Professor J. Hoyes Pantan has samples of weeds growing, each with its proper designation. Such a wide collection of vagrants we never saw in one plot before, though as yet a number of the chief offenders are not included.

The sight of these debased characters in the kingdom of Nature lead one to think of an ancient prison cell where all classes of offenders were herded together without regard to the extent or nature of the crime. Sometime it might not be amiss to leave the motley crew to follow out the evil propensities of their respective natures, to see which would triumph in the conflict for the mastery. It would be an interesting conflict.

No farmer in Canada who visits the Experimental Farm in the season should fail to visit this plot, for in it he will find noxious weeds to which he is an entire stranger. To be forewarned is to be fore-armed. Oftentimes weeds steal into our fields as the forest brave advances on a sleeping foe, and there they entrench themselves by sheer force of numbers before the farmer is aware.

The wild oat is a frightful pest; it may get a footing nevertheless, before the husbandman knows what it is. The same may be said of couch-grass, wild flax and many others of those vile offenders, but let him visit Prof. Pantan's garden and he may soon be enabled to identify the uninvited guests when they visit his farm. Those who are not so favored should read the illustrated series of articles from the Professor's pen that have appeared in the successive numbers of the JOURNAL of late, a series not yet concluded.

The Cultivation of Potatoes.

When Mr. T. B. Terry, of Summit Co., Ohio, says anything about potatoes, as he often does in the columns of the *Country Gentleman*, we always feel like listening. Like one of our most noted cheese makers in Canada, whom we heard say once "that his life was virtually spent amongst cheese," Mr. Terry's has been virtually spent amongst potatoes, hence the greater value of his testimony.

He has demonstrated to his own satisfaction this year that harrowing potatoes after they are high enough to distinctly mark the rows is of but little advantage, as compared with cultivating. Prior to that time harrowing is of much advantage both in destroying weeds and in stirring the soil for purposes of aeration. He has also used a sulky cultivator, the "Hudson Bicycle," which enabled him to do quite as effectively in ten hours what took the assistant three days, lacking one hour, with the one horse walking cultivator.

By the aid of machinery Mr. Terry applies his manure, plants his potatoes, keeps the weeds down and digs the crops. If he can do this successfully in Ohio, why cannot our potato growers do it with equal success in Ontario?

He furthermore refers to certain potatoes of 1886, sent him recently from Euclid, Ohio, which were perfectly sound and good, and had not attempted to sprout. These were kept on the cold storage system. He had not tested them at the time of the writing to which we refer, as to whether they would grow or not. It will be wonderful indeed if it turns out that potatoes can in this way be kept from year to year without deterioration.

Excursions to the Experimental Farm.

It was our privilege to attend at an excursion of the Farmers' Institutes of Centre Wellington, West Wellington and South Grey, to the Experimental Farm, on the 28th June. The visitors, comprising farmers, their wives and families, came by train, and spent the day in part in visiting the buildings of the college and farm, in part in examining the farm, and in listening to addresses from Mr. Drury, the Minister of Agriculture, and other gentlemen who spoke there.

A plain, substantial lunch was served to them in the mammoth barn on the premises, the students, many of them, assisting in dispensing it, and several of the professors spending their time ungrudgingly in their effort to make the visitors feel completely at home, and in this we have no doubt but that they completely succeeded.

That these excursions should be made to the farm is a very proper thing. It will enable the farmers to judge for themselves as to the merits of the farming, especially from the best possible premises, viz., personal inspection. In this way they can obtain a day's relaxation combined with information of a very important character. The effect of these visits will be far-reaching. If the character of the farming at the Institution is in every way in advance, as it should be, more than anything else it will incline them to send their sons there; but if not, more than anything else, it will deter them.

The other data from which an estimate of the work is made, are less tangible, viz., the character of the teaching and of the experimental work. The value of these can only be arrived at by slower processes, by the conclusions of observation and investigation extending over a period of years. We believe that nine farmers out of every ten will base their conclusions of the value of the farm as an educational institution, upon the physical condition of the farm itself, hence the immense importance of keeping it as it may be kept, in every way abreast of the times.

One feature of these excursions appears to us of doubtful wisdom, that is, providing free lunch to the visitors and drawing so largely upon the valuable time of the professors in entertaining them. The cost of the lunch is trifling, to be sure, but it is doubtful if any arrangement of providing lunch will equal in utility that of the old-fashioned farmers' lunch-basket, made up in the old home, and shared by a few families in common at the lunch hour. The professors very probably give their time ungrudgingly, but one of their number should suffice for the duties of host for each day, rather than the whole staff.

Farmers have a right to expect of the college that the teaching shall be eminently practical and helpful, that the experiments shall be important and absolutely correct, and that the farm proper in its every feature shall be the best conducted in the land. These conditions fulfilled, the college has a right to expect that the farmers shall furnish pupils, earnest, mentally vigorous, and ambitious to excel. Fulfill these conditions and the Agricultural College will prove the greatest material blessing to Ontario that she pos-

sesses. Its halls will be filled to overflowing with young men who are to lead their fellows in practical farming, and its fame will spread through all civilized countries.

Providing Substitutes for the Short Hay Crop of 1889.

That the hay crop of Ontario is a long way below the average is undoubtedly true, and that in many localities the seeding to grass has completely failed is equally true. This implies that let the season be ever so favorable for grass next year, there will be a shortage in the hay crop of 1889. No time should be lost in devising means to meet this shortage, for steps can be taken before winter that will more effectually lead to this end than any that can be taken after the winter is gone.

The only thing that can be done is to grow some substitute, and the preparations for doing so should be made at once. These preparations should embrace the twofold object of growing a substitute for hay, and that this substitute shall favor the seeding of the ground to grass on which it shall be grown.

The only substitute that can be sown before winter is rye. Where this is done the ground should be prepared at the earliest possible moment. The conditions favorable to the growth of a crop of winter wheat are also favorable to the growth of rye. If sown in August the rye can be pastured this fall, in which case it would not be wise to seed with timothy, but when sown at the ordinary time timothy should be sown with the rye at the rate of from four to six pounds to the acre, according to the richness or the poverty of the soil, as the catch of this is much more certain in autumn. Clover seed, a mixture of the small red alsike and large red is best for average purposes, may be sown in the spring at the rate of from five to eight pounds to the acre. The rye can either be cut for hay or for the grain, as may be thought best. When cut for hay the work may be done either by the mower or binder. In the latter case the sheaves must not be made too large, which will hinder the curing. Many have a strong prejudice to growing rye because of its tendency to grow again where the grain shells in the next crop, but this is no serious objection where the farming is rightly done. The advantages of growing rye at this time are fourfold. It furnishes an excellent opportunity for sowing to grass, and thus recovering the lost area of meadow land, it will provide hay, if necessary, or grain, and will produce straw for the keeper of stock. For an exigency like the present it will be found a very useful crop, and in favorable localities we fail to see why it would not be an improvement to sow a good sprinkling of winter wheat along with it, which would enhance the value of the grain for feeding purposes.

The second supplement to the hay crop of 1889 that we propose, is a mixture of oats and peas, sown thickly, not less than three bushels to the acre, and in about equal quantities; or perhaps what is better, allowing the oats to preponderate. These may be sown on ground that is not very clean, and at the first moment that it will do in the spring. Ground that is not very clean will answer, if good and strong, as the crop grows so thick that it tends to smother weeds, and is cut before they are quite ripe. This crop should be cut in, say, the first stages of ripening, and will then make an excellent substitute for hay, producing an enormous yield under favorable conditions. The land should by all means be ploughed this fall. Indeed, nearly all the land for spring crops should be ploughed in the fall if

we are to expect uniformly good crops. When this crop is reaped the land may be at once turned over for fall wheat, where the locality is suitable for growing this.

The third substitute is millet, which may be sown any time from the middle of May to June 20th. One principal objection to its growth is the liability of the seed to perish from drouth when sown in June. This will always make it a hazardous crop, and it is an objection that does not apply to peas and oats sown early in the spring.

A fourth substitute is fodder, or, as it is sometimes called, ensilage corn, which may be sown in drills with an ordinary grain-drill not less than three feet apart and cultivated carefully, as corn sown for other purposes. The yield on well-manured loose land is enormous, and when cut in the glazed state of the grain makes in itself almost a complete all round ration. Where properly tended it makes the ground as clean as a summer fallow. The crop may be bound in sheaves with rye-straw or cord, and set up in stacks for autumn or winter use; or better still, cut and at once put into a silo where one has been constructed.

It is nothing short of a national calamity in any agricultural country when the catch of grass seed fails over a large area. It disarranges the whole system of farming, and renders a satisfactory rotation of crops impossible. The failure of no single crop is half so far-reaching in its consequences. An unusually large area should be sown to grass next year, indeed, must be sown, to restore the equilibrium. The most favorable grains on which to sow are, of course, rye, wheat, and barley. When the seed is not sown on wheat and rye this fall, a thorough harrowing with Thomas' Smoothing Harrow, or one made on similar principles, when the grass is sown in the spring, will add much to the certainty of a catch.

In some localities the catch of grass has almost completely failed for two years. On our own farm and on the highland in the whole Niagara peninsula such has been the case, so that the area of grass land is seriously curtailed. In the two years, 1887 and 1888, we have the grass seed sown on 120 acres thrown away, but have this year a fine substitute in the form of peas and oats, millet and corn, so that in this article, with the exception of the reference to rye, of which we are sowing a goodly quantity this fall, we know whereof we write from experience, that most reliable of all teachers.

Report of the Judges on the Prize Farms for 1887.

(Continued.)

OAK LODGE.

The Bronze Medal Farm for South Brant.

Leaving Hillcrest about mid-afternoon we drove across the country to Oak Lodge, owned by Mr. J. E. Brethour, whose residence upon it has only been of recent years. Our course led down the winding road into the valley of the Grand River, where lay in the happy stillness of summer the picturesque little town of Paris. Ascending its right bank for some distance we turned our backs upon it with all its romance of beauty, and cut across a beautiful country of lightish soil where every field almost had a border of handsome oaks, which also lined the highways for some distance. Away to the left the smoke of the furnaces of busy Brantford ascended in spiral columns, and north, south, east and west the undulations of the landscape with the borders of spreading oak trees formed a happy picture for the painter.

Oak Lodge contains 107 acres, all cleared and fit for cultivation, a 50 acre timber lot, three-fourths of a mile away, furnishes wood and fencing material. This farm comprises part of lots 2 and 3 in the seventh concession, township of Burford, with a concession road in front lined with promising young maple

shades of Mr. Brethour's planting, and the B. N. and Port Burwell railway skirting the rear. From the building a lane runs first rearward, then transversely, giving the private road the form of a cross, which gives easy access to any field that may not be entered from the concession road. A decided feature of the farm consists in the "borders," by which we mean the lines of trees, probably a rod or more in width, with fences inclosing them some half dozen rods away on either side where the ground remains in sod. Here it is that the herds are fed green fodder drawn to them when the pastures wane in summer, where, after having eaten to the full, they may rest at will in the shade. The idea is an excellent one, which combines in a marked degree that most happy of all combinations, beauty and utility; but the fear has crossed our minds that the tramping of the cattle hoofs may some day affect the vitality of the trees.

Oak Lodge is a stock farm, and the system of husbandry adopted is eminently conducive to this end. Winter wheat is grown mainly with a view to provide bedding, but of so good a quality that it is usually sold for seed. The variety grown this year is the Diehl Mediterranean, an amber wheat with a red chaff and purple stem. It has a broad, chunky head, and on porous soils yields well, but on heavy clay has been known to rust. Barley, hay and oats are grown, not to sell but to feed, and roots and green crops with the same object in view. The amounts of each variety this year were, barley, 20 acres; oats, 6; wheat, 12½; mangolds, 1; turnips, 3½; carrots, ½; corn, 7; potatoes, 3; hay, 22; and 11 of pasture, supplemented somewhat by that in the bush lot, with orchard and garden ample for house use. These are about the usual areas of each kind of crop grown.

We found 5 head of working horses and a colt. Two of these are brood mares. The cattle numbered 27 head, of which 13 head were pure Shorthorns of the thick type, which are so fashionable to-day, and these were headed by the typical two-year-old Cruikshank bull, Prince of Crignanon, bred at Sittytown, Aberdeenshire, Scotland. Two stock bulls are kept, the one just named for the improvement of the Oak Lodge herd, and the herds of those who are anxious to bring their cattle to a high standard as speedily as possible, and the other known as "The dollar bull" for the herds of the easy minded, who are quite satisfied with evidence of a little improvement, and intend to hand down for completion to the next generation the work which they have begun. Mr. Brethour keeps this "dollar" bull on the broad principle of supply and demand. Half a dozen fat cattle are sold every year. Those sold last spring brought 5 cents per pound live weight as shippers, and are always turned off as such under 3 years.

The pure Berkshires numbered about 40 head, although this number often varies much, as is always the case in the breeding of prolific kinds of stock. A ready market has been found for these in places far and near between the oceans. A windmill pumps the water for the stock, and we observed salt and lime in the bottom of the troughs to prevent the accumulation of fungus growth.

It will be observed that the number of head of live-stock kept upon this farm is large for its size. It could not be done without the purchase of much food unless through the soiling system which Mr. Brethour has adopted, for it is all kept in a most thriving condition. We found no less than 9 acres of a soiling crop growing, and the following is the system practised:

Rye is sown in a stubble field in the fall to be pastured or cut early in the season. Then the ground is ploughed and sown to white turnips in drills, or to fodder corn. These are sown at different periods of the month of June. Oats and vetches are sown as early in the spring as the season will permit, and when they are fed off, the ground is sown to white turnips and fodder corn for late feeding. Prior to this, however, fodder corn is sown early in May for feeding when the oats and vetches fail. The order of supply then is rye, pasture, pasture supplemented by (1) oats and vetches; (2) early fodder corn; (3) late sown corn and white turnips. The evergreen corn is a favorite variety for fodder purposes. Had all Ontario practised this system last summer, with its experiences of parched grasses and famished cattle that will always be remembered by the generation of the living, it had been better off to-day by tens of thousands of dollars.

Mr. Brethour's experiences with permanent grasses have not been of that character which will justify their repetition. He found that most of the varieties

of foreign grasses disappeared after the second summer, leaving the timothy and other native grasses in undisputed possession. He thinks highly, however, of certain of them when sown in moderate quantity for hay production in conjunction with the grasses usually sown for that purpose. He says in regard to them, "I do not think that permanent grasses will ever be able to take the place of partial soiling."

In managing the cattle, the pure-bred cows are allowed to suckle their calves, the calves being kept in the stable the first summer. When a month old they are given chopped oats and bran. They get green feed in summer and in winter turnips and cut straw and hay. All the stock are kept in the stable with the windows darkened during the fly season, where green food is drawn to them, and also to the border or field in which they lodge at nights. They are allowed to run to pasture in the spring until the soiling crops are ready to cut. In winter they are fed three times daily on straw and corn stalks cut, and mixed with pulped turnips about twelve hours previous to feeding, with a feed of uncut hay at night. Ground grain, consisting of a mixture of peas and oats with bran, is also fed to the fattening animals and to the milch cows.

The manure made during winter is drawn out fresh from the stables and spread upon the ground to be occupied by the hoed crops the following season. What is made in the spring is drawn from the yard and put in a pile to be applied as top dressing, or ploughed in shallow by gang-plough for wheat. The object being to keep it under the surface, and get as near it as possible, as the subsoil of this rich sandy loam is so porous that it requires no underdraining. When put in piles, these are made shallow and flat and as solid as possible to prevent fire fang.

In the rotation it is the endeavor to have no two cereal crops follow each other, root and green crops alternating. For example, wheat ground is sown to mixed grasses, to be cut one or two seasons for hay. It is then fall ploughed to be sown to oats, which is followed by hoed-crop or some soiling crop. This is followed by barley seeded for hay or for pasture, which is ploughed just after haying time to become ready for wheat. Summer fallowing is not practised save when a field is very foul, the destruction of weeds being mostly accomplished in the working of the hoed crops, and through the smothering from the soiling crops.

It will be gleaned from what we have said that this method of cultivation involves a good deal of labor, which brings up the important question of its profitability. Mr. Brethour informed us in speaking of this point that it was his practice, and had been from the outset, to employ all the labor that gave him an ample return and no more. This is reversing the usual practice, for most farmers rather try to get along with a minimum of this, a less amount than usually suffices to care properly for the farm.

The crops of this farm looked well; they were clean, thrifty and vigorous in spite of the drought. Stake and wire fences were good, and the methods practised by Mr. Brethour we consider exceptionally so, betokening an activity, an intelligence, and an enterprise too seldom found in the farming community. When we consider that Mr. Brethour has been but five years upon this farm, and when we link with this the thorough system which he follows, a system that must soon place those who follow it far ahead of other men, we consider him richly entitled to the bronze medal awarded to him, although he is without a competitor in his own riding. The buildings of this farm are better than the average, but having been erected some time ago, and lacking some of the modern advantages, these barred him from getting a place in the competition with the first three.

(To be continued.)

Sowing Winter Wheat.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

Will you kindly give me through the columns of your valuable JOURNAL, some information about when to sow winter wheat, what kind to use, and any other hints you may think would be of use to growing it, and publish this for a reply from some obliging reader?
A YOUNG DUNHAM FARMER.

Dunham, P. Q.

The best time to sow winter wheat throughout Ontario is from September 1st to September 15th. Possibly in Quebec Province a few days earlier would be better. If the ground is sufficiently moist to insure

sprouting it is better to sow near the 1st of September, but if there is doubt about this, defer till the later date; but when wheat does not start well it is very certain that it will not produce a good crop.

The best all round varieties at the present time are the Clawson and Democrat, although some varieties of the amber are good. Other varieties are good in some sections, but have not proved themselves so generally adapted to gradations of soil and variations of climate as the two varieties named. Almost any kind of rich soil will grow good wheat in Canada where the climate is suitable. It should be plowed as soon as possible after or about time of hay-cutting, but will do some seasons on to time of sowing, and worked frequently on the surface to render it somewhat free and moist. Almost any system of preparation will answer that secures those conditions along with that of cleanliness.

Wheat usually follows peas with good results; clover sod cut for hay, or the clover ploughed in, or indeed any kind of soil turned over not later than midsummer, will answer very well. On stiff soils it is better to only cultivate after pease rather than to plough.

The old style of cultivating winter wheat must cease. It will not pay. It consisted of putting nearly all the manure made on the farm on one field, ploughing it from two to four times, with as many harrows and rollings, and waiting two years to grow one crop.

Will it be wise to risk sowing winter wheat in the Province of Quebec?

Weeds.

BY PROF. J. HOYES PANTON, ONTARIO AGRICULTURAL COLLEGE, GUELPH.

IX.

CLASSIFICATION OF WEEDS ACCORDING TO NATURE AND HABITS.

CONVOLVULACEAE (CONVOLVULUS FAMILY).

This family, consisting mostly of trailing herbs, is represented among weeds by one very pernicious pest.

Convolvulus arvensis (bindweed). This creeping perennial is very troublesome in gardens, and possesses a tenacity of life which seems almost incredible. It is readily known by its flowers, resembling in some respect, those of the morning glory, but smaller. The stem of the plant is about two feet long, and is usually found twining around objects near, such as stems of other plants, or it is simply prostrate. The leaves are somewhat triangular in outline, and arrow shaped at the base. Merely cutting this weed back from time to time seems to increase its vigor and aid in spreading it. Thorough cultivation, by which it is never allowed to develop leaves, and thus exhaust the store of food in its creeping root, will alone destroy it.

SOLANACEAE (NIGHTSHADE FAMILY).

A family of great economic value, embracing both the potato and tomato plants; yet, while these are so valuable, we find in this family some plants that possess poisonous characters which render them more objectionable than those they possess as weeds.

Datura stramonium (thorn apple). The herb and seeds of this are powerful narcotic poisons. The dried root is sometimes smoked as a remedy for asthma. The plant is usually about two feet high, stout, large spread out leaves 5 to 7 inches long, considerably cut. The flower is greenish white, 3 inches long, somewhat funnel shaped; when ripe the capsule containing the seeds is an inch in diameter and covered with prickles. This weed, not uncommon by the wayside in some parts of the Province, is easily got rid of.

Solanum dulcamara (bitter-sweet). Stem 4 to 8 feet long, somewhat shrubby and climbing; violet-purple flowers, succeeded by small red berries, which are poisonous.

S. nigrum (common nightshade). A low-spreading stem, more or less branched; ovate leaves; flowers small, white, drooping; berries black and globular—also poisonous.

ASCLEPIADACEAE (MILKWEED FAMILY).

Asclepias cornata (common milkweed). This striking weed, frequently growing in groups by the wayside, sometimes invades the fields and becomes quite difficult to overcome. The stock stem, 3 to 4 feet high, bears oval leaves 5 to 7 inches long, arranged in pairs; the purplish flowers are in clusters at the axils of the pairs, and from them arise very peculiar-looking pods filled with seeds imbedded in a cotton-like substance. When any part of the plant is cut a thick, milky juice exudes. When well established in a fertile soil, its long, deep, perennial roots are difficult to kill. In such a case continual, thorough cultivation becomes necessary.

CHENOPODIACEAE (GOOSE-FOOT FAMILY).

Chenopodium album (lamb's quarters). This very common weed around old dwellings and neglected places is well known by its leaves, on the under surface, presenting a mealy-like appearance. This annual produces a great many seeds, but seldom proves a nuisance except to the careless.

Blitum capitatum (strawberry blite). Few seem to know this weed by name, though not uncommon. The stem is about a foot long, and the leaves somewhat triangular. When ripe the fruit appears in clusters along the stem something like strawberries, arranged along the axis. However, an examination soon shows very little resemblance to that berry. A reddish juice can be pressed out of the fruit; this has been used by the Indians for paint. It is seldom that complaint is made against this plant.

AMARANTACEAE (AMARANTH FAMILY.)

Some very interesting and attractive plants are found in this order, such as prince's feather, cockscomb, globe amaranth, tressine, etc., but we notice it for its being one large, unsightly, coarse annual.

Amarantus retroflexus (common pigweed). This is the true pigweed, a name sometimes improperly applied to lamb's quarters. This coarse plant grows, 2 to 5 feet high and branches considerably; the greenish flowers are unattractive, appearing in the form of spikes crowded in a stiff panicle or dense clusters. The root presents a reddish appearance. This plant is so coarse that it is readily seen in a field and should be at once pulled. It seldom finds its way where careful farming is carried on, and can readily be put under by a little industry and care. It flourishes in rich spots, and sometimes has such a firm foothold that it tries one's strength to pull it up.

GRAMINEAE (GRASS FAMILY).

Bromus secalinus (chess, chat-grass). A great deal of discussion has taken place regarding the origin of this annual. It usually appears among fall wheat, especially in a season when much of the wheat has been winter killed. On this account, no doubt, the idea that chess is a form of deteriorated wheat arose, and to this day there are many farmers who believe chess is degenerated wheat. Few questions lead up to a more lively discussion than that which deals with the origin of chess. I have not met a person who can grow chess from wheat, but very many that can grow chess from chess; and I have always found that those who sowed wheat containing chess, never failed to get a good crop of it, and that those who were very

careful to sow clean wheat, seldom if ever were troubled with chess. I might here give some of the reasons I have for believing that chess arises from chess.

1. The plant is quite different in appearance from wheat, so much so that botanists put it in another genus (bromus), while wheat belongs to the genus triticum. In this latter we find coucl. grass, which in external appearance comes much nearer wheat than chess does.

2. If chess be sown it yields chess. Even if it were degenerated wheat, and sown under favorable conditions, it should soon return to wheat. This is a principle we see in both animal and plant life, viz., that a degenerated form returns to its proper type, when conditions surrounding it are favorable for growth. Some have at Institutes declared chess would not spring from seed. This is certainly wrong, for I have at the present time growing some very vigorous plants from seed sown this spring.

3. Chess will mature seed under adverse conditions. Though the plant is only two to three inches high, while, if surroundings are favorable, it grows three to four feet high before seed is developed. This may account for its never being seen in good crops, and consequently seeding the ground for a more suitable time. If the crop should be injured by frosts, then this hardy annual (the seeds of which possess great vitality), is ready to take the vacant place and yield a crop no longer hid from the farmer's eye.

4. The consensus of opinion, by all men who make plant life a special study, is that chess is a typical plant and produces seed yearly, which, when sown, results in a plant of the same character—that a seed of wheat cannot be sown so as to produce chess, and chess cannot give rise to wheat.

5. That in cases where wheat and chess plants were so mixed as to seem one plant, on close examination they were shown to be separate plants, and that the apparent union was not a real one.

I know some readers will take exception to these views on this question, but I feel confident that if they examine the subject with care and accuracy, they will find it difficult to adopt a view so antagonistic to the teachings of science, as that which forces one to believe that in less than a year, through the effect of some frost, a plant of one genus can change into another different in structure, form and habit.

The great remedy to get rid of chess is to sow clean wheat. Where this is followed chess is seldom troublesome as a weed.

(To be continued).

The Construction of Outbuildings on the Farm,

WITH A VIEW TO THE COST OF ERECTION, ECONOMY OF SPACE, AND CONVENIENCE FOR FEEDING STOCK. AN ESSAY BY MR. FLOS. SHAW, TO WHICH WAS AWARDED FIRST PRIZE BY THE AGRICULTURAL AND ARTS ASSOCIATION.

To the Council of the Agricultural and Arts Association of Ontario.

GENTLEMEN.—Good farming and good outbuildings are inseparably associated. When we find the first, in one form or another, we are sure to find the second, hence in the outbuildings of a farm we have a pretty sure indication of the character of the farming. But it is not in this, by any means, that their chief value lies, but in their affording suitable shelter for the grain stored within them, and the stock for which they provide an asylum.

The value of suitable outbuildings for the farm cannot easily be over-estimated. In this country, with its rapid summers, there is not sufficient time for the careful stacking practiced in Great Britain, in which case our dark autumns, with their rain and sleet, play havoc with the stacks, and the frosts that congeal the wet parts into a solid mass, and the snows which block

the highway often render their removal to the out-buildings a very unpleasant and unprofitable task.

It matters not how abundant the crop-yield. If no suitable provision has been made for it there will be shortage in the profits just in proportion to the lack of that provision. Nor will it avail that cattle are summered to advantage, if that advantage is not followed by wintering to equal advantage, which cannot be unless proper provision is made for this in the form of suitable outbuildings.

The plan and extent of the outbuildings of a farm should be determined by the nature and extent of the farming. Under-provision in the form of outbuildings is false economy, and over-provision is extravagance. Yet it is unwise always to limit the provision to the present requirements of the farm.

The plan of the outbuildings will be largely determined by the nature of the farming. Where grain-growing is followed to the almost entire exclusion of stock-keeping, large grain barns will be in order, with high pests, as roofing is expensive, and these will have suitable apparatus for elevating the grain to its place. They will want large granary-room, but no provision whatever for straw; but as these are not best adapted to present Ontario conditions, we will not tarry to describe them further. On a fruit farm, in addition to buildings for receiving other products grown, one or more fruit-houses should be erected, oblong in plan and not high in structure, but well ventilated, and provided where such provision has not been made in the other outbuildings with ample cellar room, clean and dry for winter storage. Where stock-keeping is the principal object, and most of the food is purchased, large basement room for cattle would be the prominent idea, to provide shelter for them. The amount of room required overhead in this case need not be very great, but it is otherwise when the food is raised on the farm. For sheep, oblong buildings would be in order, with fodder storage overhead, and with suitable apartments and compartments underneath, and yards attached with feeding racks both inside and outside, for use in calm and storm. For horses, oblong buildings, with stalls for the work-horses and boxes for those kept for breeding, have been found the most suitable. They require a sufficiency of room overhead for one season's hay and bedding. For swine, a building of similar shape is in order, with a passage in the centre, and suitable compartments and yards. In poultry keeping there should be the sleeping compartments, detached or combined with the laying compartments, divisions for laying, hatching, and keeping young chicks, with yards and sheds, the latter for protection when exercising.

In preparing an essay on this subject, several courses are open to the writer. (1) He may draw up a plan from his own imagination of one building, combining in itself the structures (the component parts) necessary to provide all the accommodation required in the outbuildings of a farm, or consisting of individual buildings standing isolated. (2) He may give a plan of the buildings which he himself actually possesses, and a description of them; whether of his own designing or the product of other minds should make but little difference, for the great ultimatum sought by the farmer in his outbuildings is their utility. (3) He may give the plan of a group of buildings which actual trial has demonstrated as useful and convenient, drawn from any source whatever, and (4) he may furnish a drawing and description of buildings, each a model of its kind, best adapted to the keeping of some one of the different kinds of stock, distinct in species, kept in this country, and including a plan of building specially adapted to the keeping of such variety, leaving it to the reader to embody so much of what he may consider best adapted to his own particular wants as he may deem advisable in the re-arrangement of his own buildings, or the erection of new ones.

We avoid the first of these courses on the ground that the utility of the plan has not been proven, in which case objections to it might arise, which neither the designer nor the examiner may be able to detect. Novelty, which does not combine superior utility, is no real advantage. We object to the second and third of these courses on the ground that a plan, however admirable in itself, and however well adapted to the wants of one farm, will only be equally well adapted to the wants of another farm where all the conditions are similar. Where the several parts of a group of buildings are given in conjunction or as parts of one plan, it is more difficult to adopt useful ideas taken from them, than if taken from buildings each a model of its kind and complete in itself in reference to its adaptability to the keeping of one distinct kind of stock.

We adopt the fourth plan because (1) In Ontario each farmer usually gives more prominence to some one class of live-stock than to any of the others in his practice. Indeed, in some instances he is altogether lacking in some departments, and so does not want the room designed for them in a general purpose plan. (2) He is thereby enabled to utilise with less derangement to the plan of his old buildings, what may be of use to him in the plan of the building furnished, as in the plan of a combined group of buildings change may mean serious derangement to the whole plan. (3) He who follows but one line of stock-keeping is furnished with a good model in its entirety, in all probability more complete than the same could be furnished as part of a whole system of buildings. (4) In case of building, the several structures may be kept separate, and so the danger of loss from fire be lessened. (5) The different sorts of stock can be kept from a contiguity that in many instances has proved hurtful, as there is more room for suitable yards in conjunction with buildings that stand separately.

We are aware that this plan of isolating buildings has been but little adopted, and chiefly owing to the fact, (1) that it is more expensive to so construct them, and (2) under past conditions more time is required in feeding the animals. We admit that on small farms it would not be wise to adopt the plan, but on large ones, where, for instance, a workhand, taking care of horses, has no connection with the cattle department and *vice versa*, the additional labor would be that of drawing threshed grain and litter from the main barn to the others, as in the line of fodder they would be self contained. Then the attachments, as yards, etc., could be so arranged that these would be very convenient, to say nothing of the beauty which such an arrangement would furnish when the different buildings were judiciously located.

The open space could be filled with shades, and there need be no yards anywhere save in the rear of the buildings, between these and the farm yard encircling them, nor fences between them and the dwelling, unless as a matter of taste. Minor outbuildings, as smoke-house, ice-house, etc., could be placed somewhere in the shaded area as might be deemed best. Paddocks for the use of the various kinds of animals could in such a case be furnished very conveniently. Access to the farm might be had from the rear of the semi-circular private road and also to the highway, without using the drive to the dwelling.

ESSENTIALS IN THE CONSTRUCTION OF OUTBUILDINGS.

In the erection of outbuildings, whatever be the plan, or the kind of stock for which intended, there are certain essentials common to all of them which it should be the aim of the builders to realize in the greatest possible degree. Other essentials again are requisite only for one class of stock.

Of the former class are: (1) The securing of that degree of comfort adapted to the natural conditions of the stock kept, providing them at the same time with the largest amount of pure air attainable. (2) Making such provisions for the food supplies and those of litter, that they may be kept in the best possible condition, and where at the same time these may be utilized with the expenditure of a minimum amount of labor. (3) The saving of the manure, both the droppings and the liquids, in the best possible condition, and with the least expenditure of labor. (4) The utilizing of the space secured to the utmost advantage, as building is to-day the most expensive item of outlay on the farm. (5) Securing the largest amount of light possible to facilitate the work of attendance, and to promote the perfect development of the stock. (6) Providing pure water in abundance, and accessible to the stock (unless in the case of horses) as often as they may want it, with the least expenditure of labor on the part of the attendant. (7) In having the most perfect correspondence between the wants of the farm present or prospective, and the amount of provision made, and a similar correspondence between the outlay upon the buildings and the revenue of the farm. The nearer the approach to a fulfilment of these general conditions, the more perfectly will the purposes for which outbuildings are erected be realized.

While none of these essentials are unimportant, some of them are of the very first moment, and prominent amongst these we place the provision made for convenient feeding and watering. Leading a horse fifty yards to water three times a day, means the travelling of sixty-two miles in a year. Thirty minutes occupied in untying and tying again a herd of cattle once a day, means that eighteen days of ten hours

each are spent in this way in a year. And where the rounds of feeding three times a day can be shortened each but ten minutes, it implies that a similar amount of time will be saved in a year. Prodigality of time thus spent in working is only something less of an evil than prodigality of time frittered away in idleness.

(To be continued.)

Another of the Brood.

Messrs. C. W. Allen & Co., Toronto, proprietors of that useful article, the Dandy Bag-holder, deserve much credit for exposing the following scheme of villainy, the last in a long line of succession that has been practised on the farmers. The letters explain themselves:

TORONTO, July 21st, 1888.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—You may feel interested to learn that, upon our firm receiving the letter of which the enclosed is a copy, I deemed it my duty to place the matter before the Deputy Attorney-General of Ontario, in order that proper action might be taken by the authorities.

As the result of a very interesting interview with that intelligent and courteous public officer, I learned that, as the law stands at present, it is impossible to convict the perpetrator of such a fraud as was obviously intended by the writer of the letter, of any statutory offense; and I have accepted the good advice tendered me to lay my information at the disposal of the chairman of the committee of the House of Commons that was collecting evidence respecting this class of frauds last session.

Thinking that it was not unlikely you might be glad to add your demand, on behalf of the farmers, for legislation adapted to meet such cases, it occurred to me to forward you a copy of our would-be agent's application, for such use as you may see fit to make of it.

Yours faithfully,

CHAS. WM. ALLEN.

The following is a copy of the letter:

HAMILTON, July 6th, 1888.

To C. W. ALLEN & Co.,
World Building, Toronto.

DEAR SIRS,—I see your ad. in the *Globe* wanting an agent to sell your Dandy Bag-holder. Now, what will you pay me per month straight? You pay all expenses on the road for me to travel through Ontario, selling to dealers say in 12 doz. or 6 doz. lots, as the case might be, at good round figures, in order for them to secure the agency for their township, making this sample order about 25% above regular price, and take their order straight for the sample lots, payable on presentation of said order, but *wrote up in such a way that the most of business men would not catch onto it*, for we would give them a certificate of agency, stating that we would give them a discount of 20 or 25 per cent. off on all goods ordered after sample lot; but we would give them enough the first time, so they would not be likely to want any more for a couple of years. Now, if your goods are cheap to get up, and will sell for a good round figure, why I could write up an order and a certificate of agency that would sell goods, if I can get the kind of goods we want—goods that cost but little to build, and something that the price is not universally known—something new. If you had a bag-holder and truck combined it would be still better, for you could make more money out of it. *I have been selling implements for the last seven years to farmers.*

Now, if you want to put me out on the road in this way, why let me know immediately. I would work only on salary, so if you have nothing that will sell well, so as to afford you to pay me a salary, why then it would not be advisable for me to take hold of the same. So, if you have any great amount of confidence in the selling merits of your bag-holder, why let me hear you speak. My mode of taking orders and working the canvass with all goods—I would go through Ontario and sell township rights, and give them enough to supper (swamp?) the township in their sample lot.

I would write up an order and give them a certificate of agency which would lead them to think that they would not have to pay for the goods until they had sold them, but it would read very plain that

they should pay on presentation of order, so it would be cash as soon as goods were delivered, and it would be no snap contract either—straight business.

Please answer soon, with cut of your machine, also what you can do or want to do. How long have you had it on the market, and how many have you sold? Also the cost, net or list.

Yours truly, (Sgd.) B. K. DALE,
Hamilton, Ont.

Identification of Grass.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—Enclosed please find a few heads of grass for identification. It appears to be some vile grass of some sort. If you can inform me through the columns of the JOURNAL, you will oblige myself and others.

WM. MUIR.

Surawak, Presque Isle, Ont.

[The grass appears to be perennial rye grass, a favorite factor in permanent pastures, but without getting the root and stock—the whole of the plant—it is quite possible to make a mistake as to the variety. Will Mr. Muir send a plant? —ED.]

Handling Manures at the Experimental Farm—a Request for Experimenting with the Same.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—In visiting the Experimental Farm, Guelph, some weeks ago, the farmers from this neighborhood were rather astonished to see the manure stored outside, as it is the practice of the best farmers here to keep manure under cover and well tramped. Perhaps the farmers here may be laboring under a delusion, perhaps not.

I would like through your paper to make a suggestion or request to the authorities at the Guelph Farm, that they test the value of manure kept in the different ways, and report. It may mean millions to the country.

THOS. BATY.

Wilton Grove, Ont., July 18th, 1888.

The Dairy.

WITH some dairymen the practice has been adopted of selling off the cows as soon as dry and buying fresh ones. This may answer well enough for dairymen living in towns, and for a limited number of farmers who may be experts in selecting first-class cows. It will not answer, however, for the average dairyman, who should breed his own cows. By the right use of sires, a judicious system of feeding the young stock, and careful weeding, any dairyman may through time very greatly improve his herd. By a judicious system of feeding we mean that the young stock should be kept pushing steadily ahead from the day of birth, but not loaded with fat at any time. The system of feeding that tends to foster the best dairy qualities is different from that which produces the best stamp of a beef animal. If due attention were given this matter it would be well for the dairy interest. It is exceedingly to be regretted that the Province at the present time sustains 750,000 cows to do the work of 375,000, or half the number. The cost of sustaining life in 375,000 head of cows at \$10 per head per year, is \$3,750,000, a sum that is just as effectively lost to the farmers of Ontario as though it were thrown into the waters of the Atlantic.

For the CANADIAN LIVE-STOCK AND FARM JOURNAL.

Skim-milk and Buttermilk.

THEIR ECONOMIC USES AS STOCK FOODS.

BY JAMES CHEESMAN, TORONTO.

The utilization of farm wastes of all kinds might very properly have headed this article; the desire to treat the special wastes of dairy farms, and these the

most valuable of all feeding stuffs must, for this occasion, suffice. The value of the new manufactures derived from a proper use of bye-products in the leading industries of the world, is counted by hundreds of millions of dollars. The proper use of such important articles as skim-milk and buttermilk has been suggested as a partial remedy to the prevalent practice of raising ill-grown, or poorly-nourished calves and pigs. As there can be no right appreciation of the true value of foods without understanding something of their general composition, and the relative values of nitrogenous and carbo-hydrates, or flesh-forming, and fat or heat-making constituents, neither can we grasp the full meaning of the word food apart from its nutritive ratio, or the relation which the flesh-forming material bears to the fat or heat-producing substances.

This ratio is found by ascertaining how much digestible nitrogenous constituents a food contains in proportion to the digestible starch and fats. The fats are multiplied by $2\frac{1}{2}$; the product is added to the starch, gum and sugar, and the total shows the quantity of carbo-hydrates. These are divided by the quantity of nitrogenous materials. Foods having a high or close nutritive ratio, as skim-milk, buttermilk, pea meal, linseed, cotton-seed meal, and other substances, are called highly nitrogenous, just as barley and corn are called starchy because they represent the other extreme. The necessity of having a close or high nutritive ratio for feeding young stock, and more especially till after it has completed the first year of life, in the case of calves, point to skim-milk and buttermilk as among the cheapest articles when used with flax seed and oatmeal for rearing young stock. There is no lesson in farm life more impressive to a young mind than to see plants and animals growing from day to day under a rational system of feeding. A few years ago the principal cities of the world sustained an infant mortality of about 50 per cent. That is, more than half the children born died under five years, and less than a quarter lived to be one year old. This enormous rate was due to improper feeding and lack of nutrition. We have all noticed the pale, bloodless cheek, flabby muscles, and soft bones of babies fed on corn starch, in which milk formed but a small part of the ration, and the blooming face, firm muscles and hard bone of youngsters brought up on oatmeal and milk. There is but one law of nutrition for men and farm animals, and that is the due proportion and sufficient supply of those food principles which build up bone and muscle at a steady rate of daily increase, and keep the animal in good health.

I have before asked that the female members of the family, especially the girls, interest themselves in growing up the young stock of the farm. The best lesson in calf-feeding is obtained by watching the young calf suck its dam for the first five or six days. Knowing the composition of the milk, it becomes easy to imitate it, when we have removed the butter fat for dairy purposes, by using flaxseed with our skim-milk, after allowing the calf to suck the dam; or still better, to feed it from birth with the aid of one of the best constructed calf-feeders, feeding its own dam's milk for the first ten days. After this a gradual change should be made by using a quarter of a pound of ground flaxseed divided into four feeds a day. This should be boiled and reduced to a jelly, and mixed with five pounds of skim-milk per feed. If the animal has come from its dam in a healthy condition it will probably have a good appetite and a vigorous stomach. If a Sho:thorn grade, its weight may be 60 to 75 lbs., or more. To be on the safe side we

will place it at 70 lbs., and expect a daily increase of $1\frac{1}{2}$ lbs. till it is weaned at ten days old. If we can maintain this rate of growth during the next ten days we shall have a calf of 100 lbs. weight. We will now examine our arithmetic a little closer to learn the possibilities of calf growth. I assume first of all that there is interest enough in this young animal to secure for it sympathetic care from its attendant; that it will have a warm, dry pen, be kept shaded from the scorching sun, and be equally provided against the cold blasts of winter. The daily growth from this point may vary from almost nothing to 3 lbs. or more according to food and care. Let us examine our skim-milk and flaxseed.

CHEMICAL COMPOSITION.

	Skim Milk.	Dry matter per gal.	Flax Seed.	Dry matter 16 oz.
Water	90.00		12.30	
Fat or oil,	.70	1 lb.	37.00	
Caseine or nitrogenous matter,	3.50		20.50	
Sugar,	5.00			14 oz.
Starch, gum, sugar, etc.			55.00	
Crude fibre,			7.20	
Ash,	.80		5.00	
	100.00		100.00	

Our calf needs about $2\frac{1}{2}$ lbs. of dry matter per day to enable it to support itself and grow. If we use twenty pounds of skim milk we shall get two of dry matter, and we can use six ounces of flaxseed meal and two of oatmeal for the balance of our food. In feeding this mixture, let it always be borne in mind that the meals must be thoroughly cooked by boiling, and the skim-milk be heated, and the mixture fed at a temperature of 100° . If the calf is doing well the flaxseed may be increased at the rate of a quarter ounce every day to provide for its daily increase. Let the scales be used often—if every day, well; but if not, at least every ten days, so that the growth may be closely measured, and the food increased accordingly. When the milk falls off a mixture of 3 parts flax seed, 1 part oatmeal and 1 part middlings may be used as a substitute at the rate of $1\frac{1}{4}$ oz. for every pound of milk taken away.

The question of dairy or beef quality is largely determined by the continuous growth of the calf through infancy at a uniform rate. At six weeks old our calf should have increased to 145 to 150 lbs. If it has not already been taught to nibble grass or cut hay, moistened and softened with boiling water, the practice may be commenced now. From this time on, the dry matter of the milk, which is one-tenth, or the meals and cut dry fodder, may equal $2\frac{1}{4}$ to $2\frac{1}{2}$ per cent. of the live weight of the calf. Make every effort to secure skim milk, it only ten pounds per day, for let it always be borne in mind that ten pounds are equal in feeding value to eighteen ounces of flaxseed when used alone, and is worth fully twenty-five per cent. more money when used with flaxseed as suggested. The milk has a nutritive ratio of 1:1.9, while the flaxseed is 1:4.9. As the mean of these two is 1:3.4, it will be seen that ten pounds of skim milk and one-pound of flaxseed made into gruel, with nine pounds of water, gives us the best possible substitute for full, new milk.

The Ontario acre and cow yields have been practically stationary during the last seven years, so far as we can trace them in the public documents. How much of this arrested development is due to irrational or shiftless modes of calf feeding? If it be true that the child is father of the man, how much more true is it that the calf is the parent of the bull or cow? At three months old, if we can still use ten pounds of skim milk per day, we may supplement for flaxseed, oatmeal, and bran instead of middlings, and continue

to gradually reduce the flaxseed with a mixture of oat meal and bran, sprinkled over some nicely cut clover or corn ensilage, roots or grass, making the diet as varied as possible, and maintaining a steady increase right along. If we have grown our calf well from a birth weight of seventy pounds, it should weigh at a year old at least seven hundred pounds. At fourteen to fifteen months old it may be served to calve at two years. From service to two years old, its diet should be a good growing ration, with a ratio of at least 1:5, consisting chiefly of bran and clover. Besides providing for its own growth, it has to forage for the nourishment of the foetus and to develop its dairy character, if it has promise of such; and if not, kill it when it has finished milking at twenty or twenty-one months old.

FEEDING PIGS.

I have said but little about buttermilk, as it has always seemed to me a much better use is made of this article by feeding it to pigs, than to use it for calves, though I see no objection to using it as calf food after the calves are ninety days old, if it be used in mixtures of meal and cut fodder. It is not advisable to use it alone. Its acidity and excess of nitrogen renders it a costly food. It will therefore be treated solely as a pig food, and will show a greater profit when so fed than by any other use that can be made of it. In the last issue of the JOURNAL, "Timothy Hay" asks a very pertinent question as to the feeding value of a pound of peas. This question can only be answered satisfactorily by knowing what else he has to feed with the peas. In compounding a ration with pea meal as the chief ingredient we should need to distribute it evenly through green cut fodders, corn ensilage or roots, to ensure a good return. Its high content of nitrogen and poverty in fat, render it comparatively difficult to digest. Properly used, it is one of the cheapest grains in the market, having a nutritive ratio of 1:2.9. While the nutritive ratio of a mixture is of primary importance in constructing a ration for the pig, or for any animal, it is not the sole consideration. To obtain the greatest amount of feeding efficiency from a given quantity and quality of food, we require to feed several, rather than few substances, each different in its mechanical form and chemical composition. This gives variety, the maximum of flavors, and best promotes the secretion of the digestive ferments, and the activity of the digestive organs. Before proceeding further, let the fact that farm animals which we grow from birth are whatever we wish to make them be strongly emphasised. With reference to pigs and their food, of which buttermilk is to form the main feature of the ration, the reader should here be reminded that the best men in the business to day look forward to finishing off their porkers or baconers at six months old, and to aggregate 160 lbs. to 180 lbs. live weight. There is only one way of doing this, and it need not prevent the pig getting a reasonable amount of exercise during the fattening process. The pig must first of all be regarded with as much respect and kindness as any other animal on the farm. While we may use him as a consumer of bye products of the household, as kitchen wastes; dairy refuse, as buttermilk and whey; these should be fed fresh, and the habit of looking upon the pig to eat up filth from sour swill, stinking buttermilk and whey, and worst of all the undigested droppings of other animals, is an abomination which every man claiming to be civilized should be ashamed of. The pig is the most rapid grower of all the animals on the farm, and on account of this he requires a ration rich in digestible nitrogen fats, and other carbo-hydrates. A cow feeding a calf seldom gives more than an increase of two pounds a day live

weight to her offspring. A sow only one-third the cow's weight, has to nurse from eight to ten pigs and to increase their weight at about four pounds per day, so that she may raise them from one-third the weight of a calf at birth—about twenty-five pounds a litter—to double the weight of a calf at six weeks old, and to a greater weight than herself with her first litter. Such a task as this demands more intelligence and judgment than any other occupation of the farm. The sow's milk is, if she be properly fed, as rich as the best Jersey or Guernsey milk, having as high as 18 per cent. of solids, and from four to five pounds of dry matter per day in it. In fact her daily milk yield, were she a cow, would place her high up in the list of 14 lbs. of butter per week animals. If she is 300 to 350 lbs., she must eat enough to support herself, which will require six pounds of dry matter a day, and more than one pound of dry food for every pound of dry matter in her milk.

This calls for a high nutritive ratio of 1:4.5 to 1:5, which should be made up of at least 20 lbs. of skim-milk per day. It will be safe to calculate about 1/5 dry matter from this article and a nutritive ratio of 1:1.8. The following ration will indicate a fair provision:

Skim-milk, 20; flax-seed meal, 2; bran, 2; peas and oats, 2; cut corn, 2; total, 28.

Repeated experiments have shown that pigs consumed as much as 3 1/2 lbs. of milk per day the first week, and 7 lbs. the second week. The appetites and growth of the pigs will soon show what change in this diet is needed by the sow to provide for increased growth. The whole profit of pig-feeding is in rapid growing. The food should be cooked, and the skim-milk be warmed before feeding. In addition let the sow have 10 to 15 lbs. of corn ensilage or roots, or a mixture of them; if in summer, exercise on pasture.

As our pigs grow, they will begin to help themselves, and at three weeks old, with the ordinary food, it is of importance not to give them acid milk till they are weaned, and have got established for twenty days on their new rations. If the sow is allowed to feed her pigs for seven or eight weeks, this will bring them to ten or eleven weeks before we can feed buttermilk usefully. The best German, English and American experimental work on pig-feeding gives us 1:3.5 to 1:4 to 1:4.5 as the most useful ratio in growing pigs from 50 lbs. to 100 lbs., and from that to 140 lbs. and 180 lbs. With 15 lbs of buttermilk per day we have one and a quarter pounds of dry matter; this mixed with bran, ground oats and peas, in equal proportions and fed at the rate of 1 1/4 lbs. of the mixture to 15 lbs. of the buttermilk will give us from 14oz. to 18oz. of daily increase. Fed in this way the buttermilk would prove to be worth 16c. per 100 lbs. or 2 cents a pound for its dry matter, on a basis of eight per cent. of solids.

The whole success of pig-feeding depends on the care in management, and the time taken to make the marketable pig of 170 lbs. There is no profit beyond this limit, as the cost of food increases so rapidly with each advancing ten pounds of live weight as to render the use of the scales, at least once every thirty days, an imperative necessity. Dr. Goessman's four consecutive years' work in pig-feeding for profit is perhaps the most valuable record of the kind in the world. By examining it carefully we shall see how materially the quantity of food must increase after the first 100 lbs.; and yet pigs marketed under 160 lbs. do not yield so good a price as those between this weight and 170 lbs., which is the extreme limit of profitable feeding for pork.

DAILY FOOD.

Live Weight Period Pounds.	Day's Feed	Skim Milk lbs.	Corn meal ounces.	Gluten Meal. oz.	Bran. oz.	Daily Increase. lbs. oz.
25 1/2	27	11 1/2	10 1/2	15
57 1/2	13	14	13	4	2	1 2
70	49	13	22 1/2	10 1/2	10 1/2	1 9
147	28	13	55 1/2	13 1/2	13 1/2	1 13
204

These four feeding periods simply represent as many proportions in the mixtures, or nutritive ratios, which varied from about 1:3 to 1:4 1/4. The quantity of food was increased gradually according to the appetites of the animals. These rich feeding mixtures were adopted first, because it was believed they would hasten the profitable production of lean pork; and secondly, because the value of the manurial residues would be high, amounting in this case to 2 1/2 c. per pound of the dressed pork; which reduced its net food cost to 3.39 cents per lb. The skim-milk was charged at 20c. per 100 lbs.; the cost of the gluten meal was \$22.50; bran, \$22.50, and corn meal was \$24 per ton. In Ontario we may substitute an increase of 25 per cent. in quantity of buttermilk, ground oats for corn meal, pea meal for gluten meal, and we have almost the same ration. If we desire to increase the proportion of buttermilk in our mixtures and use bran only as being the cheapest material, then we may do it in the following proportions for every increase of 50 lbs. live weight from 30 to 160 lbs.. fed gradually:

Weight, lbs.	Buttermilk, lbs.	Bran, lbs.	Probable daily increase. lbs. oz.
25	12	1	14
50	15	1 1/2	1 2
100	24	2	1 8
150	24 or 30	4 1/2 or 3 1/2	1 10
170			

The larger quantity of buttermilk would be likely to give the best result. If it be desired to make suitable buttermilk and bran mixtures with the ten pound gallon as the basis, then the following scale may be used for each of the four periods; or taking the average time of fattening at 109 to 120 days, then commence with 13 oz. of bran to a gallon, increasing one ounce every twenty days, up to 100 lbs., and after that one ounce every ten days, 14, 15, 16, 17, 18, 19, 20 ounces. This will be fed according to the appetite and digestion of the animals. The finishing stage will consume about 30 lbs. buttermilk, and 4 lbs. of bran daily. If bran can be bought at \$12.50 per ton, the pig should not require feeding more than 100 days to produce 150 lbs. increase from weaning. This will depend on the suckling of the sow, and her food.

Dr. Goessman's pork cost him 3.78c. per lb. live weight from 26 lbs. to 204 lbs., or 178 lbs. increase, at the high prices named, 2.23 lbs. dry matter produced 1 lb. live weight.

In the ration suggested for Canadian farmers, taking buttermilk at 16c. per 100 lbs., and bran at \$12.50 per ton, we should obtain about 150 lbs. of pork per pig, from weaning at 25 lbs.—at \$2.97 per hundred, as follows:

Buttermilk—180 lbs. at 16 c. per 100 lbs.,	\$2.95
Bran..... 240 lbs. at \$12.50 "	1.50
	\$4.46

or equal to one pound of live weight for every 2.38 lbs. of dry matter. Will some of our creamery men try this during the next 100 days, and report results?

"I have taken your JOURNAL from its commencement thinking it would be worth the money, and have not been disappointed. I am still well pleased with it, and wish you every success."—John Abel, Silver Hill, Ont.

"Your JOURNAL is ever a welcome visitor. All that surprises me is to know where you gather such a mountain of useful information without wings. It ought to reach every farmer in your land."—Joseph Moffatt, Paw Paw, Ill.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Ensilage.

BY PROF. JAS. W. ROBERTSON, ONT. AGR. COLLEGE, GUELPH.

I have numerous enquiries regarding the proper construction of silos, and judge the present to be an opportune time to lay before your readers further or fuller information on the subject of ensilage. I have no intention of going into its history for even the past five years. Suffice it to say that failures in the attempt to preserve fodder in a sound, palatable, nutritious condition, in pits or silos, have been frequent annually for the past 2000 years. However, a few years of careful investigation and experimental work, mainly by the practical farmers of the continent within the last decade have brought to light the true principles of the system. When these are followed with good judgment, satisfactory results are almost certain to be realized. Absolutely sweet silage is very rare; but practically sweet, cured or "ripened" silage is easily and certainly obtainable. To aid in the better understanding of how to construct a silo I will first outline very briefly the theory of sweet silage. A silo is a place where fodder is preserved in succulent condition. It may be a pit, a box, a mow, a tank, a building or a trench in the earth. Silage is the term designating the fodder so preserved. Ensilage is the word used to denote the process or system. Ensilage is the verb signifying the act or acts of making silage. Ensilor stands for the person using a silo to ensile fodder for silage by the process of ensilage.

Plants during their growth absorb carbonic acid and give off oxygen. They can do so only by the aid of heat from some external source. The sun furnishes the heat for all plants growing out of doors. A few of the lower organisms, such as moulds and ferments in their growth, reverse the practice, absorb oxygen and give off carbonic acid. That is also the function performed by animals in the process of breathing, by which heat is generated in their bodies. Flowers and fruits while maturing do likewise. The cells of the leaves and stalks of plants, after their separation from the growing root, possess a like power, and continue to live. While living they resist the action of minute fungi or bacteria, which when they become dead prey upon them and so bring about decomposition. The primary reason for the possible preservation of green crops in a silo is that the cells of plants are living when put into it. Spores of fungi and germs of ferments are everywhere disseminated in the air, and consequently a variety of organisms which cause decomposition are always present in the silo when first filled. After receiving their first impulse from contact with the air, these spores and germs can continue their activity even when afterward deprived of it; but they cannot maintain life and activity for any considerable time at a temperature above 125° Fahr. Hence when the contents of a silo are caused or allowed to heat above that temperature for a few days, these germs of fermentation are destroyed. To attain that degree of heat (over 125°) it is necessary that air be present. Then the cells of the plants ensiled begin the action of absorbing oxygen and giving off carbonic acid. Heat is thus produced by what is really a process of slow combustion, and thereby these plant cells are also killed. Should they continue to live after the exclusion of the air, they produce alcohol from the sugar then in the plants. The next state of change from alcohol would be through aldehyde into acetic acid (vinegar). It follows when plants or parts of plants of which the cells are living are put in a silo and self-destroyed by the generation of heat, that, if they are kept from air contact after a temperature of

125° Fahr. has been maintained for some days, the product will be sweet silage. If the temperature does not reach at least 122° Fahr., the product will be sour, and if the air be not excluded the product will be mouldy or putrid.*

The best fodder for the silo is ensilage corn from the South. It often goes by the name of Mammoth Southern Sweet Corn or B. & W. Corn. It grows a large bulk and weight of stalk and leaf, is of certain vitality, is proof against drought when on good soil properly prepared and cultivated, and has a high feeding value per ton. It is held that by planting in rows 3½ feet apart, with two or three grains to the foot, the largest feeding returns per acre will be realized. The rows should run north and south. The planting in drills encourages every stalk to carry an ear. Abundance of air and sunshine increases the nutrition per ton of fodder. Cultivation over the rows with a slant tooth or other light harrow is beneficial until the corn is 5 or 6 inches high. The cultivation between the rows is better for being shallow and frequent. The best time for cutting the crop is just before the ears become firm or at the glazing period. That stage of maturity makes the cells of the plants robust and the stalks nutritious to the butts. The cutting can ordinarily be done with a grain reaper. The stalks should be left in the field to wilt and dry for a day or two. From 65 to 75 per cent. of water in the plants is as much as they should contain for the making of sweet silage. A larger per cent. hinders the heating, and thus tends towards the forming of a sour or putrid product.

A low truck with a plank platform extending over the wheels, and not more than three feet high, will be found serviceable for hauling to the cutting box. Cheap and suitable wheels may be made from six inch sections, sawn off the end of a tough log of proper diameter.

A cutting box set to cut into inch lengths should be used. An elevator, somewhat like the straw carriers of a grain separator, can be attached. If the silo is mainly in the basement of a barn and can be filled from the floor above, the elevator may be dispensed with.

Fodder corn can be well preserved without the use of a cutter. By laying the stalks all one way in layers, and placing the butts of one layer over the tops of that underneath, they will keep as well as by cutting. However, they are not so convenient for handling in the feeding.

The quantity that may be fed per head will vary, as in the case of other fodders, and also according to the stage of growth or maturity at which the corn was cut, the quantity of grain on the stalks, and the degree of drying permitted before ensiling.

The best results are not obtained from the feeding of silage alone. A mixed diet is always preferable. For milking cows, the quantity that may be consumed will range from 25 lbs. to 35 lbs. per head per day. Should the silage be the sole bulky feed in the ration, 50 lbs. to 60 lbs. will be required. It will weigh, after it is compactly settled, between 40 lbs. and 50 lbs. per cubic foot. From 15 to 25 tons per acre can be grown in Ontario.

From these data it will be easy to calculate either the acreage of corn, or the size of a silo required for the feeding of any number of cattle. For instance, for feeding ten milking cows for six months, a good ration would be made up by 3 lbs. of wheat bran; 5 lbs. of mixed grain (chopped peas, oats, barley); 5

lbs. of hay, or straw, at will; 30 lbs. of silage. If straw be of good quality, cut on the green side, the hay may be left off altogether. No roots are needed, as silage takes their place at much less cost. Thus ten cows x 30 lbs. of silage per day, consume 300 lbs. per day; in six months or 181 days x 300 lbs., they consume 54,300 lbs., or 27 tons 300 lbs. That quantity can be grown on less than an acre and a half, and could be packed into a silo 12 ft. x 12 ft., x 12 ft. deep, in which it would settle to a depth of about 8 feet.

If the silo is to be erected as a separate structure, its foundation had better be a stone wall one and a half feet above ground. A clay floor filled in to stand above the outside level, will prevent dampness, and be cheapest and best.

There will be no danger of such a bottom falling out of it. Planks may be bedded on the top of the foundation wall to serve as sills. These should be firmly spiked to pieces built into the masonry for that purpose. A common balloon frame may be erected by using as studs, 16 ft. planks, 2 in. x 10 or 8 in., placed 2½ ft. apart. To secure them safely at the bottom against lateral pressure while the silo is being filled, a good method is to cut heels into the ends of the studs, allowing the inside face of each of a breadth of say 3 in., to extend to a depth of 6 in., or to the clay floor. They should also be toe-nailed. The roof will give additional strength to the sides for resistance to outward pressure, if it is made after the truss pattern. Instead of the ties or joists running straight from the top of the studs, where they would be in the way of the filling, they should run like false rafters from the top of each stud, to the rafter opposite, being spiked to it at about one-third of its length from the ridge. On the inside of the studs should first be nailed a lining of inch lumber running horizontally. A covering of tar paper with the edges lapped should then be tacked on; over that should be put inch lumber, planed on the side to be exposed, and tongued and grooved. The outside of the studs should be covered in a similar way. A single thickness of lumber outside can be made to do, but the double boarding with paper between is preferable, especially for the keeping of the building frost proof as well as air-tight. The door should be of ice-house style. A space between two studs may be left unboarded. As the silo is filled, short boards cut to fit can be nailed in and on, care being taken to so place strips of paper that they will make the joints air-tight. To preserve the inside lumber, it should receive a coating of coal-tar. If mixed with a few ounces of rosin and applied hot and liberally, the inside lining need not be tongued and grooved. Where a part of the barn or some other building is to be fitted up for ensilage uses, the inside finish of the silo should be the same as already described, viz.: two thicknesses of boards with tar paper between them. Any partitions required can be made of two inch planks dropped into grooves made by cleats on both sides, just as boards are held in front of a granary. They should fit close and be either tongued and grooved or dowelled. The cost may be put at \$1 for every ton of capacity, but will vary according to the finish of the building, the quality of lumber used, the price of material, etc. The tar paper can be purchased and put on at an expense of from 2½ to 3c. per square yard. A layer of cut straw or chaff should be spread on the clay floor to a depth of two or three inches. The filling should proceed slowly, not more than four feet in depth should be filled into a compartment in one day. As already explained, it is essential that the air should not be excluded until the required degree of heat has been reached. The contents should not be tramped in, but left heaped in rather a cone shape in the middle. After the lapse of three days the required tempera-

* For some of the foregoing information I am indebted to an excellent little book, "Sweet Ensilage," by Mr. George Fry, F.L.S.

ture will be attained. Then the heart of the heap should be shovelled out against the sides, and well tramped down, leaving the centre hollow; the filling may then proceed as before. A period of three days should elapse after filling four feet of depth into each division. The task of throwing the heated silage from the centre out against the side should be repeated just before the commencement of each filling. The last filling should be left for three days before any covering is put on. It should be levelled and tramped at the sides, as in the case of other layers. A covering of tar paper lapped at the sides of each strip, and with the ends and sides extending for a foot up against the side of the silo may be spread. Two or three feet of coarse grass, hay or straw, spread upon the paper to keep it in place will complete the silo. No weighting nor pressure are required. When opened for feeding the whole surface of one division must be uncovered. The silage will be removed from the top and taken out by way of the door provided. The short boards between two studs may be taken out as the emptying goes on. The side of the silo will be all the stronger if provision for opening a door is made between two studs for only one-half of the depth, and between other two studs for the other half. Where more than one compartment is used, the partition planks may be removed in a similar way. One door (ice-house pattern) in the middle compartment may thus serve for the whole silo.

In conclusion, I would caution readers against expecting too much from the silo. It will not add anything to the value of the material preserved in it; all that can be hoped for its use is that it will enable farmers to reduce very much the cost of the bulky part of their cattle feed. The necessities of our climate, from the frequent droughts making grass and hay very uncertain and expensive crops, urge that ensilage corn be largely and generally grown. It is a sure crop, makes a cheap winter and summer feed, is succulent and easily digested, is a cheap substitute for roots, promotes the animal vigor and health, and is well adapted for the winter production of milk of the very best quality and flavor. The cost of raising the crop will not exceed \$10 per acre, including the price of the seed and the rent of the land. The cost of handling and filling the silo will vary from 25c. to 75c. per ton. Mr. V. E. Fuller, of Oaklands, who is one of the pioneers in ensilage practice in Ontario, estimates the cost in his silos at \$1.60 per ton, after allowing for all expenses, including the value of the manure used. Hon. Hiram Smith, of Wisconsin, a man of superior judgment and wide knowledge, speaking to and for the Progressive Dairymen of his State, says:

"The actual cost of raising and getting a corn crop into a silo is often greatly over estimated. The common dairy farmer usually has all the men, teams and tools required to handle a corn crop for the silo, and the only legitimate charge is the wages of the men who are doing the work. The men on a dairy farm earn their board milking twice a day, and the teams expense is no more or less on account of the silo. What then is the cost of ensilage per acre or for 40 acres? One man and team will plow 40 acres in the fall in 26 working days, wages \$18; two men and two teams will in the spring cultivate and prepare the ground, plant with the horse drill, run the smoothing harrows and cultivators until June 15th, equal to 5 months work at \$18 per month. \$90. To recapitulate:

Plowing 40 acres.....	\$18 00
Plowing and Cultivating.....	90 00
Cutting in the field and ensiling 650 tons.....	288 64
Seed Corn, 50 cents per acre.....	20 00
	\$416 64

This is equal to \$10.41 per acre, or 69½c. per ton. If to this were added use and keep of horses, \$125; interest at 6 per cent, on 40 acres at \$80 per acre, \$192; the use and wear of machinery, \$25; entire cost of production would reach \$758.64, or \$1.15½ per ton. What is the conclusion of the whole matter? Simply this, that three cows can be wintered seven months on one acre producing 16 tons of ensilage, while it required two acres of meadow in the same year, 1887, to winter one cow, with the same amount of ground feed in both cases. It may justly be said that one ton of hay per acre is a light crop, and is often doubled. Sixteen tons of ensilage is not a large crop; 24 tons are often obtained."

A number of hand sketches of plans to supplement this article have been prepared, and will be sent to anyone who has an intention to construct a silo this season. Application may be by letter to the writer, at Ontario Agricultural College, Guelph.

The Ayrshire Herd-Book Controversy.

MR. RODDEN AGAIN REPLIES.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I intended to have sent you many extracts, from minutes of meetings, of reports, and of voluminous correspondence, as evidence of the accuracy of what I have said and have written since the meeting of Ayrshire breeders at Kingston, but I have concluded to retain them for future use, if needed.

I esteem your article in the July number as important and worthy of the serious consideration of owners of Ayrshire cattle. Although, when attacked I may defend myself vigorously in the line of argument I conceive to be universally used as against the cause I labor for, you may rest assured I do not harbor acrimonious ill-will, yet hold fast to the faith that is in me of what seems right.

The very able and logical letter of your correspondent "Wiquefut" is also a conclusive review of the case, and tends to shew that disinterested outsiders saw and understood the object in the way, and the aims of opponents to an honest and fair continuation of the revision arranged for, which, if allowed to proceed, would by this time have given to the public a second volume of our "Canadian Ayrshire Herd Record," that would have been alike creditable and useful to Ayrshire owners.

Discussions and debates are not new to me, in councils, institutions, associations and committees, but I must admit this has been to me a most unpleasant one, and regrettable, particularly as I was forced to admit I could not continue the work in the face of a seeming determination to hinder it.

The amalgamation committee met in Kingston the evening before the meeting of the association. I produced evidence of the wrong in certain pedigrees that were urged upon me for entry; yet it was not heeded; they would not dispose of them. Then is it just to say there was no proof, or that we went to the meeting to disturb arrangements? We went to uphold them by every fair means, and only refused to proceed when a change was made contrary to our conscientious sentiments of what should be.

I will abstain from troubling you with much more now; there are, however, these points of importance to notice: Mr. Wade admits in his letter that he gave the history of amalgamation from their point of view; we, on the contrary, claim that amalgamation should have been governed by the plain meaning of the conditions and not by a personal point of view. ["Their point of view" does not imply a merely individual, personal point of view.—ED.]

The frequent reference to "Quebec book" looks like ignoring the fact of its adaptation to all Canada; it is universally patronized, and is known as the "Canada Ayrshire Herd Record." He omits to mention that I informed him the errors he referred to were clerical and typographical, and were revised. He also fails to say that I told him I had discovered some printers' omissions late to remedy them in that edition, yet he makes an impression which is entirely wrong, and follows it by saying "These mistakes can very likely be corrected," while the fact is, that the certificates held by their owners shew accuracy. Then as to incompleteness in termination, it is supposed every intelligent breeder who has seen some of the best of herd and stud books in their first volumes, and at times in future volumes, the pedigree ends by giving the name of the owner or breeder of the animal, inasmuch as it was not known by name or number; and it is also known to trace up the whole termination of a pedigree; the number indicates the place for finding in the book the ancestors or starting point. Our rule has been followed in every case by pointing out who imported and bred from the animal, and that is learned by seeing or hearing written testimony from reliable disinterested persons. I still claim that in that way every animal in the "Canada Record" traces to an importation. If, after all the pains we have taken, we have in any case been led astray, it is the fault of our informants. We have not in any case entered without evidence supposed to be good.

I have, before closing this letter, to correct another misstatement made concerning our second volume. It is not "largely made up of pedigrees sent in during the amalgamation period, to come to Toronto to be completed." The facts are, that it contains over 1,700 pedigrees. Of these only 498 were entered during that period, including the unpaid entries to make good those from Toronto.

I regret thus occupying your attention, and must now pass over some matters that, if noticed, would en-

croach on valuable space that might perhaps be more usefully occupied. I trust I may not have cause to hereafter thus deal with discussions of this unpleasant kind.

With due consideration for your indulgence,

WM. RODDEN,
Pres. A. B. Asso. of Can.

[With the above the controversy on this subject must close in our columns.—ED.]

Poultry.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

The Essex Poultry Farm, Managed as We Understand It.

BY ARTHUR HARRINGTON, RUTHVEN, ONT.

(Continued from May.)

So far as we have been able to find out, the vital point in successful hatching lies in keeping the stock at a normal condition, and by choosing the most vigorous specimens year after year, "inevitable luck," and of the right kind must follow.

Before leaving this most important branch of the business, we desire to call attention to the statement made in our last communication, to wit: "Abnormal fat, or a well-filled egg-basket are not what are wanted, nor anything that tends to lower the vitality of the fowls," and correct any wrong impressions it may have engendered.

We must remind the reader in the first place, that breeding is, primarily, selection. We know that a great many place blood first, but our experience will not allow us to draw this conclusion. Good breeding without selection, followed to its legitimate end, results in nothing, comparatively; but *individual excellence backed by blood is the true principle of breeding*. Do you catch the point? Do not misunderstand us. We value blood as highly as any person ought, and should much prefer a fair bird of choice blood to one of superior worth, of whose pedigree we knew nothing; but a really poor bird though he be royally descended, we will not use unless actually obliged to.

But what has all this to do with the "question at issue?" Some of it nothing. We got started and could not very well stop. But here is what we desire to get at. We said that a well-filled egg-basket was not wanted from breeding flocks. We meant flocks in general. Fowls whose utilitarian qualities have been sadly overlooked in breeding, and whose normal condition will not fill the egg-basket, but the case is far different where selected, blooded fowls, bred for a specific purpose, are kept. Making their condition as natural as possible will not keep the basket empty; yet they will be in the normal condition we speak of, and the eggs will hatch strong, vigorous chicks. Note the case of "Old Regular," whose unapproachable record would have killed seven-eighths of the hens in the country performing it, yet she was in prime condition all the time and her eggs hatched remarkably vigorous chickens.

HATCHING.

Next in order comes hatching—the most interesting work on a farm, and where artificial means are used, becomes all-absorbing. As the natural method is more or less familiar to most people, we shall attempt to describe our *modus operandi*, which is but little known in Canada. The description of our incubator may not prove uninteresting. We presume there are one hundred different machines manufactured in the States, ranging in price from five to two hundred dollars, and every one is guaranteed the best. Possibly all of them will hatch when the conditions are right.

(To be Continued.)

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Notes and Comments.

BY J. W. BARTLETT, LAMBETH, ONT.

It is generally considered that when times are dull and other branches of farming not remunerative, the poultry business receives more attention, and the sales of stock for the improvement of barnyard fowls are greater than when other things on the farm are booming—if indeed that time ever comes. But such

does not seem to be the case this season, although there has been some demand for eggs for hatching; in fact, a fair demand, yet the inquiries for stock are not up to the mark for this season of the year.

It is pleasing to notice that the Western Fair Board have raised the prizes on poultry considerably, having added upwards of two hundred dollars to the prize list. The Great Central, of Hamilton, has also made liberal additions to this department, and will certainly require to provide more room and better accommodation than last year. By the way, can they not put themselves in a position to let exhibitors know who is to judge their birds before making entries? The statement that competent judges will be employed is poor compensation for the trouble and expense of exhibiting when one sees inferior birds carry off highest honors. This is a point the Hamilton board have neglected of late in the poultry department.

It was expected that the Industrial of Toronto had received sufficient encouragement in the poultry line to induce them to furnish a poultry building in keeping with other buildings on the ground, and also with the exhibit; but, alas for human hopes, it is not to be this year.

It is very unfortunate, indeed, that Mr. B., of Hamilton, should lose part of his chicks in his effort to protect them from lice; but if he had squeezed the sponge as dry as he could, as directed, the chicks would have been all right, and the lice banished. Don't give up in disgust, Mr. B.; the receipt is worth more to you than those chicks you lost.

Your remarks, Mr. Editor, in regard to the standard being the umpire in matters of color, is well-timed indeed. But when the standard disqualifies any color but white or creamy white, and the plumage clause says, "of a faint creamy white," there might be an honest difference of opinion as to the shade. But as I stated in May issue, there is very often too much stress placed on the white.

Plumage of Pekins.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—Mr. Bartlett's last letter in July JOURNAL is very good as far as it goes. But it throws no more light on the subject of color in Pekins. Would Mr. B. tell the readers of the JOURNAL what interpretation he puts on "plumage?" Is it a few feathers in some particular part of the bird, or is it the general color of the bird? I think if Mr. B. will answer this question, the color question in Pekins will be settled for the present.

AN OLD PEKIN FARMER.

Springville, Ont., July 18, 1888.

Standard Disqualifications of Pekin Ducks.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—The disqualifications given in the standard are these: "Birds not matching in the show pen; crooked backs; birds so fat as to be down behind; bills marked with black; plumage any other color than creamy white."

Now, Mr. Bartlett, are not my previous statements correct on the disqualification clause as above, which was the standard for judging Pekins in 1884, from which issue this is quoted, and also appeared in the December issue of the JOURNAL the same year. Mr. Editor, please correct me if my statements are misleading. Again, the best breeders in the States advertise them as "rich creamy white." Let Mr. B. raise twenty, and if he has over one or two pure white birds, it is something I have never yet seen.

Mr. B. asks if I have ever exhibited at large shows where fanciers exhibit. I have exhibited at Guelph, where fanciers, and a large number of them, exhibit; a show open to all comers, with the very strongest competition. As yet I have not been further, but

hope to have the pleasure of meeting Mr. B. at the coming Industrial Fair this fall.

Now, Mr. Editor, what we may expect for next issue is Mr. B. to retract his misstatements. If white or creamy white is the clause at present, it has been changed in the last revised edition; and let us have a remedy for killing lice, not lice and chickens.

W. B. COCKBURN.

Aberfoyle, July 16, 1888.

The Apiary.

FOR CANADIAN LIVE-STOCK AND FARM JOURNAL

The Weather, August Work, etc.

BY ALLEN PRINGLE, SELBY, ONT.

Such a drouth as is now afflicting central Ontario is altogether unprecedented in the recollection of the oldest inhabitants. The affected district is mostly included between Toronto and Brockville, in some parts of which, including the most of Lennox and Addington, there has been but little rain since winter. As a consequence the face of nature presents a spectacle as unusual as it is discouraging to the agriculturist. The pastures are so dry and parched that stock has to be fed; the hay, which is now about harvested, is not half a crop, while the grain, under the scorching sun and dry winds, is ripening prematurely and will be scarcely half a crop. Potatoes, between the bugs and drouth, are suffering greatly, while even corn, which will stand so much drouth and heat, is languishing. Wells and cisterns are giving out, and the water-wagon is increasing in weight while the milk-wagon is rapidly decreasing.

Of course the bees, in common with other living things, are suffering. I took some surplus honey in June, but they are now at a standstill, and I am feeding the *nuclei* to keep them from starving. The honey crop, within the area indicated above will, no doubt, be exceedingly light. And should the drouth continue much longer, thus cutting off buckwheat and other fall honey, the situation will be a very serious one to the apiarist; for in that case the colonies will not only be without winter stores but without young bees to go into winter quarters. To have young bees for winter is one essential condition of getting through safely. The continued drouth and consequent dearth of nectar will inevitably check the brooding, as it did last year; and this was one of the chief causes of the extensive mortality the past winter and spring. But this difficulty may be met and overcome, not, however, without skill, trouble and expense. And as these are not likely to be brought generally into requisition by the average bee-keeper it will be quite safe to predict, this far in advance, another lot of empty hives next May. This may sound rather pessimistic, but no matter, I only wish it to serve as a warning.

WHAT TO DO.

To point out an evil or unpleasant fact is one thing; to indicate the remedy or point out the means by which the evil may be overcome, or partially overcome, is another. When the two can go together the mentor may save himself from hasty and unreasonable censure.

Under ordinary circumstances during a favorable season, August is not too early to begin to prepare for winter. Under such exceptional circumstances as this season presents, it is imperative that such preparations begin this month. If there is no honey coming in from the fields to keep up the brooding it may be kept up by proper feeding. In the absence of honey, syrup from number one granulated sugar will answer every purpose. One quart of water to two and a half quarts of sugar brought to a

boil will be about right. You can gauge the proportion of each by a trial or two, as the syrup, when cold, ought not to be quite as dense as ordinary cured extracted honey in the liquid state. For stimulating purposes a little of this, say half a pint, ought to be fed each colony daily—in the evening—to prevent robbing. If the hives are "fast bottoms" and tight, the feed may be poured over the frames at the back part of the hive, where it will run to the bottom. By tipping the hive up a little at the front, the feed will settle in the back of the hive on the bottom board, whence the bees will soon carry it up where required. In the case of "loose bottoms," and in the absence of "bee-feeders," the feed may be given at the top in the second stories in shallow vessels, with floating sticks to prevent drowning. To feed bees in the "old box hives," when full of comb, so that the vessel cannot be placed in below the comb on the bottom board, they must be fed from the top. In almost all box hives there is a hole or holes through the top of the hive to place a "cap" over, and this may be utilized for feeding. Open the hole or holes and place the feed in under the cap as above directed.

This regular feeding (which in apicultural parlance is called "artificial stimulation") will have the effect of keeping up the brooding during a honey dearth, provided, of course, there is a reasonable amount of food ahead in the hive. If there is not, give them 10 or 12 lbs. of the feed at once at the start to store away, and then keep up the small rations regularly.

The brooding ought to be kept up in the fall till the middle of September at least. Then with a stock of young bees to go into winter quarters, with abundance of stores, the risks of wintering will be greatly reduced. Amount of winter stores per colony, quality, etc., will be dealt with in next issue, which will be in full time.

In favorable localities where there is a full flow of honey from buckwheat and other sources, the feeding is of course unnecessary. But under such circumstances the extractor is generally used a little too freely and too late in the season. And this is one of the causes of winter losses. Extracting from the brood-chamber (which ought to be discouraged) is still largely practised; and those who do practice it ought not to let their selfishness over-ride discretion in fall extracting. A safe rule is always to leave 30 to 40 lbs. of honey in the brood-chamber after the first of August. Extracting too closely in the fall with the intention of making up any shortage by feeding, is unsafe and unwise.

The Cause of Foul Brood.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL

SIR,—On page 267 of the *Canadian Bee Journal*, of June 27th, 1888, is one of the best letters ever written on the origin of foul brood. I have written a similar letter to what follows here to that journal, but to give it a wider publicity on a subject which to all bee-keepers is one of vital importance, I hope you may see your way clear to give this a place in your excellent publication. Every bee journal should publish it, and every bee-keeper should read it.

The writer says that his first case of foul brood arose in a damp, raw spring from spring dwindling. Yes, and in the same way have hundreds of other cases besides his started. He also says in another part of his letter, that he doesn't think that foul brood was imported, and that we can have a genuine case manufactured on the spot any where we like. I know from experience that he is right; we can have it manufactured anywhere we like. In seven cases out of ten it originates in the bee-keeper's own yard. The other three cases of it are caused by the bees robbing from hives affected with it, and the bees carry the disease just in proportion to the amount of diseased honey they convey to their own hives. I lost

over fifty colonies with foul brood in the summer of 1875. It originated in my own yard, and it was caused by the rotting of uncared-for brood in a hive which had lost most of its bees by mixing in with another in the spring. The rotting of uncared-for brood is the real and only cause of foul brood; there never was any other cause; no, and there never will be any other cause.

Mr. Jones, of Beeton, says that he once took a number of combs of sealed brood, and also brood in all stages, and placed them in a hive, and then put a clean colony of bees over it, and kept it there for weeks, and it did not produce foul brood. Mr. Jones is right. The reason why it failed to start it are as follows: 1st, the colony of bees had no decayed brood in it; 2d, the weather was warm and the bees were well cared for; 3d, the brood in the colony of bees was fed plenty of new honey fresh from the fields, so that if the honey in the bottom hive did get tainted the bees did not need to use any of it. Foul brood will almost be a thing of the past when every bee-keeper knows the real cause of it, and looks well after his bees in spring, and sees that the brood is well cared for in every hive. Those that are not real strong let him crowd well on few combs, by using division boards. We have many bee-keepers that don't take a bee journal of any kind, and who have never seen foul brood, and therefore know nothing about it, and some have never heard of it. Their neglect sometimes causes much trouble and heavy losses to other bee-keepers. Every bee-keeper should take one or more of the bee journals, or a paper like yours with a bee-department. I have often found letters in the *Bee Journal* that were worth far more to me than the year's subscription.

WM. McEVOY

Woodburn, July 14, 1888.

Horticultural.

WE learn from the *Canadian Horticulturist* that the Fruit Growers' Association of Upper Canada was organized in the city of Hamilton in January, 1859, with Judge Campbell as its first president. Dr. D. W. Beadle, St. Catharines, was appointed secretary in 1861, which office he held until 1886. The *Canadian Horticulturist* was first issued by the Association in January, 1878. Dr. Beadle continued its editor until 1886, when he was succeeded by L. Woolverton, M. A., Grimsby, as secretary of the association and editor of the *Horticulturist*. The subscription price of this valuable monthly is only one dollar per annum, which entitles every subscriber to the membership in the Fruit Growers' Association, including a copy of its valuable annual report, and a share in its annual distribution of plants and trees. We most unhesitatingly favor the idea.

THE Fruit Growers' Association decided at their last meeting to hold but two meetings in the year instead of three. This will effect a considerable saving and will answer the purpose just as well. Probably one large annual meeting would answer every purpose. The proposal to have one member of the Fruit Growers' Association on the executive of each of the Farmers' Institutes is a good one; it will tend to direct attention to the fruit interests where often they would be neglected. The fruit interest in Ontario is an important one, and whatever is likely to extend it and to build it up is worthy of careful consideration.

Fruits for the Farmer.

It is very desirable, where fruits will grow, that every farmer has an abundant supply for the wants of his whole household. They are an essential, in summer at least, viewed from a dietetic standpoint, and nothing else outside of the dwelling forms so strong an attraction for the old nest as the love of a constant supply of wholesome fruits.

Now there is only one way to secure this, and that is to keep renewing it constantly from year to year. It will not answer the same purpose to plant out a

full supply one year and do nothing more in this way for a term of years. Many varieties, particularly of the small fruits, want constant renewing or the quality of the fruit becomes impaired.

Strawberries are less trouble on the whole when the same plot is not allowed to bear for more than two years. Some even adopt the plan of picking but once. This would necessitate the planting out a fresh crop every year.

Raspberries will last for a term of years and give good results, but after two or three years' picking it is much more trouble to keep the weeds out of the rows of the canes. The same will hold true of currants and gooseberries, only these will do well for a longer term of years.

We remember at a meeting of the County Lincoln Farmers' Institute, when a discussion arose as to how frequently the different varieties of small fruits would require to be renewed. One of the members stated that currants would live and bear for all time if the ground were kept cultivated and the dead wood cut away. We admit that they will live and bear for many many years, but they will not bear such excellent fruit after a time as when young.

Even pears, particularly dwarf pears, are likely to die out after a few years, and if one wants to be sure of a constant supply, should plant one or two every year, or every second year or third year, according to the vitality which they manifest.

It is a profitless undertaking usually nursing a diseased tree when its vitality is seriously affected. And when it does recover it is some years before it regains that freshness so necessary to the production of first-class fruit.

We would not have it inferred from this that when a tree is injured or shows symptoms of its being affected for the worse, that it should always be allowed to die. If the injury comes from an insect attack, removing the cause will usually effect a cure if the injury is not too extensive.

Our remarks are not intended to apply to the professional fruit-grower, but to the average farmer, whose skill is not supposed to equal that of the amateur.

Where our plan is adopted the supply of fruit will be un failing; it will also be of a good quality, and the little trouble required to keep it in order will more than repay the labor and outlay of renewal.

PREMIUM OFFERS FOR 1888-9

More than \$1,500 offered in Live-Stock Premiums.

As intimated on the first page of this issue, and for the reason given there, we have decided to offer a list of live-stock and other premiums to friends of the *JOURNAL* who are desirous to aid in extending the circulation, without parallel in the annals of agricultural journalism in the Dominion. In making these offers we feel that we are consistently working in the line of the policy we adopted at the very outset, and to which we have strictly adhered. It will afford an easy way of making a start in improved stock to those who are of limited means, and of thus laying the foundation of increased prosperity.

Making these offers on our part is but an *advance* step in the line of our effort to improve the live-stock of Canada, in which we confidently lay claim to a consistency that is deserving of support, and which some of our contemporaries have failed to show. We have not slandered the live-stock interest at one time in the hope of getting the support of another class in

the community, nor, failing in this, have we at another time sought to conciliate them, by the bribe of purchasing from them what they might have to sell. We have without hesitancy or faltering, given the first place to the live-stock interest in the *JOURNAL* because we thought it the most important, and every day but strengthens that conviction.

The premium list published below is at present incomplete. It is our desire so to extend it in future issues as to enable any one to secure stock of any class who may desire it from any of the breeders of the Dominion who are advertisers in the *JOURNAL*.

It will be observed that unlike some other offers that are being made, those who secure lists for us have the privilege of getting stock from any of our advertisers who may have them for sale, and as these advertisers have unquestionably the best stock in Canada, it enables them to secure of the very best.

Any person forwarding to us lists of new subscribers containing the requisite number in any of the clubs mentioned below, will have his choice of any of the pure-bred animals mentioned in connection with the respective lists.

Five Names and \$5.

Plymouth Rock, Light or Dark Brahma Cockerel, value \$3 00

Ten Names and \$10.

A pair of Plymouth Rock fowl or Pekin ducks, male and female, value 6 00

Fifteen Names and \$15.

A pair of Bronze Turkeys or Toulouse geese, value... 8 00

Twenty Names and \$20.

A trio of manouth Bronze Turkeys or Toulouse Geese, value..... 12 00

Thirty Names and \$30.

A pure-bred Berkshire boar (from 2 to 6 months), or a pure-bred ram lamb of the Leicester, Lincoln, Cotswold, Southdown, Oxford, or Shropshire breed, value 16 00

Forty Names and \$40.

A pair of pure-bred ewe lambs of the Leicester or Southdown breed, value 25 00

Fifty Names and \$50.

A pure-bred ram of any of the above breeds, one year and over, value..... 30 00

Seventy-five Names and \$75.

A pair of pure-bred Berkshire pigs, between 6 and 12 months, male and female, of different strains, value 40 00

One Hundred Names and \$100.

A pair of pure-bred ewes of the Leicester, Lincoln, Cotswold, Southdown, Shropshire or Oxford breeds, value..... 50 00

One Hundred and Fifty Names and \$150.

A pure-bred Shorthorn, Hereford or Galloway bull, under one year, value..... 100 00

Two Hundred Names and \$200.

A pure-bred Shorthorn cow in calf, between two and six years of age, value 150 00

Five Hundred Names and \$500.

A Shorthorn herd consisting of 1 bull and 2 females between one and three years, value..... 300 00

One Thousand Names and \$1000.

A pure-bred Canadian Clydesdale stallion value 600 00

The above are subject to the following conditions: 1. The cash must be forwarded along with each list of names.

2. The names forwarded must be those of new subscribers.

3. It is not necessary that all the names should be forwarded at one time.

Observe:

1. This offer will enable any canvasser to secure pure-bred stock from any one whom he may prefer, having it for sale, and who is an advertiser in the *JOURNAL*. This is far more advantageous to the canvasser than if he were restricted to purchasing from some particular individual.

2. Arrangements will be made with any one desiring to secure any class of stock of the breeds not enumerated in our list, to enable him to do so, on his communicating with us. Any one who decides to engage in this work is requested to communicate with us at once, when further details will be furnished, which will be found valuable.

This is the largest offer of live-stock premiums ever made by any firm in Canada, and the extent to which it will be increased is only limited by the number and energy of the farmers who choose this easy and profitable way of securing first-class stock.

Additional Premiums Offered.

The following additional premiums are offered to those who prefer them to a cash commission. Favorable arrangements have been made for the purchase of these articles, our friends get the benefit of the closest rates. \$1.00 must be sent with each name sent in. Articles by freight or express, the charges to be paid by recipient. The subscribers may be either new or old, and may belong to different post offices.

Four Names and \$4.

1 copy <i>Weekly Mail</i> , Toronto, to 31st Dec., '89	\$1 00
1 " " <i>Globe</i> , " " " " " "	1 00
1 " " <i>Free Press</i> , London, to 31st Dec., '89	1 00
1 " " <i>Western Advertiser</i> , London, to 31st Dec., 1889	1 00
1 " " <i>The Gazette</i> , Montreal, to 31st Dec., '89	1 00
1 " " <i>Witness</i> , " " " " " "	1 00

Six Names and \$6.

Horse Breeding, by J. H. Sanders	2 00
Feeding Animals, by Prof. Stewart	2 00
Home Corn Shelter (Copp Bros)	2 00
50 lbs. Hamilton Thorley Cattle Food	2 50

Eight Names and \$8.

Cattle and Their Diseases, by A. J. Murray, M.R.C.V.S., Vet. Editor <i>Breeders' Gazette</i> , Chicago	2 50
Truck, made by B. Bell & Son, St. George	2 50
75 lbs. Hamilton Thorley Cattle Food	3 00

Ten Names and \$10.

Butter Scale, with weights $\frac{1}{2}$ oz. to 6 lbs., Burrow, Stewart & Milne	4 30
Breeds of Live-Stock, by J. H. Sanders	3 00
Allen's Shorthorn History	3 00
Truck, made by Burrow, Stewart & Milne	4 25
100 lbs. Hamilton Thorley Cattle Food	4 50

Twelve Names and \$12.

Farmer's Even Balance Scale, with weights, 8 lb.	5 00
Cast Road Scraper	6 00
Farm Bell, made by Armstrong, Guelph	6 50

Fifteen Names and \$15.

Corn Cultivator, Copp Bros., Hamilton, makers	7 00
Horse Hoos, " " " " " "	7 00
Butter Scale, with weights $\frac{1}{2}$ oz. to 17 lbs., Burrow, Stewart & Milne, or Gurney & Ware, makers	7 10
150 lbs. Hamilton Thorley Cattle Food	6 75

Eighteen Names and \$18.

Farmer's Union Family Scale, B., S. & M., or G. & W., makers	8 00
Stait's Reaper and Mower Sharpener	8 00
An Armstrong Farm Bell	7 50
200 lbs. Hamilton Thorley Cattle Food	9 00

Twenty Names and \$20.

An Armstrong Farm Bell	9 75
Wormans' & Words' Revolving Churn, capacity 15 gallons	9 00
Union or Family Scale, $\frac{1}{2}$ oz. to 200 lbs., B., S. & M., or G. & W., makers	10 45

Twenty-five Names and \$25.

Root Cutter, made by T. Gowdy & Co., Guelph	11 00
Steeleyard, capacity 100 lbs., B., S. & M. makers	9 00
250 lbs., Hamilton Thorley Cattle Food	11 25

Thirty Names and \$30.

Bell's Champion Horse Hoe and Cultivator combined	13 50
Burrell's Corn Shelter	12 00
Iron Cultivator, Copp Bros., Hamilton	12 00
Gowdy & Co.'s Horse Turnip Seed Drill	13 50
Imp'd Jointer Plough, Gowdy & Co., makers, Guelph	13 50

Thirty-five Names and \$35.

Root Pulper and Slicer, B. Bell & Son, St. George	16 00
Double Drill Seed Sower, B. Bell & Son	15 00
General Purpose Plow (Fleury Maunf'g, Aurora)	17 00
Hand Feed Cutter, " " " "	16 00
Copp Bros. Agricultural Furnace	16 00
Copp Bros. Jointer Plough	16 00

Forty Names and \$40.

A Fleury Root Cutter	25 00
Grain Separator and Fanning Mill, T. G. & Co., G.	23 00
Copp Bros. Straw Cutter	18 00

Fifty Names and \$50.

Fleury's Straw Cutter, 10 inch	25 00
Fanning Mill, E. L. Gould & Co., Brantford, makers	28 00
Fanning Mill, M. Campbell, Chatham, manufacturer	25 00
Farmer Platform Scale, 1200 lbs., B., S. & M. or G. & W.	26 00

Sixty Names and \$60.

New Land Roller, T. Gowdy & Co., Guelph, maker	31 00
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Seventy-five Names and \$75.

Bell's Double Land Roller	36 00
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One Hundred Names and \$100.

Mower, L. D. Sawyer & Co.	50 00
Knivon Elevator Stumping Machine	45 00
I X L Feed Mill (Ontario Pump Co.)	45 00
Gowdy's Improved Tilling Model Mower	50 00

One Hundred and Fifty Names and \$150.

Gale Sulky Plow	70 00
Fleury's Sulky Plow	65 00
Portable Platform Scale, B., S. & M.	61 00

Two Hundred Names and \$200.

Combined Reaper & Mower, Harris & Son, Brantford	125 00
Maxwell, Paris, Ont.	125 00
Hay Scale, Burrow, Stewart & Milne	125 00

Canvassers should begin work at once. Further particulars cheerfully given per letter. Sample copies and subscription lists furnished. This is a grand opportunity for farmers to secure a premium for a little work.

STOCK JOURNAL CO., Hamilton, Ont.

Jottings.

Dairy Articles.—The articles of Mr. J. Cheesman and Prof. Robertson in this issue, we regard as particularly valuable, and hope they will get that attention which their high merit deserves.

The P. E. I. Provincial.—The P. E. Island Provincial Exhibition of live stock, farm products and general industry, will take place at Charlottetown, on Wednesday and Thursday, Oct. 3rd and 4th, 1888.

Notice.—A few subscribers still in arrears will please renew their subscriptions at once. Please bear in mind that no names are removed from the subscription list until all arrearages are paid, as prescribed by law.

Goat Rearing.—Angora goats have recently been shipped from Texas to Chicago, and a trade in them is being established in that city. Is there any place for goat rearing on the rough and rugged mountains of many parts of Canada?

A New Kind of Weigh Scale.—Mr. Joseph Rear, of Mount Albert, Ont., has invented a weigh bridge that will weigh from three to ten tons. It can be placed on the level anywhere, and does not require any pit. There is consequently no danger from freezing in winter.

Crops in Dakota.—Mr. Robert B'ain, formerly of Blackheath, Ont., writes from Ardoch, Dakota, that crops there this season are very promising. On July 8th, the date of the letter, they were coming out in head. The season has been very favorable to growth, abundant rains having fallen.

Great Holstein Milk Yield.—Mr. D. B. Whipple, of Cuba, N. Y., owns a Holstein cow, Pieterje and, No. 3,273 H. H. B., whose milk record he claims in one year is 30,318 lbs. 8 oz., surpassing all previous records by 4,297 lbs. 6 oz. This was testified to by Mr. Whipple through a notary public in New York State.

Exhibition Number.—The Sept. issue of the JOURNAL will be the exhibition number and will circulate amongst a large number of new readers, and in many ways be of special benefit to advertisers. New adverts. and changes in present adverts. should be sent in early, to be put in good shape and properly classified.

Canvassers Wanted.—If any of our readers, not having time themselves, know of any person in their neighborhood likely to devote a little time in getting us a few subscribers or even in forming a club for next year, we shall esteem it a favor if they will kindly send us his name and address, when we will send them sample copies, etc., for the purpose.

Quebec Quarantine.—There are at present (July 17th) in quarantine at Quebec 76 Galloways, 7 Shorthorns and 3 Herefords. Since the opening of navigation a considerable number of sheep have arrived, but they are only kept a few days and then allowed to proceed. Dorset Horned and Shropshires have been the breeds most in favor, with a few Cotswolds.

Business Cards.—Even if a breeder has nothing to sell, the publication of his "card" is of use to him. It keeps the name of his herd and his own name before the public. It is virtually an invitation to any one interested, to call and examine the breeding stock, and when he has stock to dispose of he will find that they are not strangers to the buying public.—*The Guernsey Breeder.*

The Essex Poultry Farm.—Mr. A. Harrington, Ruthven, now controls himself the Essex Poultry Farm. It will henceforth be known as the "Harrington Poultry Farm," with headquarters at Ruthven, where all communications should be addressed. It comprises 20 acres of land well adapted to the purpose, and should produce a very large amount of first-class poultry. See advt. on another page.

Breeders' Directory.—There are scores of stockmen in various districts, who, we believe, would find it would pay them well to have a card of two or three lines in the Breeder's Directory. Oftentimes their stock is superior, but being known only to their immediate neighbors, they have little chance of getting its full value when placed in the market; whereas a card would bring it to the notice of thousands of readers throughout Canada and the United States. The cost is only \$1.50 per line per annum.

Agricultural Societies.—While we earnestly thank those who took so much interest in the JOURNAL last season, will not our friends in those Agricultural Societies where the plan has not been adopted, use their influence to have it included among their premiums? We believe it would be the means of very materially increasing the demand for a better class of stock in the neighborhood. Any society wishing to offer the JOURNAL in this way will please communicate with the publishers, the Stock Journal Co., Hamilton, Ont.

Manitoba Items.—Crop first-class. Stock and hay above the average. Emigration moving slow; monopoly in jewelry trade prospects. Vacant land with a per centage is re-

living. Harvest two weeks late. For land and natural advantages, southern Manitoba stands first for stock and grain growing in the world. With free competition trade will flourish and the husbandman reap the just reward of his toil.—T. B. C., Clearwater, Man., July 20th, 1888.

Guelph Central Fair.—By reference to advertisement on another page it will be seen the Guelph Fair will be held on the 12th, 13th and 14th September. The prize list is a good one, and doubtless the Fair will be one of the best in Canada this year. We regret space forbids our giving more particulars, for which send for prize list to R. Mackenzie, sec., Guelph, Ont.

The Central Canada Exhibition Association. The first annual exhibition of this association will be held at Lansdowne Park, Ottawa, Sept. 24 to 29, 1888, when \$10,000 will be given in premiums in competition open to the world. This association has been incorporated within the present year. The president is C. Magee, and secretary, R. C. W. MacCuaig. Amongst the twenty-four directors we notice the names of Sheriff Hagar, Plantagenet, Ira Morgan, of the Provincial Board, and W. C. Edwards, M.P. for Russell. The prize list is very creditable and full.

Registry of Shropshires.—Our attention has been called to rule 30 of the American Shropshire Association which reads: "All American bred sheep born after January 1st, 1887, to be acceptable for registration must be recorded within one year after birth." As this excluded a number of pure-bred Shropshires owned by persons whose attention had not been drawn to it, the Executive Committee has waived the effect until August 15th next. All such sheep should be registered before that date.

"The Swine Industry."—This is the title of a neat pamphlet of some fifty pages by Mr. Jas. Cheesman, Toronto, secretary of the Ontario Creameries Association. The limited space at our disposal only permits us to say that its objects are to encourage improvement in the breeding of swine, giving special attention to economy in feeding. The subject is handled in a masterly way, and further reference will be made to it in our next issue. To all engaged in the cheese and butter industries, it will be specially valuable. Price five cents each or \$4 per hundred.

The Buffalo International Fair.—This exhibition held Sep. 4th to 14th, promises to be one of gigantic dimensions. One hundred thousand dollars are to be offered as prizes on live stock, of which \$13,450 will be paid in prizes on horses, not including the prizes given to the turf competitors. The main building has a frontage of 450 feet, and a depth of 200 feet. The different kinds of live stock are to occupy separate buildings, each enclosing a court 240 ft. square. There will be bicycle contests of world wide interest, and such a show of live stock as has seldom been assembled at any one fair in the history of mankind.

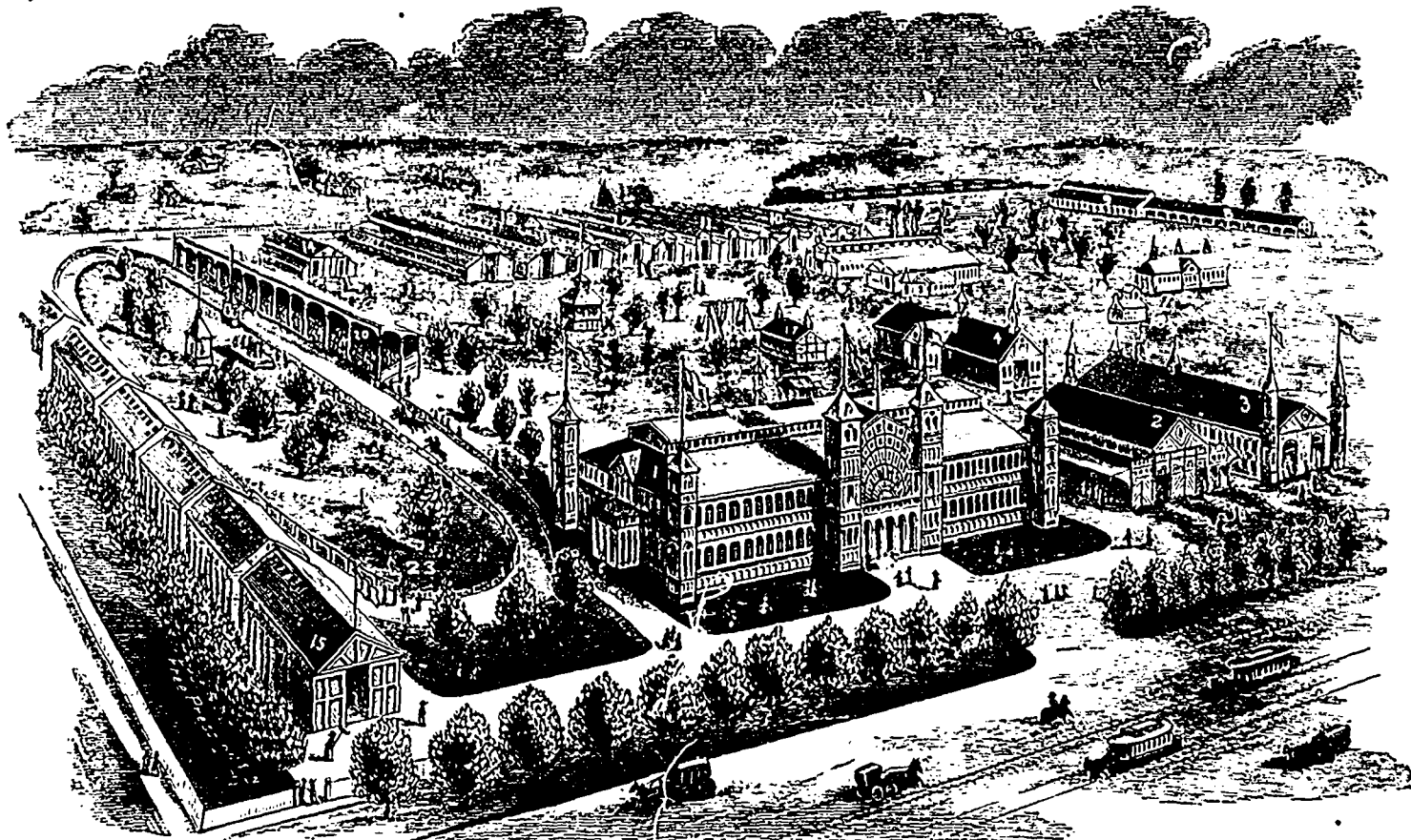
Imports of Wool and Woolen Goods into the United States in 1887.—Entered for home consumption:—

Wool, 1st class	\$4,339,498
" " 2d	2,270,058
" " 3rd	9,741,814
Rags, shoddy, etc.	1,822,733
Manufactures of wool	44,235,743
Total	\$62,409,346

According to the returns of the U. S. bureau of statistics in 1886, the domestic product of wool amounted to 285,000,000 pounds, and the imports of wool to 144,404,193 lbs. Of this amount 1,316,228 lbs. went from Canada.

Frightening Crows from Corn.—Mr. M. E. Myers, Saratoga County, N. Y., has discovered a very ingenious plan of keeping crows from injuring corn. It is described by him in the *Country Gentleman* substantially as follows: Take cotton twine, say one eighth of an inch in diameter, rather loosely twisted, and fasten powder crackers by inserting the fuse of the cracker through the string at any desired distance apart, according to the frequency with which you wish them to explode. After fastening the fire-crackers in the cotton-string by inserting the fuse, place them on a board in the corn-field, straighten out the string, and set it on fire at one end. In damp and rainy weather, protect the string and fire-crackers by covering with a board. The cost is but a few cents a day, and in large corn fields two or three strings may be kept firing at the same time.

The Great Central Fair, Hamilton.—This exhibition will be held Sept. 24th to 28th. The prize list, which has just come to hand, is ample and complete as usual, the classes for horses unusually so. That always has formed a feature of this show. There is a good list of special premiums for speed in the ring. The classes for cattle, sheep and pigs are about as last year. The poultry prizes are increased. The agricultural, horticultural and industrial prizes are much the same as last year. The list of specials is always creditable to Hamilton. This year is no exception. Several of these go for butter, notably a \$65 sewing machine by Mr. R. M. Wanser, for best 40 lbs. packed butter, to be retained for the Boys' Home. V. E. Fuller gives a cash prize of \$75. Entries received up to Sep. 18th. Those made after that date require an extra fee of fifty cents up to Saturday 22nd, after which no more will be received. Hamilton is easy of access by rail, has a fine show ground, and good accommodation, and a diversified scenery of mountain and lake all her own. Strong effort is being made to render the show a complete success. Send at once for prize list to Mr. J. Davis—the secretary. See advertisement.



NEW WESTERN FAIR GROUNDS AND BUILDINGS, LONDON.

- | | | | | |
|--------------------------------------|-------------------------------------|----------------------|------------------------------------|--------------------|
| 1. Main Building. | 6. Carriage Hall. | 11. Sheep Pens. | 16. General Office. | 21. Judges' Stand. |
| 2. Agricultural Hall. | 7. Dairy Hall. | 12. Cattle Sheds. | 17. Dining Hall of the W. C. T. U. | 22. Band Stand. |
| 3. Horticultural Hall. | 8. Agricultural Implement Building. | 13. Barn for Cattle. | 18. Ladies' Parlor. | 23. Horse Ring. |
| 4. Poultry Hall. | 9. Heavy Machinery Hall. | 14. Dining Hall. | 19. Fire Hall. | 24. Band Stand. |
| 5. International Bench Show of Dogs. | 10. Hog Pens. | 15. Horse Stables. | 20. Grand Stand. | |

The Western Fair, London.

In this issue we give our readers an illustration of the New Exhibition Grounds and buildings of the Western Fair Association at London, Ont. The buildings are very handsomely constructed and painted, and are situated in the Queen's Park, one of the finest natural parks within city limits in America. These grounds, comprising 37½ acres, are situated at the east end of the city, lying between the G. T. R. on the south and Dundas (the principal business street) and C. P. R. on the north. The Park is beautifully covered with immense pines of natural growth, and is used as a pleasure resort for the public when not in use for exhibition purposes. Stock and machinery can be unloaded from the cars on the grounds. The facilities afforded visitors for reaching the grounds are very complete. Trains are run regularly every half hour, while the street railway company's cars land passengers every few minutes at the main entrance. It is also convenient to pedestrians, being only twenty minutes walk from the post-office or business portion of the city. The grounds and buildings, with improvements to be made by the management this year are valued at \$1,320,000.

The Main Building, a beautiful structure 200x80, cost nearly \$24,000. The Poultry Hall is said to be the finest in the Dominion. The halls for agricultural products, horticultural products, carriages, dairy, machinery, etc., are large and commodious. Stable accommodation is provided for 500 horses, while the sheds for cattle will accommodate a like number. Two hundred and forty pens have been constructed for the accommodation of sheep and hogs. An excellent half-mile Speeding Track has been laid out at a cost exceeding \$5,000.

London's waterworks system has been extended to all parts of the Fair grounds at a cost of \$1400. The water is from the same source as that supplied to the citizens of London, namely Coomb's Springs, five miles distant, and is not surpassed by any other supply in America.

The hindrances last year to the New Western Fair scheme were of the most determined character. These were happily removed, however, and in ten weeks from the time the contracts were let the buildings were completed and Fair opened.

The attendance and success crowning the efforts of the management were most gratifying. Fifty-six thousand five hundred and forty-four persons passed through the turn-stiles. This does not include occupants of carriages, guests, members

of the press, attendants, herdsmen, etc., which would make the total attendance about 75,000 persons.

These results have stimulated the directorate to spread the Fair over nine days instead of one week as heretofore. Twenty-five thousand dollars have been appropriated for prizes, attractions, etc.

There will be larger prizes, grander attractions, more to see and more to learn than any previous Fair. The Indian Tribes of Ontario are preparing a grand exhibit of manufactured articles of all descriptions, relics and curiosities of the old hunting days, including agricultural and Horticultural productions, Fine Arts, Ladies' Work, etc. It is expected that Indians in charge of their exhibits will be dressed in native costume.

The directors of the London Bench Show of Dogs are making special accommodation for a grand international exhibit of all the principal prize winners in America. The management are advertising for new attractions, and have already made contracts for several novelties which will be introduced at the forthcoming Fair for the first time. No pains are being spared to make the coming Fair the great event of the year. Keep the dates in mind, September 20th to 29th, and wait for it.

Stock Notes.

Horses.

Messrs. J. W. & R. Brownlee, Hemmingford, P. Q., report that their Clyde mares have produced good strong foals and that their large stock of horses generally are doing well.

The Messrs. Jeffrey Bros, Whitby, Ont., write: "We have just received from Mr. Peter Ferguson, Glasgow, Scotland, the famous two-year-old Clydesdale colt Merriment; sire Belted Knight. He is one of the most stylish and evenly built colts we have ever handled, and has the appearance of making a grand horse. Other stock doing well. Crops in this section looking well."

Mr. Geo. Ballachee, Brantford, Ont., writes: "His Percheron mare has produced another horse colt. This is the sixth colt she has had since he has had her. All have done well. Among recent sales he has made the following: Entire Percheron colt to Messrs. Savage & Farmer, Detroit; cow yearling bull and hisifer calf to S. W. Jacobs, Dakota; mare, and bull calf to J. R. Martin, Cayuga; bull calf to the Indian Institution, Brantford; bull and boar to E. D. Passmore, Brantford; sows to S. K. Passmore, J. Fell, F. Irwin; sow and boar to Peter Roy, Brantford; boar to W. G. Sanders, St. Thomas,

who writes: 'I am well pleased with this boar. He has served thirty-eight sows, and weighs over 400 lbs. at a year old.' Boar to D. L. Haviland, Boston. Shorthorns, Shetlands, Shropshires, Berkshires, all doing well."

Galloways.

IMPORTATION OF GALLOWAYS.—The *North British Agriculturist* has the following notice of the lot of Galloways recently imported by Mr. Thomas McCrae, of Guelph, by the Allan line steamer Grecian, and now in the quarantine station at Quebec. "Messrs. Thomas Biggar & Sons have recently shipped a very choice lot of young Galloway cattle to America, where this class of stock are said to be gaining in popular favor. The consignment numbered 30 in all—six bulls and 24 heifers. At the head of the males stands the 3-year-old Current Coin (4037), purchased from Mr. Clark of Culmain. He has for sire the famous bull Crusader, and was as a 2-year-old, first at Dalbeattie. He has grown and filled out considerably since then, and is regarded as altogether one of the best Galloway bulls ever imported. Among the others are Cinaman, first-prize 2-year-old at Castle Douglas this year, and two yearling bulls by Crusader. The heifers are a remarkably level lot and well bred. Six 2-year-olds and four yearlings were from the Duke of Buccleuch's herd, and include two Semiramis, two Harriets, one Maid Marian, one Handsome and one Duchess. Several are sired by the £180 bull Netherlea and a few by Kinsman and, first prize winner at the Royal in 1887. Two heifers are from the Closeburn herd, one being of the Lady Stanley tribe, and another by the fine old bull John Highlandman. Two good heifers in calf to Regent Murray went from Lairdlaugh herd, and a very good Killiningan cow from Mr. Joseph Brown. About the best heifer in the lot was Violet 2rd, bred by Mr. Cunningham, of Tarbrooch, sire Scottish Borderer, dam from the fine Maid Marian family. This heifer won third prize as a yearling at the Royal at Newcastle last year. Three very well bred yearlings went from the Balig herd, and from their own herd Messrs. Biggar shipped three very handsome yearlings by their champion bull Crusader. The forty head shipped by Messrs. Biggar in August last have done well, and all except five or six have changed hands. This lot, however, the Messrs. Biggar consider the choicest in point of breeding and quality that ever they exported. Along with the above cattle they also shipped a number of Dorset Horn, Shropshire and Cotswold sheep to orders from Canada, and the States.

Holsteins.

Those engaged in dairying or looking in that direction, would do well to attend the sale of pure bred Holsteins to be sold by the Wytton Stock Breeders' Association at their farm, Wytton, on the Grand Trunk Railway, between London and St. Marys, on the 3rd of October, 1888. It is held on the farm, that an opportunity may be afforded for purchasers to see the sire and dams of the animals offered. This is the fourth semi-annual sale held by the Messrs. Scatcherd, of this famous breed of milk and butter cattle. On this occasion they will offer about

40 head of bulls and heifers, the largest and finest lot yet offered by them at one time. They are all registered, and guaranteed in every respect as to quality. The animals sold at previous sales have given complete satisfaction. They are fed with judgment and prudence, and go on improving in the hands of purchasers who do at all fairly by them. Trains leave London for Wyton at 7.35 in the morning, and return at 5 p.m. in the evening, and leave Stratford and St. Marys at 8 and 10 a.m., returning from Wyton at 6.15 p.m. Catalogues will be furnished on application to the secretary, Mr. W. B. Scatterd, Wyton, Ont.; also see advertisement on another page. The dairy interest grows apace, and Holsteins are certainly a fine breed of dairy cattle.

Shoop and Pigs.

Mr. Robt. Miller, of the firm of John Miller & Sons, Brougham, Ont., writes: "We have had good sale for stock and have made many of our sales through our advertising in the JOURNAL. We are having a large enquiry for sheep, which is something unusual at this time of year. Crops good here. We are putting up 15 to 20 acres of hay per day. My father and brother have gone to Scotland and England for horses and sheep, and they will return about the middle of August."

Mr. S. Lemon, Kettleby, Ont., writes: "I send you a list of my late sales of stock, for all of which I obtained good prices considering the times: Shorthorn bull Baron Prince 2d to W. Stodard, Bradford; bull Senator 2d to G. Morris, Alton; cow and heifer and Oxford ram to R. Tilson, Manitoulin; Oxford ram to J. P. Lemon, Lemonville; Southdown ram to G. Glover, Ottawa; Southdown ram to W. Spring, Elmvale; Southdown ram to W. Porter, Lloydtown; Southdown ram to C. Grant, Thornbury; 6 ewes to J. Neil, Collingwood; Berkshire sow to G. Watson, Potageville; Suffolk sow and boar to T. Pagator, Aurora; 2 sows to W. Spring, Elmvale; sow to T. Harman, Aurora; boar, D. J. Whitteker, Morrisburg. We take four stock and Agricultural papers, but the JOURNAL is ahead of them all."

FAIRVIEW'S SHROPSHIRE.—This well known flock owned by Mr. John Campbell, jr., of Woodville, Ont., is, notwithstanding the long continued drought, in a thrifty condition, and taken as a whole, shows a marked improvement, even when compared with the high standard a tained in the past. The imported breeding ewes are from such noted flocks as Crane & Tanner's, Jones', Farmer's, Byrd's and Lovatt's, while the Canadian bred ones are nearly all first and second prize-winners at the Industrial and Provincial exhibitions. The shearing ewes—all registered in the American Shropshire Record—are a very even lot of choice quality, and are well up in all points of breeding. The lambs are the best that the Fairview flock has produced, being of good size and over the average in quality. Shearlings and lambs were sired by the highly-bred rams Lord P 1579, E. F. B., and Paragon 2d 518, As. No. vol. iv., A. S. R. The selections now being prepared for exhibiting at the leading shows, together with part of an importation now on the way from England, will, we have no doubt, be found worthy of close inspection by interested visitors, and be creditable to Fairview.

Mr. John Dryden, M. P. P., Brooklyn, Ont., writes: "I returned a few days ago from my trip to England. The passage across the Atlantic was very pleasant, the weather being quite calm and the sea air very agreeable. My stay in England was brief, covering only two weeks, during which time I purchased nearly 200 Shropshire sheep. They have been selected with great care from the flocks of the best breeders in England, and include specimens from the flocks of Bowen-Jones, T. S. Minton, P. & G. Evans, Alfred Tanner, Andrew E. Mansell, and others. They include rams and ewes, and among them are winners at the great Royal Show held at Nottingham, and other exhibitions. They are expected to reach Maple Shade early in August. On my return home I found everything suffering from a severe drouth which has covered a large extent of country. Pastures are almost bare and all kinds of grain are comparatively short in the straw. Notwithstanding this, thanks to the easy keeping qualities of my Shorthorns, I find that they have held their condition well. The young things have grown well. With the light hay crop and the poor prospect we have now for roots, I shall seek to reduce the number of my herd. Among the lot are many specimens which will certainly make some intending purchaser happy in their possession."

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Advertising Rates.

The rate for single insertion is 18c. per line, Nonpareil (12 lines make one inch); for three insertions, 15c. per line each insertion; for six insertions, 13c. per line each insertion; for one year, 10c. per line each insertion. Cards in Breeders' Directory, not more than five lines, \$1.50 per line per annum. No advertisement inserted for less than 75 cents. Contracts broken by bankruptcy or otherwise, shall revert to the regular rate of 18c. per line.

Copy for advertisement should reach us before the 25th of each month (earlier if possible). If later, it may be in time for insertion, but often too late for proper classification. Advertisers not known at office will remit cash in advance. Further information will be given if desired.

G. BALLACHEY, Branford, Ont., offers some choice Shorthorns, Shropshires and Berkshires cheap. au-3

FOR SALE—YOUNG SHORTHORN BULLS, COWS AND HEIFERS.

The bulls are nearly all reds. Excellent pedigrees and good individually. Prices to suit the time.
THOS. SHAW, Woodburn P. O., Co. Wentworth, Ont.

BULL FOR SALE.

Durham or Shorthorn bull, Prince Rex, registered in Dominion Herd Book. Calved in 1883, sire, Baron Baringtonia (28502); dam, Juno 2nd. Color, rich roan. One of the finest animals of the kind in the Dominion. To be seen at Libbytown, 3 miles from Ayer's Flat, on Passumpsic Railway, near Sherbrooke. Will be sold cheap as proprietor has two others, his progeny.
Address, W. H. DAVIDSON, Libbytown, P. Q.

MESSRS. T. & S. BRADBURN,

ASTWOOD HILL, REDDITCH, WORCHESTERSHIRE, ENG. Breeders of high-class SHROPSHIRE. Pedigrees strictly kept. We have bred many prize-winners, and bred from such rams as The Rector (1766), The Dean (2350), The Judge the Second (2303), and The Duke of Wellington (2842), all Royal winners. Large stock for sale. Visitors made welcome. Correspondence invited.

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Ram Lambs from imported stock on both sides. Prices cheap.
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TWO IMPORTED HORSES
ONE Cleveland Bay, 3 years old, weighs 1470 lbs., 16 hands high; winner of 3 first prizes and 1 silver medal. One Clydesdale, 2 years old, weighs 1,580 lbs., 16½ hands high, and registered in 10th vol. C. S. B. of G. B., also C. S. B. of Canada, winner of 4 first prizes; also 12 varieties of pure-bred Poultry, at low prices. Bronze Turkeys a specialty. Correspondence answered by sending 3 cent stamps. Address,
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One Ayrshire bull, two years old in last April; one Ayrshire bull, two years old July 20th; one Ayrshire bull, one year old, June 2nd; one Jersey bull, one month old, by the celebrated Canada's John Bull; twenty five Ayrshire heifers two years and one year old.
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from imported ewes, 5 two-shear rams and 2 shearing ewes. All choice animals. Address,
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E. G. PREECE, Live-Stock Agent Shrewsbury, Eng., has for private sale, registered pedigree animals from the best English flocks and herds, at lowest prices. He assists importers in purchase and shipment of stock; also buys on commission. Highest references. Reasonable fees. Jy-3

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Shorthorns Southdown Sheep of highest strain and pure-bred.

SUFFOLK PIGS, all registered. Young stock of all the above for sale. All orders promptly attended to. A number of young Shorthorn Bulls for sale at moderate prices.

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My Shorthorn herd now consists chiefly of imp. Lady Violet Lustre and seven of her daughter's, and two daughters of imp. Beauty 15th, almost all sired by one bull, and of one character, thick, and fine quality. Can furnish a splendid young herd, including an imported bull. Trains twice daily. Station one mile.

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FOR SALE—BERKSHIRE PIGS, SOWS and BOARS.
July litter, eligible for registration in C. B. S. R. Price at six to eight weeks old, \$5 each, \$8 per pair. Satisfactory dealing and stock that will please guaranteed. JOSEPH RIGHTMYER, Wooler P. O., Ont. Trenton, G. I. R., and O. R. au-1

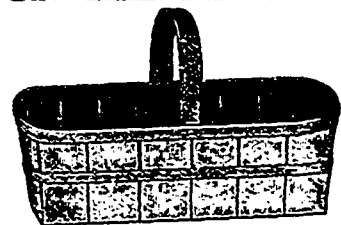
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"CHISHOLM BASKET"
It is the best always.

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FOR SALE, the farm known as "Cranberry Farm," five miles from Fergus, eleven from Guelph, belonging to the late John S. Armstrong, parts of lots 28 and 29, 1st and 2d con., Eramosa township, containing about 330 acres, 200 cleared and in high state of cultivation; 40 acres hardwood bush, balance in well timbered swamp. This is one of the finest stock farms in the stock raising county of Wellington, being watered by three living springs and a running creek, and having accommodation in stone buildings, for sixty head of cattle, twelve horses and forty pigs; also frame building for forty sheep. A good bank barn 72 x 61, a good stone house, and a first-class orchard and garden are also on the premises. Will sell part or whole to suit purchaser. Parties wishing to view the farm will be met at Guelph or Fergus on giving notice of arrival.

For terms, etc., apply to
ADAM A. ARMSTRONG, on the farm, or Speedside P. O. Jy-2

—SEED WHEAT—

With confidence I am this season offering for seed the following thoroughly tested varieties: Garfield, or Natural Cross, white bald; Surprise, white bald; Occidental, light amber bald; Fultz's Clauson, red bald. Send post card for price.
THOS. ELMES, Grain Experimenter, Princeton, Ont. aug-2

THE FOURTH SEMI-ANNUAL AUCTION SALE

OF THOROUGHBRED

Holstein Cattle



BY THE
**WYTON
STOCK-BREEDERS'
ASSOCIATION**

WILL BE HELD OCTOBER 3rd, 1888, AT 12:30 O'CLOCK

About **Forty Bulls and Heifers** will be offered for sale. In order that the buyers may see the sites and dams, the sale will be held at **WYTON**, a station on the Grand Trunk R. R., between London and St. Marys. For further particulars and catalogue, address **W. B. SCATCHERD, WYTON, ONT.**

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Sale of Live Stock.

The surplus thoroughbred and grade stock—Cattle, Sheep and Pigs—of the Ontario Experimental Farm, will be sold by public auction, at the farm,

ON THE 5th SEPTEMBER.

For Catalogue, apply to

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GUELPH, July 27, 1888.

Preliminary Notice of Auction Sale. I will hold a public sale of Durham Cattle about the middle of October. Look for full announcement in Sept. number of this Journal.

A GRAND LOT OF BULL CALVES.
HUGH THOMPSON.
Drawer "D." St. Marys.

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ON WEDNESDAY AND THURSDAY, SEPT. 12 AND 13, FOR TWO HOURS EACH DAY, COMMENCING AT 2 P.M. THE HON. CHAS. DRURY WILL PRESIDE. FIFTEEN MINUTES TALK BY PRACTICAL MEN.

Ensilage Corn, illustrated with specimens, by JOHN SPRAGUE.

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Grass and Fodder Crops, illustrated with specimens, by R. J. GRAHAM.

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Dairy Influence in Agriculture, black-board demonstration, by JAMES CHEESMAN.

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Further information from **JAMES CHEESMAN**, Ontario Creameries Association, TORONTO.

• ONTARIO •

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RE-OPEN ON THE 1st OCTOBER.

The object of this institution is to give a thorough insight into the theory and practice of Canadian farming, and for that purpose

NINE BREEDS OF CATTLE AND SEVEN BREEDS OF SHEEP

are kept on the farm, also Horses and Pigs.

A full and thoroughly practical course of instruction is given in

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the same as to High Schools. If need be special arrangements will be made for farmers' sons who may not be quite up to this standard.

COST for Board, Washing and Tuition, to an Ontario farmer's son, \$15 to \$60 a year; if he be a *County Student* \$15 to \$40 a year.

For circular giving full information, apply to

JAMES MILLS, M. A.,

PRESIDENT.

GUELPH, July 27, 1888.

aug-2.

GUELPH CENTRAL

EXHIBITION

Will be held on the Exhibition Grounds in the

CITY OF GUELPH

—ON—

Wednesday, Thursday and Friday,

SEPT. 12, 13 AND 14

Prizes will be given for Stock, Produce, Ladies' Work, Fine Arts, Collie Dogs, etc., etc.

Speeding in the Horse Ring, and other attractions will be provided.

For further particulars see Prize Lists, which may be had on application to the Secretary.

GEO. HOWARD,

President.

R. MACKENZIE,

Secretary.

FALL TERM

—OF THE—

• ST. CATHARINES • • BUSINESS • COLLEGE •

Opens Monday, Sept. 3rd, in all Departments.

This school is unequalled in Canada for its excellent courses and thorough work.

Send for opening announcement

W. H. ANGER, B. A., Principal.

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This Harrow has swept away all opposition either in Disk or Tooth Harrows, and stands as

**THE BEST,
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and THOROUGH WORKING CULTIVATOR made. It has SOLID STEEL DISKS, Chilled Boxes, and Seeder Attachment. It turns the soil either inwardly or outwardly.

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and a large number of Local Fairs, when its superiority will be shown.

The Best Farmers in the Country are Using it and Endorse it.

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Heifers and bulls for sale, mostly sired by imported Duke of Harehote 68th, 65797. Also a number of fine Hereford grade heifers and young bulls.

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OAKLANDS 'JERSEY' STOCK FARM

(All registered in the American Jersey Cattle Club (Herd Register).)



Cows with well-authenticated test of from 14 lbs. to 24 lbs. 13 oz. in one week, and from 81 lbs. to 106 lbs. 12 1/2 oz. in 31 days are in this herd. Young bulls (registered in the above herd book) for sale from \$100 to \$300 each.

A herdsman always on hand to show visitors the stock, and the stock-loving public are always welcome.

VALANCEY E. FULLER, Hamilton, Ont.

JAMES DRUMMOND,
Petite Cote, Montreal.

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**PURE-BRED
AYRSHIRE
CATTLE**



Of Large Size, and from Choice Milking Strains.

The herd numbers 65 head, and for three years in succession has won Provincial or Dominion prize as best milkers. The imported bull PROMOTION (3212) at head of herd.

Young Stock on hand at all times for sale.

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Shorthorn Cattle and Berkshire Hogs

Herd headed by the Bates bull Duke of Rugby, and bred with strict reference to individual merit and milking qualities. Animals recorded in both American and R. A. herd books.

My Berkshires are of the choicest breeding—large size and grand individuals. For prices and other information, address as above.

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AND

Shropshire Sheep



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FOR SALE Superior show Cows, Heifers and Bulls, of the best Cruickshank families.

Purchased in England, for arrival in August, 175 Shropshire sheep, including Rams and Ewes, winners at the great Royal show and other exhibitions.

Inspection invited. Catalogues on application.



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WHITE SWINE.

Stock for Sale. Registered pedigree.

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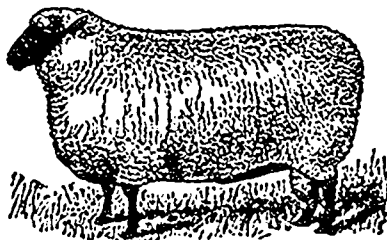
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ROBERT MARSH, Proprietor.
RICHMOND HILL, Aug. 17th, 1886.



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For sale at reasonable prices a fine lot of Shropshire Ram Lambs, bred from my imported ewes and ram.

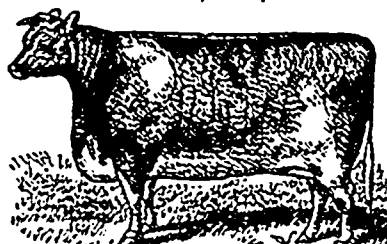
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Choice lot registered also Clyde Horses and Shorthorn Cows.

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I HAVE still on hand and for sale an excellent lot of imported Bulls, Heifers and young Cows, besides an exceedingly good lot of home-bred Heifers and Bulls—all by imported sires and mostly from imported dams.

I can supply intending exhibitors with first-class show animals of either sex and of various ages, from calves upwards.

I have also a good lot of imported CLYDESDALE STALLIONS and MARES for sale.

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SHORTHORN CATTLE.

CLYDESDALE HORSES,

AND SHROPSHIRE DOWN SHEEP.



Stock of both sexes for sale.

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OF



PURE-BRED SHORTHORNS

Have at all times a number of both sexes for sale. Catalogue of young bulls recently issued.

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Sutton West, Ont.

Choice of 50 head of

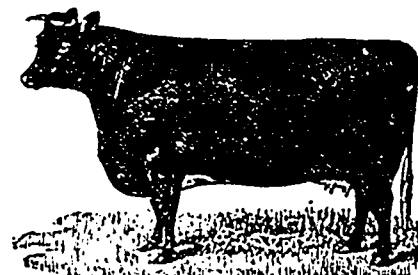
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Including three yearling bulls, by Butterfy Duke 6th, he by 4th Duke of Clarence of Bow Park fame; all from the best strains, and registered in the Dominion Herd Book. Also young Horses and Pigs. Inspection invited.

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A-1 Shorthorns,

Baron Constance 10th heads the herd.

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HEAVY AND LIGHT

HORSES OF ALL

KINDS.

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2 Miles from Chatham on the G. T. R.

Visitors met at station.

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SHIRE HORSES,
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All our pigs registered in the English Herd Book. "Good Stock with Straight Pedigrees," our motto.

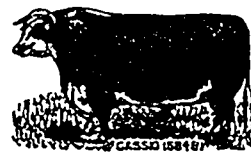
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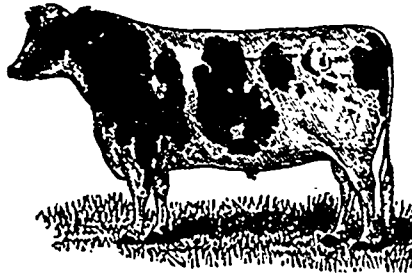
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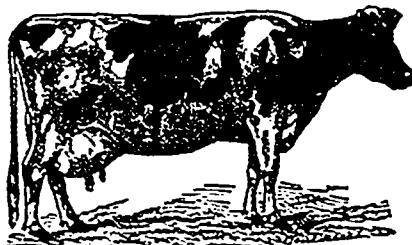
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Young stock, all ages, for sale, including Carlotta's Netherland Prince, dam Carlotta, with butter record of 22 lbs. 7 oz. unsalted butter; sire, Netherland Prince. Prices low for quality of stock.

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HOME of the imported Holstein-Friesian bull MARS I. ELIS No 61, Vol. 1, H. F. H. B., selected in North Holland—special request, and whose 3 calves secured first prizes at the Dominion Exhibition, held at Sherbrooke, Que., Sept. last, 1886.

Parties wishing to secure bull calves or yearlings from such a grand individual, and out of nothing but imported Holstein-Friesian cows, will find it to their advantage to write to

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No Reserve. All stock for sale, and in A1 condition.

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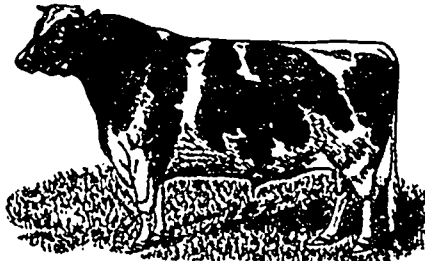
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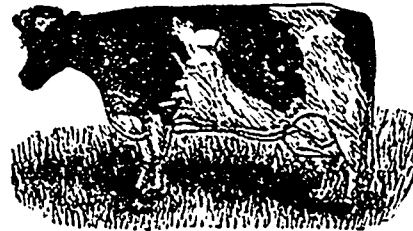
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All stock registered in the Holstein-Friesian Association of America. Foundation stock imported direct from Holland.

Young stock, male and female, for sale.

Correspondence solicited.

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NEW DUNDEE, WATERLOO CO., ONT.

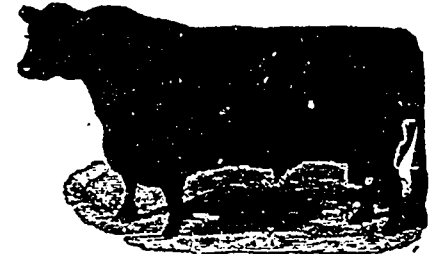


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HOLSTEIN-FRIESIAN CATTLE.

Herd headed by the noted prize-winner Prairie Aaggie Prince H. F. H. B. No. 2, first prize at the Industrial and Provincial in 1886; dam, Prairie Flower, 5 yr. old butter record of 20 lbs. 1 oz. unsalted butter per week. This herd has been crowned with more honors in the show-ring than any other herd in Canada. Selections made from the finest herds and most noted milk and butter producing families in America. Every animal selected for its individual merit—symmetry, size and weight a special object. Our motto, "QUALITY." Stock for sale. Visitors welcome. Correspondence solicited.

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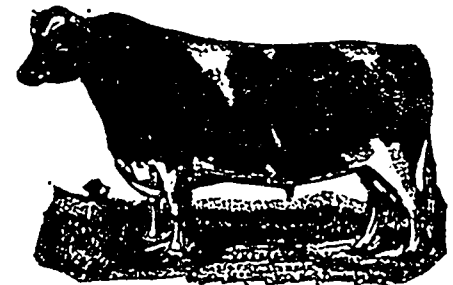


The undersigned are in a position to supply young bulls of the above excellent breed of cattle at prices within the reach of all, and as to their quality we need only mention that our herd finished last season by taking the medal and diploma, for the fifth year in succession, at the Provincial Exhibition, held in Ottawa. Send post card for our Illustrated Catalogue, and give us a call before investing.

HAY & PATON, Proprietors,

New Lowell, Co. Simcoe, Ont., Canada.

**CREDIT VALLEY STOCK FARM.
SMITH BROS.**



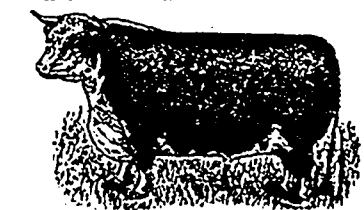
CHURCHVILLE, (PEEL CO.) ONTARIO,
Breeders and Importers of Pure-bred Registered

HOLSTEIN-FRIESIAN CATTLE

SADDLE and CARRIAGE HORSES.

Stock always on hand for sale. Send for catalogue. Visitors always welcome. jae-6

THE TUSHINGHAM HEREFORDS

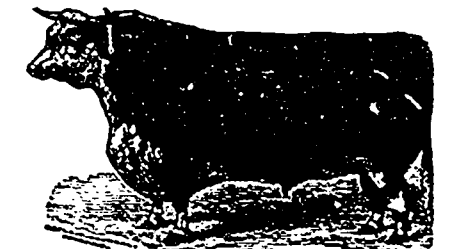


THIS herd, grounded on selections from the best blood in England, is remarkable for the number and uniformity of the good calves that it has produced during the three years of its existence, owing in a great measure to the excellence of the stock bull Tushingham (S127), by Charity 3rd (6350), by The Grove 3rd (5051). Several young bulls of his get are held for sale.

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The Park Herd of Herefords,



THIS herd embraces over fifty head of choice animals. All registered. Catalogues sent on application.

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Farm, half a mile from C. P. R. and G. T. R. Stations, eight miles from Toronto.

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We breed and have

FOR SALE
Shorthorn Cattle
and Leicester Sheep

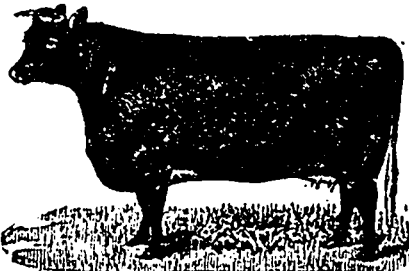


of the choicest quality and best breeding. Duke of Colonus - 9282 - heads of herd.
Our Stables are one mile west of Lucan Crossing, on Grand Trunk and London, Huron and Bruce Rail ways.

We have Five extra good Batts, which we will sell now very reasonable.

Come and see us **JAS. S. SMITH, Maple Lodge P. O., Ont**

J. Y. REID, HILLSIDE FARM,
(2 1/2 miles south from Paris.)



BREEDER of Shorthorn Cattle, all registered in the new Dominion Herd Book. The highly bred Bates bull, 2111 Earl of Burlington, bred at Bow Park, at head of herd. The herd is composed of a choice lot of young cows and heifers, all of the ROAN DUCHESS strain. Young stock at all times for sale. Apply to

James Goddio, Manager, PARIS, ONT

Imported Clydesdales For Sale.

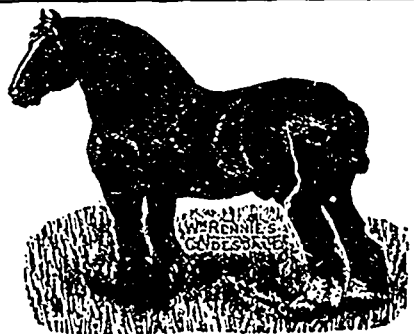
FROM one to four years old, stallions and fillies from the best studs in Scotland, including gets from Macgregor, Harold, Knight of Snowdon, Sovereign, Crown Jewel, McMaster, What-Care-1, Clyde, Scotts, Laird Craford, etc., etc.

The stock is selected by myself with great care. Parties wishing to purchase would do well to inspect personally before deciding.

Also a few **Shetland Ponies.**

Correspondence Solicited. **Howick Station, C. A. R., on the farm.** (G. T. R. one mile from Howick also.)

Address, **ROBERT NESS, Woodside Farm, Howick P. O., Pro of Que.**



IMPORTED CLYDESDALE HORSES

of superior breeding and quality
FOR SALE AT REASONABLE PRICES

both Stallions and Mares, from 2 to 4 years of age, all registered in Scotch and Canadian Stud Books, bred from the following noted sires: Darnley (222), Belted Knight (1795), Breadalbane (1078), What-Care-1 (912), McCammon (3818), Harold (2851), Trademark (3269). Inspection solicited.

WM. RENNIE, Toronto.

Stables, 88 Duchess St. P. S.—Also **SHETLAND PONIES.**

Clydesdales

FOR SALE

Importation of 1887.

Not long arrived, a superior lot of

CLYDESDALE STALLIONS AND MARES

Ranging from one to five years old, including gets of the celebrated Lord Erskine, Belted Knight, Sir Wyndham, Warrior, Goodhope, Lord Kirkhill, Old Times, Pride of Galloway and Macgregor. Prices reasonable. Catalogues furnished on application.

ROBERT BEITH & CO., Bowmanville, Ont.

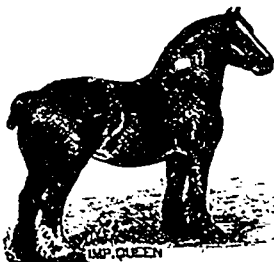
27 Bowmanville is on the main line of the G. T. R., 40 miles east of Toronto and 29 1/2 west of Montreal.



D. & O. SORBY,

GUELPH, ONT.

Breeders and Importers of
Clydesdales.



27 registered ones on hand and for sale, including gets of the following sires: Darnley, Lord Lyon, What-Care-1, Macgregor, Belted Knight, Goldenberry, Corsewall, Top Gallant and Prince

Charlie; of which 14 are Stallions and Colts, 8 of them our own breeding, which we can sell very cheap, the rest are Mares and Fillies, mostly in foal.

JAMES GARDEHOUSE & SONS,

MALTON, ONTARIO, CAN.

Breeders and importers of
CLYDESDALE & SHIRE

HORSES,
Shorthorn Cattle and Berkshire Pigs. Young Stock for sale. Terms reasonable.

JAMES GARDEHOUSE & SONS,

MALTON STATION, Highfield P. O., Ont.



fe-1f

COLDSTREAM STOCK FARM,

Whitby, Ontario.

We have on hand and for sale a superior lot of imported and home bred

Clydesdale Stallions

and mares. Several of them were prize winners at the leading shows in Scotland and Canada.



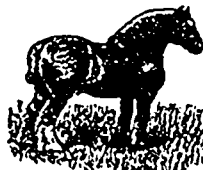
ALSO A FEW CHOICE SHETLANDS.

Prices to suit the times.

Address, **JEFFREY BROS., Whitby, Ont.**

CLYDESDALES, SHORTHORNS AND SHROPSHIRE.

JOHN MILLER, Brougham, Ont.,



has on hand for sale a large collection of prize-winning animals of the above breeds. The Clydesdales are large and of the best quality. The Shorthorns are of the best Scotch families and of superior individual merit.

Particular attention is called to our Stallions and young Bulls, which will be offered at moderate prices. Terms easy.

Residence, 3 miles from Claremont Station, C. P. R., or 7 miles from Pickering, G. T. R., where visitors will be met by telegraphing us at Brougham. Correspondence solicited.

GRAHAM BROS., CLAREMONT, ONT.

RESIDENCE ONE MILE FROM CLAREMONT STATION.

Importers of Registered

Clydesdale

STALLIONS AND MARES

constantly on hand and

FOR SALE

At reasonable terms.



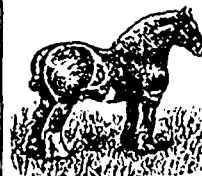
The importations of 1887 comprise a large number of one, two, three and four-year-old registered stallions and mares, the gets of such sires as Macgregor (1487), Darnley (222), and Prince of Wales (673). Also a few choice **SHETLAND PONIES.**

Correspondence solicited, and visitors always welcome.

PERCY & YOUNG,

Bowmanville, Ont.,

Home of the Provincial Renowned Manfred (1758).



Have on hand for sale, on very reasonable terms, their 1887 importation, consisting of 8 very choice and carefully selected

REGISTERED CLYDESDALES

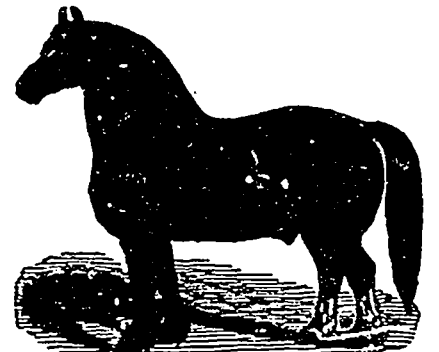
prize winners, of very superior quality, form and finish, consisting of 3 two-year-old stallions, 2 one-year-old stallions, 1 four-year-old mare, 1 filly two years old, 1 one-year-old filly.

Our importation consisted of the get of Lord Erskine, Cairnbrogie Keir, Good Hope (by Darnley), Crown Jewel and other noted sires.

We invite the attention of intending purchasers to the rare individual merit and excellence of our stock.

Also two very fine Canadian-bred Stallions, 3 and 4 years old, almost solid colors, sure foal getters.

SHIRE BRED HORSES



MORRIS, STONE & WELLINGTON

IMPORTERS, offer for sale choice Stallions, Mares and Fillies, which are registered in the English and Canadian Shire Stud Books, including prize winners at the Royal Agricultural in England, and the Industrial at Toronto.

MORRIS, STONE & WELLINGTON, Welland, Ont.

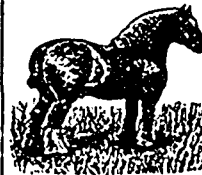
Imported Clydesdales FOR SALE.

Prices moderate and terms to suit purchasers.

Not long arrived, a superior lot of registered

CLYDESDALE

Stallions and Fillies



from 1 to 3 years old, and with the exception of three all have been prize winners at leading shows in Scotland. Including gets of the celebrated sires Darnley, St. Lawrence, Lord Hopion, Macgregor, Old Times, Gallant Lad and What-care-1.

Our horses are all selected with the greatest care from the best studs in Scotland. We pay a little more for our choice than those who buy in job lots. Parties wishing to purchase superbly bred animals should inspect our stock.

DUNDAS & GRANDY,

Velverton P. O.,

Pointypool station on the C. P. R., 50 miles east from Toronto.

J. F. QUIN, V. S., Brampton, Ont. Ridgling horses successfully operated upon. Write for particulars.