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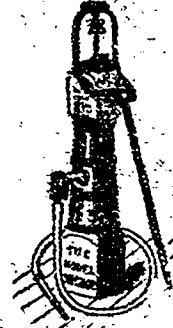
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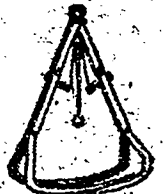
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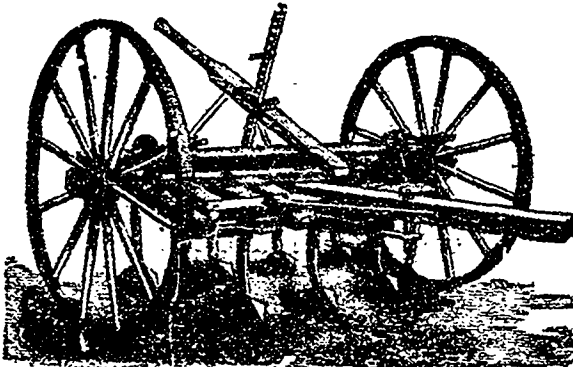
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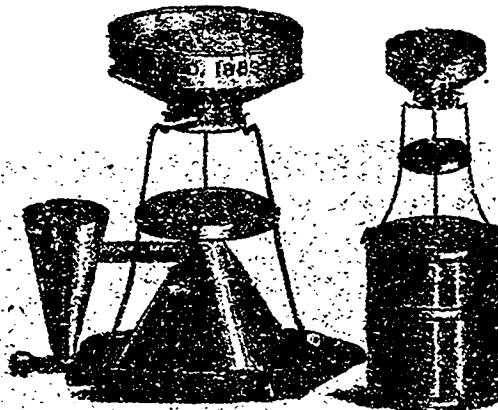
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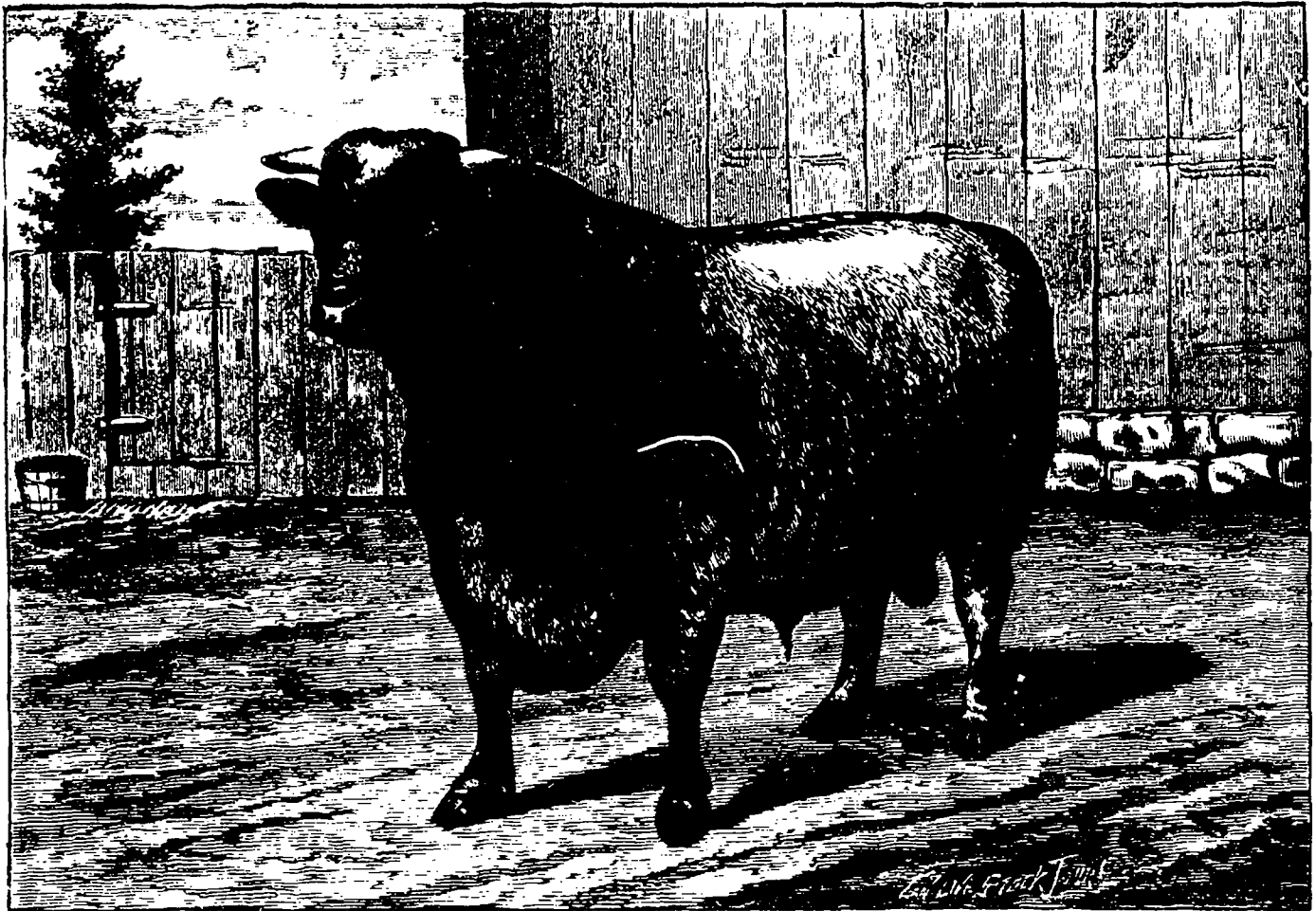
THE CANADIAN LIVE-STOCK AND FARM JOURNAL

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

VOL. VI.

HAMILTON, CANADA, MAY, 1889.

No. 67



A KINELLAR SHORTHORN BULL, ROAN PRINCE (54293).

The property of H. J. Davis, Maplewood Stock Farm, Woodstock, Ont.

Roan Prince (54293.)

The engraving above given is a true representation in every particular of a grandly-topped and finished bull, Roan Prince, and worthy he is to stand at the head of such a herd as that of the Maplewood Stock Farm, owned by Mr. H. J. Davis, of Woodstock. This bull has contributed largely to the present high estimation in which the Scotch Shorthorns are held, for he has never yet left the show ring of any of our leading exhibitions at Toronto, Guelph or London, without a ticket, though always in the very best of company. He was bred from a herd the fame of which is known to every Shorthorn lover—that of Mr. S. Campbell, Kinellar, Aberdeenshire, Scotland—and he is of the Nonpareil strain, that the sages of Sittytton, the Cruikshanks, gave such an impetus. Roan Prince was sired by Vermont, and was imported by Mr. Arthur Johnson, of Greenwood, Ont. This bull carries a wealth of flesh under a coat of glossy hair. As to his form, the above life-like illustration speaks with more force than words. He is a remarkably strong bull, throwing himself into his calves without fail. The latter are splendid feeders and possess that desirable early maturing quality to a remarkable degree.

The females of the Maplewood Farm number 10 head in all, and have been mostly sired by Cruikshank bulls. They are nearly all reds, and are good roomy animals, fleshy, but true breeders, and of such a build as to guarantee sound constitutions, which is also bespoken by their mossy coats and other reliable indications of robustness and vigor. A few choice grades are also kept, and a number of superior Berkshires are bred annually, to which a young imported boar of excellent merit has been added for service the current year.

Still to the Fore.

The giving in the press of full and comprehensive reports of the several association meetings, we hold to be one of the most potential means of advancing the interests which these associations father, and acting on this idea we have always made it a strong feature of the JOURNAL to be behind no other publication in this respect, and we may modestly point to our issue of last month to bear us out, by direct comparison if you will, to the assertion that we are yet to the fore. Our several reports of last month, and especially that of the Holstein Association, we are pleased to know, have been appreciated by our pat-

rons and readers, and doubly so as we were the only agricultural periodical that gave the latter due prominence; others, which we consider an affront to the great and growing interest, not even giving a brief synopsis, though they were possessed of equal chances with us to give a complete report. This month we have endeavored to make our appearance as bright as possible. The engravings illustrating the points of a draught horse were photographed from life, and specially prepared with the expenditure of much time and skill by our artist. Our article on silo building, which is one of the burning questions of the day, we feel sure will meet with due appreciation, and especially the illustrations that are given, they having been carefully prepared by our own engraver. The others, illustrating the several other articles, contribute their quota and add their testimony to the fact that this is one of our brightest issues.

"There is no paper comes into our house that is read with more interest than the JOURNAL."—Hugh Davidson, Peterboro, Ont.

"Herewith find enclosed \$1 for the JOURNAL for one year. A friend handed me a copy it pleased me so well that I feel like patronizing it."—James Cogley Emmell, Mich., U. S.

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HAMILTON, CANADA, MAY, 1889.

READERS of the JOURNAL yet in arrears will please renew their subscriptions at once, and get our handsome picture of the Ontario Agricultural College, Guelph, Ont.

DO NOT "break in" your colts, but adopt the more humane as well as more profitable method of training them. The former is the iron-handed plan of the cowboy, the latter the method of the progressive horseman. Kindness and gentleness of handling is the most efficient whip to secure obedience and confidence that is at present manufactured. Early accustom them to handling of all parts of their bodies, to the wearing of the halter and leading them, and fully three-quarters of their education is completed. A colt is essentially a child of his conditions, possessing a brain to reason with and connect cause and effect. Consider him a mere machine, without life or brains, and act on these convictions, and he will in time think himself so and act also on his convictions, much to the detriment of his value, both for working purposes and appearance.

"STOCK-RAISING, by common consent, is admitted to have fallen to the lot of the farmer, whereas it should be a special calling," says a writer of Europe, who wears at least the garb of authority, if the above extract does not speak much for its texture. To such thoughts as these spreading among our farmers is undoubtedly due much of the apathy now shown by a few to stock-raising, imagining as they do that this loud decrying of the scrub is to boom the interests of a few importing stockmen, and point to stern facts and infallible experiences of fellow-farmers as you may, they will gaze with incredulous eyes, deeming them mere baits to catch them. It is our earnest desire to see this grand interest of our commonwealth fall to the lot of every farmer in our Dominion, for not until then will we be followers of true economical husbandry. The trend of feeling is upwards, and the time is not far distant when we shall find a pure-bred bull in every stable, aye, even in the most backward

of our backward counties. Then, and not till then, will the JOURNAL have accomplished one-half of its life-mission. A good pure-bred sire of any of the breeds, chosen for his fitness to head a herd and ability to meet the required wants, may be purchased at a small cost at the present time. So we think no farmer can go wrong in making such a selection if he knows his wants and conditions thoroughly.

It will take $4\frac{1}{2}$ lbs. of feed to make one pound of pork when the hog weighs 100 lbs., and when it weighs 350 lbs. it will take 7 lbs., says Prof. Henry, of Wisconsin. So much for early maturity of pigs, but do not the conclusions that may be drawn from facts apply with equal force to the steer? Though figures may be wanting, yet the teachings of experience and observation show it to be fully as important in beef production as in that of pork. There is not a vestige of doubt but that the Shorthorns hold the prominent position they do in beef circles to-day principally because of the early maturing quality, which is a well marked characteristic of the herd. The quick returns given make it a quality of prime importance to the feeder, independent of the better results for food fed that the young animal gives. A short time ago the cry against baby beef was raised, but it did not influence the successful producer, he recognizing the relation of the same to his profits and acting on this knowledge. Early ripeness does not necessarily mean a poor quality of product; it may be induced consistent with the laws of health, and for this reason the cry raised has spent itself with but few re-echoes.

WHILE it must be freely conceded that early breeding is economical and gives rise to better results for a time, it should be remembered that there is a certain limit which cannot be trespassed on without serious loss of constitution both in the dam and the progeny. At a time when nature is busily adding to the growth of the young animal—the building up of the framework, the construction of the ligaments and muscles, which are all nurtured from the blood—it is easily conceivable that when the flow of the latter is directed to the development of new organs and the nourishment of a new being, that a vigorous, robust constitution, as shown in a good growth of bone and muscle, must not be looked for. The same digestive capacity must feed the two, and if young and undeveloped, a checked growth of one, and a stunted growth of the other must necessarily result. A heifer from two and a half to three years old is in a balancing condition—her tendencies may either be directed to milk or beef very easily. From $2\frac{1}{2}$ to 3 years, then, varying with individual vigor, is time enough, and in the case of the bull, the same age or thereabouts, is early for a bull worthy to head a herd, that is deserving of every care that will tend to lengthen his time of usefulness and extend to the last his procreative powers. Early maturity, the crying demand of our times and a factor of great economy, like all other good things, deserves to be kept within bounds and not allowed to run riot, for it is well to be careful that in feeding the stream the fountain is not dried.

THE American Consul, Tanner, of Liege, Belgium, in writing to the American government gives expression to the opinion that if we on this continent would use the money spent in the purchase of foreign breeding cattle in constructing quarters for our native cattle equal to the housing quarters of Europe; and if we would give our native cattle the same care we give to high-priced foreign cattle, that within four generations of careful breeding, always selecting the best

bulls and the best cows and keeping the others thinned out by the butchers, we would soon have a native breed that would rival any cattle in the world. We fully recognize the power of such factors as the worthy consul has mentioned, and freely grant that their observance would in a short time produce a very marked effect. For the present, however, we shall suppress our doubts as to whether such a reformation could be brought about in the time stated, with the Texan steer, for instance, or our equally meritorious scrub, and merely content ourselves with presenting another phase of the question. We cannot admit, though we give the elements of food, care and selection their true worth, which is beyond question of great import, that a breed the equal to the Shorthorn, the Aberdeen-Angus, or the later evolved Ayrshire, could be produced in the time allotted. The element of time is an important consideration in respect to this question which cannot be overlooked. In a week, or thereabouts, we can import from England the prime animals of some of her best Shorthorn herds, having in their form, their inherent powers and qualities, the outcome of years upon years of the close application of breeding principles in the hands of experts. Compare this brief week with four generations and the matter is presented in its true light, and the mistaken idea shown in asking our farmers not to take advantage of the offerings made them of the years of labor that the breeders of Europe have put upon their proffered products, is at once apparent. It is certainly sound to advocate that our native stock be used for foundations, but let pure-bred bulls be used with a free hand and so upgrade our native herds. Among the many breeds of the day no difficulty need be experienced in making a choice to suit our conditions, and it would be sheer waste of time and labor to attempt to produce a breed of our own.

Do Not Recognize Luck in Breeding.

"Luck is a fool; pluck is a hero," is one of the grandest of the many maxims that have been voiced by sages, and with it as a central pillar many edifices of success have been reared. Its acceptance in its entirety would bring about a plainly discernible change, not only in the methods of the farm, but of the various interests of our commonwealth. Luck is the unktion of the careless worker, and balm of the slothful minded, diverting the natural stimulants to industry and enterprise from their regular channels. In the farmer's practice, based largely on known principles, it should not find an abiding place, however much the populace of the speculative world may court it. The element of luck has gained a strong foothold in breeding, largely due to the fact that its principles are yet hazy and unsettled, but it is our endeavor to press the fact home that it never should be relied on when cardinal principles point the way. "Success," Mathews says, "always a coy maiden, is now, when crowds of wooers have made her saucy, harder than ever to win;" and so it is in all the departments of farming, especially in the breeding of live-stock.

The elements of success do not count among their number, "luck," but those same firm principles that guided the bark of a Booth or a Bates to a successful haven, are just as essential for a ground-work as at the time they labored so assiduously to accomplish their ends. Bakewell acknowledged no such factor as he dissected and pickled the carcasses of many of his animals, and the Leicester men of to-day may largely accredit the excellence of their flocks at the present time to this elimination of luck from his methods, and so it is, and always has been, with prominent breeders; in fact, the degree of their excellence

in this art may be measured by the extent to which they were successful in banishing chance from their works. These hap-hazard results, coming from reliance on luck are noticeable in our cattle, but it is far more discernible in our horses, for here it has worked with more detrimental effect largely induced by the intoxication arising out of the brilliant doings of a few of the old time turf performers. We say old time performers, for even in the raising of trotters to-day, fixed principles are recognized and steadfastly followed by those who make this branch a speciality.

At the present time many decisions will be made in the choosing of sires that will have more than transient effect, let us hope for the better, on individual herds, as well as our live-stock interests as a whole. Decisions that future repentance will not undo, no matter how sincere the desire may be to make up for past negligence. It is the importance of this question at the present moment that stirs us to present it as one well worthy of serious thought and careful consideration.

In this connection the thought naturally arises out of what has gone before, how may the element of luck be to a great extent at least eliminated from the question of breeding. The first that presents itself to our mind as the most potent to do this is the using of pure bred sires of good personal qualities, as well as possessing ancestral virtues. Allow us to say here that it is just as possible to have a scrub pure bred as it is to have one of no breeding, but as the latter predominate by great odds in Canada it has been against these that our forces have been centred. Happily Canada possesses among her herds, flocks and studs, some of the best pure bred animals that money can buy, but also, unhappily, she possesses very many of the opposite type, the worst that money can support. We have reiterated time and again that the pure bred sire of any of our breeds, possessed of a good pedigree, has a voucher for his ability to reproduce himself in his offspring, and the fact that he can do this should secure him patronage in preference to his rival of nondescript breeding. So long have our breeds been carefully selected and their properties so developed, that reliance can be put on their transmitting those qualities if conditions are at all favorable. It is very easy, by means of a little pampering and padding to cover up the individual defects of a stallion or bull, but the qualities of his ancestors, made known through his pedigree, are always reliable in the hands of those that know how to draw conclusions from them rightly.

The difference of a dollar or two between the pure bred sire that comes up to your ideal and the scrub or plug should not be allowed to throw you back nearly a year in time, and in many cases more, in the grading up of your herd. Before making a choice of any one it is well in most cases to get a look at some of the animals he has thrown, being careful to make all due allowance for the breeding of the dam. This will aid in forming conclusions as to how far he possesses that good quality known among breeders as impressive power. This can be largely told by appearances and gleaned also to a great extent from pedigree, but actual results, perhaps, surpass them all in this respect. There are a number of our breeders at sea without a rudder, now veering to the left and again to the right, just as the breeze, having its origin in their whims, catches their sails. The establishing of an ideal of what you desire to produce, and the calling into play of all the items, minor as well as major, that will tend to bring about the desired result is demanded. Commend us to the breeder who can take you into his byre and point out youngsters as like as eggs, or take you into his stables and show you

colts that will readily match and form mated teams. Such a person has, by the observing of recognized principles, taught by experience as well as those garnered otherwise, succeeded in almost completely smothering luck out of his methods.

While all due importance should be attached to the selection of the sire, yet the dam should never be slighted. It is said that a participant in one of the Olympian races of olden days, being feverish as to the result of the contest, inquired of a savant of the turf what his chances of success were. "Ask the dam of your horse," was the repartee, and it was very appropriate, for it is generally conceded that the dam has a greater effect on the staying power or stamina of the progeny than the sire. Aside from this, however, it is obvious that careful selection of the dam, in conjunction with the sire, is going to materially lessen the chances of any result being the outcome other than that which they would naturally lead one to look for. A well knit and formed animal is one noted for the absence of faults rather than for the presence of a few marked features of excellence, and following out this the conclusion naturally is found that it is desirable to have the qualities of the sire and dam blend and offset each other, to the advantage of the progeny. Very violent crosses, however, are more apt to result, not in a medium, but rather an uneven balancing of the specially noticeable qualities of sire and dam.*

The Merino Sheep.

The history of this famous breed of short-wooled sheep reads more like romance than sober history. For long decades Spain was their principal seat, but during the present century they have overspread a large proportion of the American and Australian continents. They have found a congenial home in New Zealand and several other far away countries. Long ago they crossed the Pyrenees and the Alps, and in Saxony in particular, through special treatment by way of close housing in stormy weather and raw and dewy nights, the wool has been brought to a degree of fineness unrivalled by that of any other branch of the great Merino family.

They got a footing in the United States about the beginning of the present century and have at different intervals been unquestionably the most popular breed of sheep in the great Republic. Toward the close of the war of 1812-1815 the rams were not infrequently eagerly caught up at prices varying from \$1000 to \$1500 and since that time they have journeyed westward continuously with the settler, till now we find them feeding in long array on the eastern and western slopes of the Rocky Mountains.

In no country has the carcass of the Merino been improved so much as in America, and this has been done without sacrificing in any degree the quality of the wool, although it has at the same time been greatly increased in quantity. In the first decade of the century the imported Merino yielded but $3\frac{1}{2}$ to 4 pounds of brook-washed wool. At the present time many small flocks might be selected where the average would be over ten pounds.

Merinos have never been very popular in Canada, perhaps for the same reason that they never became popular in Great Britain. In both countries the attention of manufacturers was more concentrated upon utilizing coarser wools, and it may be this preference was based upon the fact that in both countries large flocks of the coarser woolled sheep breeds were abundant. We are not sure that there is not a bright future before the fine-wooled sheep even in Canada. It is a fact that considerable quantities of the wool are used in some manufactories in the Dominion at the present

time, the supplies for which are almost wholly brought from other lands. We have been informed by a manufacturer, of Hespeler, Ont., that he would be glad to purchase the wool of the Merino and Southdown in large quantities if the same could be obtained of a good quality in this country. The small quantities that have been secured have given results eminently satisfactory. Why, then, should our supply come all the way from Australia and New Zealand when we have the facilities for growing these wools in abundance if our farmers are so minded.

Such being the case, we hope those engaged in growing this breed of sheep in our midst will persevere in the good work in which they are engaged. The Messrs. W. M. & J. C. Smith, Fairfield Plains; G. & B. Deo, New Sarum, and Rock Bailey, Union, are amongst the foremost breeders in Canada at the present time. The flock of Mr. Bailey is perhaps the oldest and the largest, though in this we may be mistaken. We are pleased to notice at the recent exhibitions other breeders are coming in, while there is still room for a much larger number.

The excellence of the breed does not consist so much in the quantity or quality of the carcass as in the unexampled fineness and felting properties of the wool, and in the weight of the fleece. They readily adapt themselves to variations of climate, and have appetites not in the least degree dainty. They also possess a quietness, patience, tractableness and gentleness that are seldom combined in so high a degree by any of the other breeds.

While it is true that they are not in the front as mutton producers, it is on the same principle that Jersey cows, unsurpassed for butter-making are not in the front as beef-producers. The return they give in wool, when we consider the quantity and price, more than atones for the other deficiency.

In the improved Merino the head and neck are short, and rather thick and wrinkled in the case of rams, and both rams and ewes have a deep soft plaited dewlap. The ears should be small, and the legs short and strong. They should stand well apart, and should possess a heavy fore-arm and full twist. The body is plump and round and not very long; the back straight and broad; and the breast and buttock full. The skin should be of a deep, rich rose color, mellow and elastic. The constitution of a Merino is one of its strongest points of merit, and the indications of this prime quality should always be carefully looked for. It is this that gives them the ability to withstand severe inclemencies of weather that has placed them so well forward in ranching districts of Australia, and other countries, coupled with the valuable breed peculiarity of doing well even when kept in very large flocks.

Stocking a Farm.

(First Paper.)

In Ontario at the present time stock-raising is beyond all comparison the greatest agricultural interest engaging the attention of the farmer. By far the larger portion of his gains are gathered from this source, hence it has a claim upon his attention of paramount importance. The wheat belt is shifting westward every year, and the exports of coarse grains from this province are fast decreasing; it is therefore apparent that the future greatness of Ontario is very largely dependent on the kinds of live-stock that are kept within her borders, and the condition in which these are maintained. When we reflect that it is possible to keep live stock that will prove a continual source of profit, and that animals of the same breed can be so maintained that they will be a continual

source of loss, the duty incumbent on every farmer whose lands are stocked at all, to give this matter his most careful consideration is abundantly manifest.

Stocking a farm judiciously is a feat that but few comparatively accomplish in the best manner possible. And this arises, we believe, more from a lack of consideration than from a lack of ability. It is because so many farmers allow the masterly powers of thought which nature has given them in so remarkable a degree, to slumber in the cradle of the unawakened.

In stocking a farm the first consideration is *adaptability*. By this we mean the adaptability of the land to maintenance of stock of a certain kind, and the adaptability of certain breeds of stock to the present or prospective conditions of the land. Every farm is better adapted to the production of some one kind of stock, except so far as similarity of conditions, food and treatment will answer for breeds with much resemblance in their nature and uses. It is therefore the imperative duty of the farmer to consider carefully which breed or breeds are best adapted to the conditions of his own farm.

The popularity of a breed is usually a mightier factor of the farmer's consideration than adaptability, hence the reason of many of the mistakes that are made. Because Jersey cattle sometimes sell for \$20,000, this is no sure indication that every farmer should stock his farm with Jerseys, and because Shropshire sheep bring good prices and find ready sale to-day, it does not follow that a majority of farmers should take up the breeding of Shropshire sheep.

It would be unwise for the farmer with much surface soil violently undulating, to stock his farm with the heavy breeds of cattle, sheep or horses, and it might be equally unwise for those possessing fertile bottom lands to stock them with the lighter breeds of the same. One farm may be admirably adapted to dairying but less so to producing beef; another may suit the growth of mutton and wool, and a third may produce beef better than anything else. Let dairy produce, then, be grown on the first, mutton and wool on the second, and beef on the third. The enumeration of the conditions of adaptability would unduly swell the contents of this paper, and therefore for the present cannot be considered.

Proximity to market should be a determining factor. The dairyman remote from market town or railway station and in a locality where cheese factories and creameries are unknown, will find it impossible to compete successfully with those enjoying the advantage of proximity to one of these or to all of them. So situated, he had better not go into dairying. He could better engage in the growth of meat or wool, which can be marketed with but little trouble and at far longer intervals. The cost of marketing should at no time bear a large proportion to the cost of production or no place will be found for any margin of profit.

The *natural tastes* of the individual should be considered. The farmer who has a passion for light horses, fleet of limb and comely in form, should breed them, and so he who loves the sounding tread of the heavy draught, with massiveness of build, should breed the same. The lover of the heavy beefing types with parallelogramic forms, should choose the Shorthorn, and he who admires more rotundity of shapes, the Aberdeen Angus Poll. Those who are never so happy as when pails overflow with milk should think of the Holstein and the Ayrshire, and the man who has strong admiration for big wool sacks should breed sheep.

For the CANADIAN LIVE STOCK AND FARM JOURNAL

The History and Breeding of Bates Shorthorns.

BY RICHARD GIBSON, DELAWARE, ONT.

(Second Paper.)

We have noticed that Mr. Bates spent an early period of his life at Haydon Castle, (generally spelled Aydon but the *Official Gazetteer* gives it Haydon), in the neighborhood of which resided Geo. Culley, an eminent breeder and writer. The brothers Colling are reported to have said, that whatever they knew about breeding cattle they acquired in the first instance from Mr. Geo. Culley, and why may we not conclude that Mr. Bates from the same eminent authority obtained the first rudiments in the art of which in later years he became so proficient.



Thomas Bates, of Kirklevington.

It was not, however, until he moved to the Halton Castle farm that he laid the foundation of his Shorthorn herd. His attention was first called to this breed by Mr. Waistell, of Great Burdon, near Darlington, who was not only a large feeder and grazier, but also a breeder of Shorthorns, and one who was so far ahead of his time that he actually believed in pedigree and talked pedigree at that early date, when herd books were not only unknown but unthought of. We little realize the trouble and hard work that those old pioneers of the herd book, Messrs. Coates, Whitaker & Bates, had to undergo to get people to register their cattle. "Old Coates," as he was called, rode from breeder to breeder on an old white mare, with saddlebags attached to his saddle, collecting data upon which to publish the first volume of "Coates' Herd Book." This data was then submitted to either Mr. Bates or Mr. Whitaker, or both, for revision and approval, and had it not been for the kindly assistance of the Greenholme enthusiast, in more ways than one, the first volume would not have been published as early as it was. It was printed at Olney, and a manuscript copy of it is still preserved, written out in Mr. Whitaker's own hand.

We have said Mr. Bates' attention was first called to Shorthorns by Mr. Waistell, and from him no doubt Mr. Bates received those ideas of breeding and the value of pedigree in connection therewith that made him such a student of blood lines, and stickler of pedigree, perhaps the greatest that ever lived up to his own time.

When first Mr. Bates commenced farming for himself he bought and grazed the little Kyloes or west

Highlanders, as was the custom in that part of England, but he quickly became satisfied they were not what he wanted.

We find he afterwards, in "1799 twice bought steers descended from a cow bought at Mr. Harrison's sale after his death; and although the times were very much distressed, this cow cost 50 gs. Mr. Bates affirmed these steers were better than any he ever saw either at Barmpton or Kelton, when the Messrs. Colling's stock were at their greatest perfection. Mr. Bates had bought Mr. R. Colling's steers the following year, and both lots were by Mr. C. Colling's Favorite (252), then in his bloom" (Bell.).

It was in 1799 that the Durham ox by Favorite (252) came out first at Darlington with his half sister of the Duchess tribe. The latter was quite as great a wonder in her way, and confirmed Mr. Bates' fancy for the sort which was hereafter to be linked with his name. The subsequent travels of the ox all over England not only brought a large bull trade to Kelton and Barmpton, but was the means of drawing attention to this breed of cattle in districts of England very remote from the valley of the Tees. When we state the Durham ox weighed 3,024 lbs., "not by unwieldy bulk but by the ripeness of all his points," it is easy to imagine that he would create quite a sensation amongst stock-breeders in the southern and eastern counties of England, where small and ill-fed cattle predominated.

Mr. Bates had been breeding Shorthorns by the Tyne-side for some time, or as may be called, serving his apprenticeship, weighing and experimenting, but it was not until he became possessed of his first Duchess that he had any particular views, and he then became an enthusiast and seemed to be guided by certain theories, or perhaps prejudices, both in favor of and against different families. Of some, perhaps, he over-estimated their worth as much as he spoke disparagingly of others. Certain it is, until he bought the Stanwick cow, he had not struck out any decided line of breeding. This cow must have been a good one, for "Mr. Charles Colling frequently assured him that the cow he purchased in 1784 out of Stanwick's Park, was the best he ever had or ever saw." Mr. Bates himself writes, "I selected this tribe of Shorthorns as superior to all other cattle, not only as small consumers, but as great growers, and quick grazers with the finest quality of beef. My first Duchess calved at Halton Castle, June 7th, 1807. She was kept on grass only, in a pasture with 19 other cows, and made in butter and milk for some months, about two guineas (\$10) per week." This strikes the keynote of Mr. Bates' aim, beau ideal, or whatever term you choose to apply to that great fundamental principle he ever held in view—*utility*. They must raise their calves and make a weekly return also in shape of butter and milk sold. As he himself dictates, "Mr. Mason once said to me, 'You can go on breeding Shorthorns, because they pay you in milk, butter and beef, but we cannot unless we can sell at high prices to breeders.' This confession was unguardedly made one morning when he called upon me to breakfast, just as my housekeeper had put up the week's butter in readiness for the Newcastle market. I told him, however ready he was for breakfast, he should not have it until he counted the butter. There were 300-half pound rolls to go to market, besides what was sold at home and used in the house. There were then, I remember, 30 cows which had calved, and the butter sold for about 25c. per half pound, being above ten shillings (\$2.50) per cow, in butter alone, besides the value of the old milk otherwise sold. Had all the milk been creamed and made into butter it would have been,

above twice the quantity. He (meaning Mason), however, at that time, as I told him, kept 3 lots of cows, one to breed calves and then get dry (which was no hard matter) to attract notice by their high condition; a second lot as wet-nurses to rear the calves; and a third lot to supply the family with milk and butter. This is a system that would ruin any man, even if he had the land rent free and no outgoings to pay, and yet many, even in the present day, pursue this reckless course to gain premiums, attract public attention, and gratify their vanity at the cost of the pocket." (Bell.) Thus spoke the "sage of Kirklevington." Are there no Masons in the present day to whom these words may be addressed? His disciples should read and ponder over these words; a legacy has been left them to perpetuate and maintain a tribe of cattle that, when in its prime, has never been equalled; a tribe, if properly bred and handled will always maintain their high prestige; but remember utility don't sacrifice everything for *pedigree on paper* and "fool's fat." We shall have more to say upon this point when we consider the system of breeding as practised at Kirklevington. Mr. Mason, we have seen, kept his cows very fat; the Booths were always great admirers of fat, heavy-fleshed cattle. Mr. R. Booth used to say, as he pointed with pride to the wide, well-packed backs of his favorites, "Is not that worth a few pails of milk?" That exactly explained the difference in the object sought by those champions of the systems pursued by each. The one looked for round, smooth bodies, big chests, wide-fronted, well-packed neck veins; shoulders well covered (but often upright or forward; perfect butcher's animals. The others for elegance, neatness, fine heads, soft handling, mossy-coated cattle, that would earn their every day living, each day at the pail, and when they eventually found their way to the block produced a good carcass of meat. Of the old breeders Mr. Whitaker was another that looked for something besides a blubbery carcass. If they would not milk to suit his fancy, away they quickly went. Sir Charles Knight was another, and perhaps in many respects the equal of either the Booths or Bates or Collings; but no master hand was there at his death to continue the good work; his herd was distributed, and each one bred and crossed to his liking. His first herd was a wonderful one, the cows had such a well-bred, refined look. The "Knight of Fawsley" had too keen an eye for beauty and symmetry to tolerate anything coarse or rough. His hunters and thoroughbred horses must have, above everything, smooth, oblique shoulders, so must his cows. His horses, fine, intelligent countenances; so with his Shorthorns, each must have round ribs and strong loins. His horses must be able to go, his Shorthorns to milk—(usefulness again). The combination of beautiful heads, symmetrical bodies; of which smooth shoulders, neat necks, and especially round ribs were the principal characteristic, combined with an udder that had gained them the cognomen of "Fawsley Fillpails," was such as to make many a man break the 10th commandment, as he strolled through the Fairsley pastures. Though as I said, there was no master hand at his death to keep his blood intact, it is now coming to the fore again, as evidenced by the phenomenal successes of Mr. Sheldon, of Brailles, with his bulls on his annual pilgrimage to the Birmingham bull sale. This year, as usual, he again nearly sweeps the deck of all the best prizes with his Dukes of Charmingland (through Charmer to Sylph by Sir Walter), and his Earls of Fawsley (through Polyint by Earl of Dublin (10178) to Rosy by Rob Roy (55)). His average this year at the sale was £129 14s. 0d. for seven head, equal to an average of over \$630 each.

A New Boom in Manitoba.

(From our own Correspondent.)

The most disastrous experience that ever befell this province was the great boom of '82-'83. Money was fooled away by hundreds of thousands of dollars; everybody had a very big head, or rather they lost their heads altogether, and made investments of all sorts that brought little good to any body and ruin and disaster to many. The new boom is of quite a different sort. It did not originate with the big crop yield of '87, though that woke it up, perhaps. Small farmers then began to buy from the C. P. R. and other land companies another quarter section to enlarge their old holdings, and non-landholders were taking up homesteads or buying more quarters convenient to the railroads. Besides the home demand, well-to-do men came up from Ontario on the fall excursions to look for locations for their sons. They saw the full extent of the damage done by the summer frost of last August, but were not scared by it. The man who has seen a field a half mile each way as level as a lake and not a stone on it, with a splendid crop on top, feels sick when he goes back and looks at the patches where he spent the best years of his life following one horse and half a harrow. He sees his old acquaintances raising and harvesting 100 acres of grain with three horses and \$50 outlay for hired help, and either buys at once or makes up his mind to come out very soon.

They are coming very fast. A mile of cars per week laden with settlers, outfits and stock, has been about the average of late, of which one-sixth may have gone over to Dakota and another sixth to the North-West and Vancouver. We get the lion's share. A thousand souls per week, mostly Canadians, has been about the average immigration. Some sorts have come rather too thick. We have not openings for all the men who come looking for farm work at \$20 per month. Farmers here are thrifty and want to spend as little on hired help as possible. Adventurers of this sort, especially the more recent immigrants from England, will find the labor market glutted and get mad and abuse us, but we cannot avoid such disagreeables. The run of real work only begins in harvest and from that on through the threshing time, and it is only for those who come to make money by slow and steady going that real encouragement can be held out in such a country as this.

It is not boom talk but sober truth that many people are coming in here week by week and buying right in the middle of old friends from Lanark or Huron, the holdings of the speculators who never were and never will be farmers, and have with the help of a good big mortgage been holding down a half section of land till somebody came along that could put money and energy into it. They pay from \$5 to \$10 an acre for such places, the highest priced being often the cheapest, and at such figures it is much cheaper now than it was ten years ago at nothing an acre. There was more discomfort and more time lost then in travelling from Emerson to Pilot Mound than today in going the whole distance from Ottawa to Deloraine. Railroads, schools, churches, roads, good markets in sight of home, and the better implements at nearly half the cost, with land that in six months may pay from one year's return, after all expenses are paid, the whole cost of the land that it grew on, are substantial reasons for my faith that to the right men we offer more solid attractions now than we had eight years ago. It is curious that outside homesteads, say 30 miles from railroads, are not taken up so fast as much poorer land in sight of the appliances of advanced civilization. Sales of land, both new and old,

have been going on for the last four months at a rate never approached since '82, and prices are, from the point of view already noted, advantageous both to the sellers and the buyers. With the balance left after existing liabilities are cleared off, the mortgaged speculator goes out once more to the front and begins afresh, or goes out of the country, sometimes not the worst sort of knave for the country. Dead men above ground are in the wrong place here.

The boom in horse flesh is quite as great as that in land sales. There will be before this month closes about a dozen of district shows for stallions, of which, as intimated in last month's issue, that of Portage la Prairie was much the best. Their offer of \$100 prizes for draught and blooded stallions was responded to by eight pedigreed Clydes, the very plainest of which were good horses. Granite City, the best of the lot, is one of Bei-h's recent importations. Another Beith horse, Bounding Willow, well known in Ontario, was put below Free Trade, a black, owned by Robt. Grundy, Clandeboye, Ont. I mention these names to show the kind of horses now in use for the heaviest sort. There were in all 28 entire horses shown here—draught, general purpose, coach and roadster. In Brandon I saw six Shires, an English blood and two Clydes within one half hour's run, all pedigreed and imported. Mares, high grade or pure Clyde are numerous, and three more English hunters for use in the province came in to-day.

The fine weather and early season have done much to encourage this boom. We have not had three weeks ugly weather all winter. Wheat seeding is closed with a great many farmers. In fact, one of our troubles is that on stubble ploughing the mould is so dry that it blows off on a windy day, leaving the seed exposed. This occurs in northern Dakota as well as here and rolling only aggravates the evil. If a break is once made in a rolled field soil and seed both go off to be piled up anywhere it can find a resting place. On breaking and summer fallowing, where the soil has got settled and fairly full of moisture this blowing does not take place, and I have seen crops up to more than 30 bushels per acre that never had a drop of rain. In '86 such cases were frequent, and land that did have a shower or two did no better than that which had only dew. In such seasons stubble ploughing and poor cultivation come miserably short of a yield. There are places, such as the big plain behind Carbeny and at Portage, where good crops come in any season.

With the earliest and finest season known for a dozen years, a great increase of crop acreage, the blanks in settled districts rapidly filling up with good men, even second class lands covering fast with free homesteaders, and the promise of railroads within the year for every district except the remote south-west, the new boom in Manitoba seems at present as healthy as the old was unwholesome and unprofitable.

For the CANADIAN LIVE-STOCK AND FARM JOURNAL.

Swine—Their Breeding and Management.

(Second Paper.)

Once the young pigs have suckled, the sow will usually take to them and one may then consider that all is going on well, at the same time attention should be paid that the sow's digestion is in good order, otherwise the young pigs will be scoured; dry, clean quarters and sunshine are the best preventatives, and of the latter, when the weather is warm, the young pigs cannot get too much of it; but they should not be allowed to run in the grass until the dew is off, as they are very liable to take a chill. Young pigs should

be taught to eat by themselves as soon as possible, and it is a good way to place a small trough for them apart from the sow, to which they can run. In feeding, regular hours are essential, and oatmeal and middlings mixed with skim milk are perhaps the best food to be given at this age; a little oil meal is also recommended by some authorities, and at an early age it may doubtless often be fed with satisfactory results, but it should not be fed to fattening pigs, as it is liable to make the flesh rank in flavor and the fat oily. The sow in the mean time must not be forgotten, and her feed should be steadily raised, to meet the increasing drain of the young pigs. Young pigs are usually weaned from the sow at the age of from 6 to 8 weeks, and prior to the time of weaning all boars should be operated on, that are not intended to be kept for breeding purposes. When weaned the same course of feeding should be continued with the addition of a little corn or pea meal, increasing the quantity as the pigs increase in size, but being careful that no more food is given than they will eat up clean. If it is inconvenient to allow them a grass run, they should have a large yard to exercise in, and as much cut grass and vegetables should be given them as they will eat. The mouths of young pigs not thriving well should be examined, as occasionally the tusks in their growth deviate from their normal course, so that they turn inwards. In such a case the young animals often cry out suddenly from pain, occasioned by the points of the tusks bruising or wounding the opposing gums while they are eating, and in a short time the young pig grows poor and does not thrive well. If such faulty teeth are found, they should be removed, care being taken not to break them off below the gums, as they might prove equally injurious to the animal. Young pigs are often afflicted from leg weakness, arising from want of exercise and too generous feeding, then their bodies become too heavy for their legs, and in such a case I have found bones crushed fine and a little of it mixed with their food, a good, simple remedy. Whether intended for breeders or for pork, young pigs should be kept gaining as fast as possible; but if intended for the former purpose, muscle and bone-forming food should be given in preference to fat-forming food. Experiments made by Sir J. B. Lawes, of Rowthamstead, go to prove that as pigs grow older more feed is required to make a pound of growth. The German feeding tables show the same. Prof. Miles and Prof. Sanborne also corroborate that fact, while Stewart says that 2 lbs. can be put on a young pig with the same feed required to make 1½ lbs. on an older hog; all of which tests go to show, that to obtain the largest amount of profit from hog-raising, the pigs must be pushed along as fast as possible when young. For winter feeding of brood sows roots should form a large proportion of their food. They prefer mangolds to swedes, but will eat the latter if readily pulped. Authorities differ as to whether better results are obtained from cooked or uncooked food. In 1884 Mr. Dudgeon, of Kelso, reporting on an experiment made by him at that time on this subject, was strongly in favor of cooked food, and said: "I made repeated observation every 8 or 10 days on the appearance of the animals, and the lot fed exclusively on boiled food thrived throughout in a superior manner to the other, and even to those who had an occasional mixture of boiled and raw food." It should, however, be said that his experiment can hardly be called conclusive as the lot fed on boiled feed were all males, while the other lot were all females.

At the Michigan Agricultural College the result of a test conducted by Prof. Johnson, seemed to indicate

that cooking did not pay; but it appeared that the same amount of meal would go further as a ration when cooked than it will raw, but whether it would produce a larger gain in young animals is questionable. In similar experiments at the Wisconsin Agricultural College it appeared from the results that (a) cooked feed is not as valuable for fattening hogs as uncooked food; (b) that a hog would eat more uncooked food than cooked; (c) that hogs fed upon dry feed in no case did as well as when fed upon wet.

One point worthy of especial notice is, that the hogs getting the wet feed ate considerably more than when given dry feed, and to this fact, in a measure, Prof. Henry describes the greater gain and at the same time mentions that his experience in feeding hogs, for the present at least, plainly point to one rule, viz.: all other things being equal, feed the hogs in such a way as to get them to eat the largest amount in a given time without waste. Formerly as long as a pig was fat little attention was paid to the quality of the flesh or to the proportion of fat and lean, but of late years the tastes of the consumers have undergone a change, and the demand is now for a greater proportion of lean. It becomes, then, necessary for the pig raiser of to-day to pay more heed to the likes and dislikes of the public, and to ascertain by what means he shall accomplish this object. To arrive at this two courses present themselves, the one to select a breed which already fulfils this requirement, such as either the Tamworth pig or the improved large white Yorkshire, a breed which now stands high in the estimation of pork packers; the other to attempt to arrive at the same end by the selection of proper food. The attention of scientific men has already been turned in this latter direction, and from recent experiments at the Wisconsin Agricultural College and at the Cornell University, striking proofs have been given which indicate that not only hogs but also sheep are wholly affected by different foods, the one nitrogenous producing in pigs a much greater percentage of lean, and the other non-nitrogenous, a greater percentage of fat.

According to the investigations of scientists the digestible substances of food consist of dry matter. Fat, carbo-hydrates and albuminoids, fat being usually considered as being 2½ times as valuable as carbo-hydrates, and that in order to feed to the best advantage the daily ration of food should consist of a certain proportion of albuminoids to the carbo-hydrates and fat, the fat being reduced to the equivalent of carbo-hydrates by multiplying by 2½. A fattening pig has been found for every 100 lbs. of its weight to require in its daily food about 5 lbs. of albuminoids and 27.5 lbs. of carbo-hydrates and fat, and by the report of the feeding experiments which have been conducted in Germany with greater care than anywhere else, the food should bear a proportion of 1 lb. of albuminoids to every 5 lbs. of carbo-hydrates, and such a proportion is best suited to pigs in an early stage of fattening and eminently suited to produce fleshy animals, while in the later stages a food less rich in albuminoids and having a proportion of 1 to 6 or one to 7 would produce good results. In the early stages of a pig's growth it is most difficult to provide a suitable ration, owing to the large proportion of albumen required. Skim milk, as it supplies this necessary component, is an excellent constituent for the food of young pigs: in the absence of this it becomes necessary to use a due proportion of peas.

The following table contains the analysis of some of the foods most frequently used in feeding pigs, by reference to which it will be possible to average a ration consisting of the necessary proportions:

100 lbs. of the following food contain.	DIGESTIBLE SUBSTANCES		
	Albuminoids.	Carbohydrates.	Fat.
Potatoes	21	20.6	0.3
Swede Turnips	1.1	10.6	0.1
Sugar Beets	1.0	15.4	0.1
Wheat	11.7	61.1	1.2
Barley	8.0	57.5	1.7
Oats	9.0	47.8	4.7
Corn	8.4	57.8	4.8
Bean Meal	23.0	43.6	1.4
Peas	20.2	49.9	1.7
Shorts	13.26	52.70	
Middlings	11.25	57.72	
Skim-milk	3.0	5.6	0.6
Whey	.8	5.0	0.3

It may, perhaps, be imagined by some, that this system of feeding belongs to that branch of agriculture called book-farming, which is so contemned and considered so impracticable by the working farmer. Let us see if such is the case, or whether it is confirmed by practical experience. In his prize essay on dairy farming in Devonshire, Mr. Alex. Watt says: "I find that equal quantities of bean, maize (corn), barley and wheat meal, make an excellent mixture for feeding pigs." If the table is now referred to it will be found that equal quantities of these grains contain 50.11 of albuminoids and 264.72 carbo-hydrates or a proportion of about 1 of albumin to 5 of carbo-hydrates, an exact corroboration of the experiments in Germany. It is of course impossible that the analysis of the different foods in the foregoing table can be exactly correct in every case; climate, soil and other influences may cause a slight variation in the components of the foods; it will, however, be sufficiently near enough to act as a valuable guide and as such is undoubtedly useful to the intelligent feeder.

AGRICOLA.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Stock-raising in New Brunswick.

The farmers of New Brunswick have not in the past given that attention to the breeding of stock that its importance in rural economy or the natural adaptability of the province justifies; nor have they in the management of what has been kept, exercised the intelligence in their methods that would lead to encouraging results. We speak of the majority of our farmers, yet bear in mind that in this Province are some of the most prosperous and intelligent agriculturists that Canada contains; men who pursue farming as a profession, and see in it all that is healthful, pleasant and profitable. Until about ten years ago, with the exception of the Jersey and Ayrshire there were scarcely any pure-bred animals in the Province, the stock being represented by the native scrubs that had been kept more from custom than profit. Even today in many sections large herds of worthless mongrels are fostered, that cause the owner a loss rather than increase the revenue.

There is a pronounced want of education on the part of the farmers. Far too many are following farming and making but little headway on account of not being educated in their craft. They must be taught the difference in value between an animal that will show a gain of 1½ or 2 lbs. per day up to 18 or 20 months, and a creature that will scarcely show as many ounces; or between a cow that fills the pail until a month before calving, and one that is dry all winter. They must be taught that if the St. John river farms are to maintain their enviable reputation, less hay must be sold and more fed to secure that fertilizing agency which will return to the soil the plant food removed by a 3-ton crop of hay; and that if they do not feed their stock sufficiently and keep their buildings in repair, small will be the return from that source.

Naturally this Province is well adapted to stock-

raising. As heavy forest covers about three-quarters of it, the country is free from the terrific wind and snow or rain storms that so frequently visit our western brethren, and in clearing, if windbreaks are preserved, we have no cause to anticipate a change with extensive settlement. Our winters are neither long nor severe. We are comparatively free from diseases and the ravages of insects. The greatest aid to successful stock-breeding lies in the abundance of water. The surface is mountainous, from which spring brooks, to provide the meadows and pastures with a complete system of irrigation, and which during the spring and autumn freshets, cover the low-lying land and deposit a sediment, very rich in fertilizing material, and make the application of artificial manures less necessary. Our hills are covered by bush in many places, and would, if cleared, make excellent sheep-ranges. Our nearness to market, both for import and export, is not an inconsiderable advantage.

Our Government in its goodness has done a great deal toward improving the stock of the country. During the past two years it has imported and placed at the disposal of every farmer, stallions of all the best draught and trotting breeds, several specimens of each breed of sheep, and at the Provincial Stock Farm are kept males and females of four breeds of cattle, the offspring of which are disposed of at annual sales. It is difficult to say what breed is most applicable to the Province, but we are safe in saying that any breed that thrives in any part of Canada will do well in New Brunswick. The choice is dependent upon the object in view, whether beef, milk or butter. In any case it is better to start with a good male, and, by selecting the better native cows, produce a grade that may be used to build up a herd. The Shorthorn, where it has been tried, has given satisfaction; the Aberdeen-Angus Poll has not been very extensively bred, the Red Poll, or Norfolk, has a few representatives, and have made their owner loud in praise of their virtues, in fact the Norfolk breeders claim that theirs more nearly approach the general purpose animal than any other breed; and the Hereford, has not, that we are aware of, a specimen in the Province. We believe that any of these, graded upon the native cow, would produce a good piece of beef upon our pastures, and with moderate care during winter. The milkers are represented by the Jersey, Holstein and Avshire. If the breeder be near one of our cities, where Jersey butter is in demand, money may be made by catering to the public taste, and if a good article is produced, a ready sale will be met. For the milk trade the two latter breeds have been encouraged, although by far the greater number of the milkmen breed the native cows without any outside blood.

Sheep of all kinds will do well here, and where preference has been given to any particular breed the Cotswold and Shropshire have received it. It may surprise our Ontario readers to learn that here no price is paid for all classes of wools, the Cotswold bringing as much as the Merino. This is due to the large quantities of native wool produced (which in texture resembles Cotswold wool), having encouraged the purchase of machinery suited to its manufacture, and which will not manufacture the finer grades of wool into cloth. When enough finer wool is grown to warrant the introduction of suitable machinery, a discrimination in price will be made, when the Shropshire will doubtless be the best breed for the Province.

New Brunswick needs an agricultural college where the sons of the farmers may receive an education which will enable them to pursue their calling to the

best advantage. At present the young farmers are following in the steps of their fathers, who in their turn did likewise, and in many sections of our worthy Province an Egyptologist would find ample scope for amusing investigation. P. A. T.

Industrial Exhibition Association of Toronto.

The late report of this association must surely be encouraging to its officers and members, for the exhibition of 1888 shows a marked advance, financially and otherwise, on those of former years. The attendance of visitors, at last September exhibition, reached nearly a quarter of a million, the total fees for admission being \$60,118, which, compared with the \$26,960 of ten years ago, clearly indicates rapid progress. The assets have steadily grown in magnitude from \$25,672.99, at the end of 1879, to \$98,332.90 at the present time, which is surely a flattering testimonial to the energy of those connected with it, and speaks volumes for the business ability and enterprise of the manager and secretary, Mr. H. J. Hill, whose able guidance has brought their efforts to such a successful issue. Increased patronage has called for enlarged grounds and new improvements, and for the attainment of these desirable ends the association is now working, and their friends and patronizers may, with all possible hope, look forward to improvements in keeping with past progress.

How to Form Shorthorn Dairy Herds.

BY JAS. LONG, ENGLAND.

Some sensible and far sighted breeders have seriously demurred to the neglect of the milking properties of the Shorthorns. Mr. Bates was opposed to over-feeding, kept his stock in a very healthy, natural state, and some of his best cows were deep milkers. Mr. Whittaker for nearly forty years maintained the dairy superiority of his Shorthorns, which not only reared their calves, but supplied the people of his extensive factory with milk. He never used bulls excepting from cows which reached a high standard of dairy excellence. Although his famous bull, Fairfax, was the most shapely he ever bred, he was hired to go to Warwickshire, became the sire of many good steers and a Smithfield gold medalist, but Mr. Whittaker would not use him at home, as he did not consider his dam a sufficient milker. The late Lord Ducie was equally anxious to preserve the milking qualifications of his herd, and was a staunch opponent to over-feeding. The forty-nine cattle at his great sale in 1853 were in very ordinary condition, and many were exceedingly good milkers. From these and other such tribes, where reasonable pains have been systematically taken to maintain milk, pedigree Shorthorn cows can be obtained which will compare with any dairy stock. From such herds young bulls can be selected which may be trusted to produce vigorous, good, thriving animals, with early maturity, good all round, and which will not detract from the dairy profits of the herd with which they are mated. By the use of such sires good thriving young stock are produced, which make the best of their food and time, which, whilst they milk as well as their dams, probably acquire, when dry, greater capability rapidly to lay on beef. I need not here enlarge on the enormous boon it is to the dairyman to have his cows maintain their condition while milking, readily to lay on beef as they are dried, and if required shortly to go to the butcher at about the price they were valued for calving. This combination of good qualities—this milking liberally for eight or nine months, and making, if needful, three or four months later, a good carcass of beef—is pre-eminently secured more rapidly and effectually by Shorthorns than by any other breed.

A very valuable herd of pure-bred dairy Shorthorns could be inexpensively founded in a few years by a tending Shorthorn sales, selecting animals merely for their dairy qualities and without regard to fashion or tribe, and mating them with a bull carefully chosen from a heavy milking cow of a well-known dairy sort, such, for example, as the Knightleys. My herd contains animals that have milked twenty-four

quarts per day each without any special forcing, and milked only twice a day. With more stimulating food and an extra milking even larger results might be obtained. I am inclined to the opinion that pure-bred Shorthorns give richer milk than common-bred cows of no particular type, but no doubt the proportion of cream is affected by the kind of food and quality of land. Bean meal is a favorite "licking" for milk cows with the Yorkshire men; cotton-cake stands next; grain, distiller's wash, and other like articles, whilst increasing the flow, diminish the quality of the milk. Twenty years' experience in milk-selling and Shorthorn breeding brings me to the conclusion that £500 invested in pure-bred Shorthorns, selected solely as dairy animals, and kept to yield milk for sale, weaning and rearing the calves, and selling off the dams as fat when no longer serviceable in the dairy, would in ten years leave better profit than the same amount laid out on any other breed for similar purposes.

In selecting young bulls for dairy herds, it is not only essential that they are descended from dams and tribes which have the desired milking capabilities; they ought, also, to carry in their own persons some recognized characters indicative of dairy usefulness. Size, substance, and masculine character are essential for health and vigor. Close-made, compact sizes, although sometimes captivating on account of shapely, even form, are rarely good getters, either of steers or dairy cows. There is a happy medium between smart, heifer-like or steery-bulls, and rough, coarse leggy brutes. The head should be kindly, free from coarseness, but withal of a masculine character, without which a bull is unlikely to leave his mark. I do not object to tolerable growth of horn, which shows constitution. The neck should be rather long to secure carriage and length of carcass, merging in those curved lines of beauty into a well-developed prominent bosom. The chest, necessarily capacious to give ample room for heart and lungs, should approach the oval of the well-bred horse, rather than the round or square proportions of the cart-horse. This will bring the dewlap somewhat near the ground. The shoulder blades will be well laid back; there will be no roughness or overdue prominence of the shoulder points. In a young, growing animal in moderate condition this conformation will entail a somewhat light appearance of the forequarter and the fore chine may not be so abundantly clothed with beef as the butcher would desiderate. The back and loin cannot be too wide, the back ribs should be well sprung; the narrow, weak-backed bull is certain to have the worst of all faults, a delicate constitution. The quarters should be long, well clothed with lean meat, but alike in bulls and cows of milking proclivities, they will not be so thick and massive as in animals selected more exclusively for beef-making. The body will be invested with a skin of moderate thickness, soft and pliant, not papery, and covered with rather long, fine hair. The soft undergrowth of mossy hair, so pleasant to handle, augurs fattening rather than milking capabilities. It is not absolutely necessary for ordinary dairy herds that the bull should have a long, fashionable, or even perfectly consistent pedigree, free of so-called alloy, and satisfying the taste of the critical purist. But a good, sound pedigree secures uniform, certain results. A bull whose pedigree is made up of a number of dissimilar strains is unlikely to get his calves with that uniformity of good type which is so desirable. The fashion of the present day is to use young bulls, beginning with them when they are about 15 months, and discarding them often when they are 3 years old; frequently they are slaughtered before their stock becomes appreciated. In olden times bulls were wont to be used charily at first, their progeny were carefully noticed, and a successful sire was used so long as he continued serviceable. — *Consular Report.*

"The JOURNAL is so interesting that the boys at the barn get hold of it before I do, and hence your little reminder on the wrapper did not catch me, however. I enclose you \$5.00 which will put it ahead far enough so as not to catch me in same trap soon. I am much pleased with your paper, and although I am a cashier, I can't go to Canada to read it."—J. N. Coldren, Iowa City.

"I think my year is about up, and as I desire to renew, enclose \$1 for another year. Can't keep posted without the JOURNAL."—George Green, Curries Crossing, Ont.

"Enclosed you will find \$1 to pay for the best farmers' paper I ever read."—John Tullock, Farreins Point, Ont.

The Desired Mechanism of a Draught Horse.

(Second Paper.)

Coming to the underpinning, all due importance should be given to these parts. Even if only to be used on the soft soiled farm, good legs and sound feet are of prime importance. Transferred to the hard macadamized roads of the city, they become doubly important, for it does not take long to bring bone diseases to the surface, spring the knees, or make tender the feet, if the least weakness is present. As it is the weakest link that proves the strength of the chain, so is it in the legs of a horse, the weakest part proves the strength of the whole. To our mind the



A strong boned and muscled fore leg.

Clydesdale breeders have not erred in attaching so much importance to the legs, pasterns and feet of their favorites, for on these the wearing qualities of a horse almost solely depend. It must be admitted, however, that in a perfect draught horse all parts and structures should be equally developed and work in unison, yet there are some divisions of the body that are required to do more and severer work than other parts.

Among these structures that have to stand the trying test of continuous and hard labor, the legs are called upon to bear the most, and for this reason claim close attention. No better criterion of the muscular development of the whole body is to be found than the quantity of muscle on the arm of the leg. However much the body may be padded with fat to fill up shortcomings, this part cannot be so padded out; only solid muscle and tendon will be found there, and hence its value for the estimation of muscular power. From the knee up to the body good length should be looked for, as it is a very desirable feature, giving a horse a stronger command, through better leverage, of his feet. Viewed from the front the knee should be broad, retreating to a razor-like edge behind and clean cut in every respect. When we consider there are over a half dozen small bones that enter into the formation of the knee-joint, and help to prevent concussion, and increase the flexibility, the desirability of the surfaces of these being as broad as consistent with beauty is at once apparent. This breadth of knee should run well down in a gradual slope and not shrink, as is too often the case, just below the joint, thus giving the latter but little support. Col. Ravenhill required that saddle-horses should measure at least 8 inches in circumference at this point. A short cannon bone admits of better and easier handling of the feet, thus rendering the risk from stumbling less and giving the horse that quick, active step, if the muscles are also well developed, that not only conduces much to appearances, but also greatly to utility, either before the plough or wagon. An appearance of flatness below the knee is considered to be a feature of worth, and no doubt it



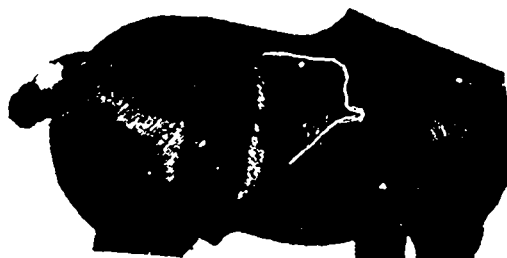
A weak pastern, being too oblique.

is, though the common conclusion associated with this is not always strictly correct, as this appearance is given by the tendons that run from the point back of the knee to the fetlock joint, and not as commonly supposed by the bone being flat. The tendons should stand out distinct, free from puffing and coarseness.

Nothing contributes more to elasticity of movement than a clean, sloping pastern, and nothing contributes more to wearing power of the legs than easy movement and slight concussion. A short, upright pastern gives a stilted motion, and is an exciting cause of ringbone and other like diseases, while on the other hand a too lengthy pastern gives rise to sprains of the ligaments of the leg. Hair, though at the best only an ornament, is an index to quality, if fine flowing and silky. A sound and firm foot of good size is the crowning glory of a draught horse. The fore legs may be sometimes noticed bent over at the knees, or in, like those of a calf. The former in an old horse, is less unsightly, though in a young animal the latter fault is more likely to disappear with age.



A pastern too straight.



A model middle piece.

Horses with bottom and vitality wearing well, are only to be found among those with good, deep barrels, with well-sprung ribs, tightly ribbed home, leaving but little space between the last rib and the quarter. Experience has taught us that not only has a horse of such a conformation extra staying power, but he is also easily kept. These are the external signs of well-developed digestive organs, which, having plenty room for growth and action, assimilate easily and make a good use of the food given them. In a well-clothed loin a great deal of the pulling and moving power of a horse resides. Though the roach back is rather unsightly, yet it without doubt gives strength. Good length of quarter as well as depth, with fullness, are points of importance. A horse split up behind gives a poor account of himself, either before the buggy or wagon, for fullness in this region is in most cases a sign of extra muscular power. A high attached tail, carried well, adds much to appearances. The muscles of the quarters should run well down to the hocks, and the tendons should be prominent, standing out like whipcords. Broad in front and running back to a sharp edge, is a good feature in a hock, as well as breadth from a side point of view. Gummy or fleshy hocks is an undesirable condition, the preference should be given on every occasion to those clean and well-defined. As in the fore leg so in the hind, a long thigh with short cannon bone and a pastern at an angle of 45°, and large feet, by no means flat, are the desirable features. When a horse stands naturally on good hind legs, the toes will be almost in a line with the stifle. The tendency among many of our horses is to-



Strong quarters and hind legs.

wards the sickle leg, a conformation as undesirable as the opposite bowed legs. A slight turnout of the toes behind gives free play to the stifle and is conducive of good action.



Hindquarters deficient in strength.

Supply a brain, well trained, to direct the energies and spend the force of the mechanism we have outlined, and we leave our ideal with you—such as we do not for a moment hesitate to say is within the reach of about every farmer in this province, if only advantage were taken of the opportunities afforded, and due attention given to the known and fixed principles of breeding, leaving the undefined and unsettled to work out their own solution.

Veterinary.

For the CANADIAN LIVE-STOCK AND FARM JOURNAL.

Foaling Time.

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

As the time for dropping foals approaches, more or less anxiety is felt by the owners of pregnant mares as to the result. The mares rarely suffer much, but so many foals succumb before they are a week old that there is no wonder that alarm is felt about tiding them over this critical period of their lives.

Veterinary surgeons are not likely to reflect very much credit on themselves in treating colts at this tender age. Practitioners of human medicines generally assert that infants of a tender age are by no means desirable patients, for in addition to the difficulty of determining what is the nature of the malady from which they may be suffering, their tender age and want of strength render them little capable of responding to the actions of medicines, with much reliability.

In veterinary medicine the difficulties are often equally great in these particulars, in addition to the practitioner's services usually being called at a late stage of the trouble. But even if one were on hand at the very first moment, armed with all the knowledge that modern science renders available, it would be impossible to keep the life in some frail bodies that are born weak. Nevertheless there are many cases occurring in young foals that are amenable to treatment, if it is prompt, so that it is particularly desirable that those in attendance upon a newly born animal should have some knowledge as to how to proceed. If one could only be on hand at the time of birth many foals that perish could be saved. But this seems almost impossible, for it is often a difficult matter to tell within a few days when labor will come on, so that it is almost out of the question to get any one to exercise the unremitting vigilance necessary to be on hand when the foal drops, or to watch the course of labor, and notice if the progress made towards delivery is as rapid as it should be, for there is very little time to be lost in words, as the foetus seldom survives over an hour or two after the commencement of the pains.

It is always well to let nature take its course as much as possible, and meddling interference is to be much deprecated if all is going well; but if after at the outside half an hour has elapsed without any apparent progress being made, then the hand and arm bared, thoroughly washed and oiled, should be introduced in order to determine the cause of delay. If the foetus is in its proper position, a little aid may be given by drawing on the fore legs, in a downward direction, while the mare is paining. If the hind

legs are presented, rather more powerful traction may be necessary, as a mare seldom succeeds in delivering herself when the foetus is in this position. A great number of mal-positions, and some diseases and deformities require to be overcome, but their rectification should seldom be entrusted to any but professional hands. Don't risk the mare's life by having her handled in an unskilful manner, for all manipulations misdirected are a great injury.

If the attendant is at hand at the time the foal is dropped, he may be of use in removing the cleanings from the head, around which they sometimes cling and cause suffocation. All mucus should be removed from the mouth and nostrils with the finger. If the young animal does not breathe, raise up its hind legs, press in the chest, and allow it to expand, or throw some cold water on the head, all of which will tend to excite the respiratory movement, if the heart is beating; if not, it is useless.

Dryness and warmth are favorable to the young animal, and it should be put to the teat in fifteen or twenty minutes, if it does not show briskness and signs of looking out for itself.

One of the greatest difficulties a young foal has to contend with is insufficient or poor quality of milk; and it is difficult to find a satisfactory substitute, particularly for the first few days, or when the milk should possess the laxative action so necessary to arouse the proper activity of the bowels of the young animal.

Perhaps the best substitute for the first milk of the mare is cow's milk, with one-fourth of water, and honey in the proportion of a tablespoonful to the pint of milk. Inactivity of the bowels is one of the most fertile causes of death amongst foals. If the bowels do not move properly, colic or inflammation of these organs set in, and the consequences are usually fatal.

The error is commonly made of not keeping a watchful eye on the state of the bowels, seeing that the evacuations are free, and of the natural consistency. If they are not, no time should be lost before giving lukewarm water, rectal injections at intervals of half an hour, until the desired effect is produced. Nothing acts more powerfully in a foal than injections, and another advantage is, that they will do no harm, as medicinal agents are apt to do in a colt of tender age, for it is difficult to so regulate the dose as to just get the amount of action desired, and in addition young foals are easily nauseated, and their appetites destroyed.

If the bowels will not respond to the injections, it may be necessary to give a laxative. Castor oil is usually used for this purpose, but I have found syrup of rhubarb in doses of a tablespoonful mixed with a little linseed more satisfactory and less depressing to young animals.

If pain has actually set in, as shown by uneasy movements, in addition to getting the bowels to move by injection, it is a good plan to apply a blanket thickly folded and wrung out in very warm water, to the belly. The blanket should be repeatedly wrung out, so as to keep it warm. If the pain continues to be severe give a teaspoonful of laudanum in a couple of ounces of water; repeat in two hours, if necessary.

Very frequently diarrhoea follows torpidity of the bowels, and to such an extent as to cause weakness. It should not be checked too rapidly, but the strength should be sustained by tablespoonful doses of brandy, to which a couple of tablespoonfuls of lime-water and half a tablespoonful of tincture of gentian may be added and given in a teacupful of linseed tea, at intervals of three hours. The doses men-

tioned are sufficient for foals up to several days old, but may be increased as the animal grows.

Foals that have not sufficient muscular strength to stand seldom survive, even under the best treatment and care.

The Serous Membrane.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—Would you kindly inform me through the veterinary department of your valuable JOURNAL what to do in the following case? I have been castrating colts for several years and I find that in some cases that in about two or four hours after castrating, something about the size of one's finger hangs down one foot or so from the opening. It can be spread out like a web. By letting me know how to treat it you will greatly oblige
J. H.

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

The web referred to is the serous membrane—*peritonium*—lining the belly, and covering the cord and testicle. When a portion of it escapes in the way explained, it can be cut off with safety.

Digestive or Blood Derangement.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—I would like an opinion through the veterinary department of the JOURNAL on the following; I have a colt eleven months old that bites himself, mostly between the fore legs and hind quarters, taking the hair off. White scales form on his hide, but no lumps. Appetite good, and looks well. I would like to know the cause and more especially what would effect a cure.

A SUBSCRIBER.

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

This itchiness is doubtless due either to digestive or blood derangement. When he gets on the pasture the chances are he will soon get right.

The Farm.

THE question so long at issue between many scientists as to whether leguminous plants, such as clover, beans, etc., had a special power for the assimilation of the uncombined nitrogen of the atmosphere, has been brought to a plausible understanding by the late researches of Hellreigel. In practice it has been found that clover did possess a special power for the assimilation of nitrogen in the soil, and now Hellreigel as the outcome of extended experimentation and research, says that the small tubercles or warts on the roots of all leguminous plants (clovers, peas, beans, etc.), contain small bacteria that work up the free nitrogen of the air into nitrogen compounds more suitable than any other for supplying nutriment for plants. These organisms live and grow in these warts, and the nutriment they manufacture is constantly being used up by the host for its nutriment. This gives strength to the importance of clover in renovating poor, worn out soils, that are so because of the loss of the nitrogen compounds in it.

Two Valuable Reports.

We have to hand two reports that should be in the possession of every farmer of our Dominion, broad though it may be. They not only contain complete and full information in regard to the workings and doings of two excellent institutions, that have for their sole object the uplifting of our agriculture to a higher plane, but they are also replete with abundant mental food, that if digested and assimilated will ring in better practices, and with them a more profitable agriculture. We refer to the lately issued reports of the Ontario Agricultural College and the Dominion Experimental Farm, both of which are doing a grand work for our farmers, each being possessed of a field wide enough for the profitable expenditure of their

arduous labors without trespassing on one another's ground.

The report of the latter institution contains, besides a fund of other information, an interesting account of the establishment of the experimental farms in the various provinces and also of the work done at the central farm, Ottawa, the past year, including a report from the several officers at present engaged there. Valuable material has been collected by the vigorous director, Prof. Saunders, in respect to Indian grains that are likely to prove suitable for cultivation in Canada, and we feel certain that in the near future, if it is not already the case, the outcome of Prof. Saunders' earnest efforts will be a marked advance on many of our present varieties, more particularly in respect to those of the North West Territories. The report of the chemist, Mr. Frank T. Shutt, besides containing a number of analyses of different products, is devoted largely to an entertaining as well as instructive account of his recent trip to Europe to secure apparatus for the equipment of the laboratory at Ottawa, and inspect the leading experimental stations on the continent, that ours might in no way be deficient. As such widely known institutions as the experimental farm of Sir John B. Lawes, at Rothamstead, the experiment farm of the Royal Agricultural Society, at Noburn, and many others of almost equal fame were visited and described, it may be inferred that much interesting matter has been garnered. The report of Prof. Fletcher, the entomologist and botanist, is of special merit and will be most likely to engage the attention of readers, especially at this season of the year. A number of field and garden depredators are fully treated of and minutely described, with remedies given, making in all, in conjunction with the former report, the most valuable treatise on insect life that could be put into our farmers' hands. Mr. W. W. Hillborn, horticulturist, confines himself mainly to a statement of the number of varieties of fruit trees, etc., confided to his care. Mr. A. G. Gilbert, the poultry manager, also contributes in no small degree to make the report one of great value.

A suitable companion to the foregoing is the report of the Ontario Agricultural College for the past year. That part of the report pertaining to the workings of the farm and College, the doings of the students, etc., should be read by every farmer and every farmer's son in the land, for we have not the least doubt if pondered over and a fair judgment given, it would be the means of still further adding to the long list of young men who greatly profited by the teachings of this institution. The reports of the several professors supply abundant material for the consideration of the farmers, which, we feel sure, will produce an effect for the better on our present methods. All the bulletins issued by the Ontario Department of Agriculture are reproduced and all given in this one volume. It appears to us needless to say that these bulletins, bearing on the many different phases of farm work, should be in the hands of all Canadian farmers.

We would urge every farmer whose eye catches this to write at once for these reports to these two institutions, and we have no doubt they will be willingly sent, free of postage, to all requesting them.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Chapter on Fodder Corn.

1. The man who forgetteth the lessons of the drought of last year and still neglecteth to plant corn for fodder shall have his profits cut off.

2. In the Dominion of Canada there cometh a period of dry and hot weather in the months of July and August.

3. The fields will be very dry and they shall thirst for rain; they shall appear like unto the parched lips of an ill-nourished lad whose lot has been neglect and famine.

4. The grass of the hills and the plains, and even the herbage of the aforetime well-watered meadows, will wither away.

5. The animals will roam to and fro in the pasture fields seeking sustenance and finding none.

6. They also shall wither away; and the springs of milk which maketh glad the heart and heavy the pocket of the dairyman shall be dried up.

7. In that day the foolish farmer will say unto himself, "Wherefore hath the Lord so afflicted this land which hath been sought as a refuge by many pilgrims from the oppressions of Europe, as a land flowing with milk and honey?"

8. And the man who hath planted corn in due season, even early in the month of May, and hath caused it to grow in patient continuance by the tribulation of frequent harrowing and cultivation, even he shall be glad because of the abundance of the food from his fields.

9. His cattle also shall show forth the praise of his prudence and judgment, and they shall recompense him for his thoughtful toil and skill.

10. He shall establish the corn in the land and give each seed a wide place wherein it may flourish and wax great and strong.

11. It shall resist the attack of the fierce drought, and as the sun shall beat with the mighty majesty of his strength upon it, with all meekness and alacrity it shall store up the same for the comfort of animals and the service of man.

12. The corn from the country to the far south shall ye buy, and every man of you in the land of Ontario, according to the size of his farm, shall plant it in rows or in hills.

13. Ye shall not sow it broadcast.

14. Every man according to the capacity of his fields for crop shall set apart one-tenth for fodder corn.

15. Whoso is wise he will plant fodder corn, and he will also build a silo, and if he shall inquire of the man that is in charge of the dairy and the silo at the College of Agriculture, nigh unto the city of Guelph, verily he shall receive instruction.

Farmers' Institutes.

MEANS THAT MAY BE USED FOR THEIR ADVANCEMENT.

(Third Paper.)

Parties should be secured competent to impart useful information and in an interesting way. The list of subjects at every meeting should vary, for what interests one will be of less interest to another. It has been found useful to hold, say two large meetings in the year, with a two days session, at important points, a mass meeting being held in the evening with a mixed audience, at which short speeches are made and music interspersed. Scientific subjects should form rather the sauce than the substance of the feast. Men who are known to be thoroughly versed practically and theoretically in the subject which they handle, wherever they can be got, will answer best to introduce subjects, orally or on paper. Everything of the quasi-political order should be kept in abeyance, and every encouragement should be given to the thorough discussion of subjects. This is the patent prize-winning fanning mill, through which every paper or address should be passed, to thoroughly separate the wheat from the chaff. In this way also experiences are brought to light only known to one,

which henceforth become the property of many and very much to their advantage.

It is not wise to go to large outlay in bringing several speakers or essayists of note from a distance to instruct one meeting. It is too expensive. The funds of the Institute will not afford it. Better get two or three addresses or papers from the one help secured and draw as largely as possible on the local help of the neighborhood for papers on other subjects. The country contains a fine sprinkling of men with the requisite gifts to entertain an audience profitably, although they may not know it themselves, and it will be a good thing, both for themselves and the country, to have these gifts developed. Young men, the future leaders in thought in the agricultural world, are growing up in our midst, and the Institutes will form an excellent medium for ascertaining who they are.

There should be no place in the Institute meetings for the one hour lecturer, unless a master at his work; papers, short, pointed, pithy, full of marrow and outline, will accomplish much more. The chairman should see to it that, if possible, it be thoroughly dissected by the audience, that each one may reject what is unprofitable and bear away what is good. The mere theory man, and the man of hobbies, the crank and hanger-on of public meetings should all be given seats in the back of the building, and the irrepressible bore, who is always wanting to say something which is nothing, should be placed beside them.

It should never be forgotten by those managing the Institutes that the model Institute meeting consists of a feast and the guests who come to it. It cannot be called a model meeting where either of these is lacking, and no less effort should be put forth to secure the guests than the food to entertain them, or the food to entertain the guests than the guests themselves.

Institutes up to the present are something of an experiment. It is quite probable that new features will be introduced as time moves on and additional experience is gained. In the United States mass meetings are the order of the day, with two or three lecturers at work at the same time in different parts of the same hall. Some features of their methods it may be wise to adopt. We have many reasons for believing that if the Province were divided into two or three sections and the meetings held in a continuous succession, one or two speakers going the entire circuit in each, it would result in a great saving in the item of traveling expenses, and the meetings would be more surely furnished with talent of the right order.

In the meantime let every member of the Institute realize that he is identified with a great work, a work that will elevate the entire profession to which he belongs, and ultimately deliver it from all-oppressive influences, and let him govern himself accordingly.

Fungi Injurious to Farm Plants.

(Fourth Paper.)

SMUTS—OATS (*Ustilago carbo*) AND CORN (*U. Maydis*).

These two fungi, brothers-in-arms they truly are in their destructive work, possess an advantage over other plants, that are parasitic on farm crops, inasmuch as they not only decrease the yield of the crop indirectly, as most other fungi do, by sapping the plant of its nutritive juices, and thereby lessening its growth and vitality, but they also decrease the returns both in quantity and quality directly by attacking the grain. In this way they are doubly armed, and succeed in annually causing great loss to the farmer. They both are so common that no description is necessary further than that which may be

given through the eye by means of our engravings. Figure 1 represents the oat smut on an affected head.



It is noticeable that the disease begins at the lowest kernels and gradually grows upwards. This blackened portion is the only part of the smut that is discernable to the naked eye, but the microscope reveals the fact that the root, or, more properly, the mycelium of this parasite, grows like a vine amongst [the cells comprising the tissue of the oat stem. Once it gains admission to the plant it grows rapidly upwards, throwing out small side shoots or feeders (*haustoria*) that take from the adjoining cells the nutritive substances that should normally go to increase the growth of the oat plant. The mycelium, soon reaching the first floret, begins to produce spores, and thus spread the disease to the surrounding plants. It is principally when the oat plants are in flower that the pest spreads, and these spores are the main agents in so disseminating it. Examined under the microscope, with a power of 600, they have the appearance of small wheat grains, being more oval than circular. Those shown in figure 2 have been drawn by the writer from mounted specimens taken from a diseased plant. The black dust contained in affected heads consists solely of those minute organisms. Brefeld found that those spores in a sterilised solution of manure germinated like yeast, by the process known as budding. The spore sprouts and produces new individuals called sporules, each of which are capable of producing the disease when they come in contact under favorable conditions with an oat plant; and as the spores are very light and produced in great numbers, the pest spreads very quickly from field to field. Those spores shown at figure 2 measured .02 of a millimeter in length, or .0039 of an inch. With



Fig. 2.

this as a basis of calculation, it would take fully 250 of them to extend over a line an inch in length.

The corn smut possesses many features very similar to the smut of oats, making them near akin to each other. More extended research, however, has resulted in the life history of that which attacks the corn, being better known. Its appearance is shown in figure 3, which has been carefully engraved from a draft that appears in a report of the department of Agriculture at Washington. Kuhn, a German investigator, found, as a result of his observations, that the parasite gained access to the corn plant by germinating at the root node or lowest joint of the corn stalk, as the tissue is very soft at this spot. Once it gains an entrance

the mycelium rapidly grows until it has increased to such an extent in the tissue of the corn plant that it bursts the stem, and the production spores shortly begin to carry on the destructive work on other plants.

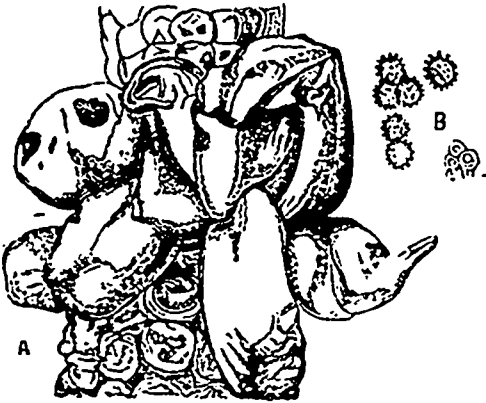


Fig. 3. (After Tulane.)

(A), a diseased ear. (B), spores magnified 460 times.

The corn smut differs from that of the oat principally in regard to the place of spore-production; the latter produces spores only in the head of the oat plant, but the former makes any part of the plant a station for spore-production, even growing as high as the tassels before beginning to form spores. In the great majority of cases, however, it attacks the ears and less frequently the stalks. Prof. Henry, of Wisconsin, knowing the size of each spore, and the number of cubic inches the spores of a large bunch would fill, came to the conclusion that a single bunch may contain over one hundred billion corn-smut spores, each of which is capable of reproducing the disease, but owing to the fact that but few of the spores succeed in gaining admittance to the tissue of the corn plant, and differing from the spores of many other fungi in being short lived, they do not spread the disease as rapidly as these figures would lead one to infer.

In respect to the danger of feeding smutty oats or corn to animals, the trend of opinion is that if fed only in small quantities, no serious results follow. Some years ago the Department of Agriculture at Washington started under way an experiment along this line, and the outcome of it was that thirty-six ounces of smut was fed to a cow per day, and she neither showed any evil effects nor even lost in flesh. Prof. Henry conducted an experiment of a like nature with two cows, one dry and the other milking. The amount of smut fed with bran was gradually increased in quantity until both animals consumed 24 ounces, when the milch cow refused to eat any more. The other, however, being a gross feeder, fattened on the ration, which was increased until she ate 64 oz., or a peck measure full. Three days after reaching this quantity she suddenly died, and the conclusion reached by Prof. Henry was that she was killed by the corn smut, and that her brain was affected. The symptoms given were: loss of use of limbs; head thrown forward as if to bring the nose on a line with the back; hard breathing and groaning; spasmodic contractions of the body; horns and legs cold; some frothing at the mouth, from which also flowed quite a quantity of thin, yellowish fluid. The teaching of these experiments and also that of experience is that in ordinary practice the feeding of quantities of smutty food does not bring about serious trouble when only fed to a limited extent.

Differing so slightly in nature similar remedies may be used for both. There have been many recipes given, but many have been declared useless by ripper experience and observation. Of course as in all suc-

cess good culture and drainage are conditions that will materially lessen bad results from these attacks, as will also the selection of healthy, well-developed seed. In the case of the corn smut, when a diseased stalk is noticed it should be at once removed and burnt. Throwing it on the ground is not effectual as the spores will readily mature and spread. There is no doubt but that sulphate of copper, rightly used, is of use in treating the seed. This, however, does not apply with equal force to the oat smut, as it is the spores that are inclosed in the husk that produce the greatest amount of damage. The danger in using the sulphate of copper solution is in lessening the germination of the grain as well as those of the spores. Prof. M. A. Scovell, director of Kentucky Experimental Station, states in a bulletin, that excellent results have accrued from treating their seed as follows: Ten pounds of blue vitriol (copper sulphate) were dissolved in 8 gallons of water and the solution placed in a tub. The seed wheat was put into the solution and well stirred, care being taken not to put enough seed in to come to the top of the solution. After skimming off floating diseased grains and particles, the solution was poured off into a second tub, the wheat drained and spread on boards to dry.

In the late report of the Royal Agricultural Society J. L. Jensen, of Copenhagen, who has given this subject considerable time and attention, contributes a valuable paper on this question, from which we extract the following conclusions:

(1) A watery solution of sulphate of copper ($\frac{1}{4}$ per cent. of this salt) reduced the number of smutted ears to such an extent (1:72) that it might be considered practically sufficient. But part of the corn seed-grain was killed and the crop suffered not inconsiderably. With a one per cent. solution about $\frac{1}{3}$ of the seed grain was killed and a large number of the young plants remained without rootlets for two or three weeks, greatly retarding the growth and ripening of the grain.

(2) The effect of a one per cent. solution of copper sulphate, followed twelve hours afterwards with four per cent. lime, was very beneficial. The lime saved a considerable portion of the seed from destruction.

(3) Sulphuric acid ($\frac{1}{2}$ per cent.) when employed of sufficient strength to kill the spores killed a considerable quantity of the seed corn as well.

(4) Disinfection by placing in dry heat for 7 hours did not diminish the blight, but heating in moist air for 5 hours completely killed the spores, but also injured the seed grain.

(5) Heating the seed grain in water for only five minutes at 133° Fah. entirely protected the crops from smut, and did not injure the oats at all. Immersing the seed in water at a temperature of 127° Fah. for the same time reduced the blight to such an extent (1:72) as to be sufficient for all practical purposes. This treatment was also found to be sufficient protection for wheat from bunt. As to the method of procedure he gives the following: The grain to be dipped is placed in a shallow cylindrical basket about twelve inches deep, lined with coarse canvas and provided with a cover made by stretching the canvas over a ring of such a diameter as will pass inside the mouth of the basket. The canvas should overlap the ring about an inch all round. An ordinary boiler, such as is found on every farm, is filled with water and heated to boiling point. Two vessels of sufficient size are placed near it. These may be designated 1 and 2. Supposing the boiler to contain 35 gallons of boiling water, if 12½ gallons of cold and the same quantity of boiling water be put into each vessel, we shall have 25 gallons of water at 132° Fah. in both of them. The exact temperature may be readily obtained by adding a little more hot or cold water as the thermometer shows to be required. A basket containing $\frac{1}{4}$ of a bushel of corn, which must not be more than 8 inches in depth, is now dipped into No. 1 four times; this will take rather more than half a minute, and will reduce the temperature of the water 8 or 9 degrees. It is now to be rapidly dipped 5 or 6 times into No. 2, which will take about a minute, and then dipped once per minute for three minutes long, i. e., five minutes

altogether in the two vessels. This will reduce the temperature of the water in No. 2 from 132° to 129°-130°. If steeped barley be used the original temperature of No. 1 should be 129°-130°; but with unsteeped grain, for oats, barley or rye, it does not matter if the original temperature be 130°-136° Fah. The seed corn must now be cooled. This is best done by placing the basket on the top of a third vessel and pouring a couple of buckets of cold water upon the grain in it, taking care that the cold water falls not only upon the center but round the edges, so that the corn may be uniformly cooled. The basket is now emptied on the floor and the grain spread out in a thin layer, so that it may cool completely. The requisite temperature (132° Fah.) of vessels No. 1 and 2 must be maintained throughout the process by adding from time to time boiling water from the boiler and transferring a similar amount back again to the boiler. The basket must be completely immersed each time, then lifted quite out of the water so as to allow it to drain for four or five seconds before it is dipped again.

The conclusion drawn from these experiments by the author and conductor of them is, that dressing cereals with sulphate of copper in the usual manner against smut and bunt causes, as a rule, a waste of seed grain. He claims that it is injurious to the plants and unnecessary. American experience in this respect shows it to be of value, but as to how far it injures the germinating power of the seed has not been sufficiently experimented with nor observed to overthrow the results obtained by Mr. Jensen.

Brine and lime, and also alkaline water have been found to lessen the amount of damage done by these parasites. The former, of such a density as will float a fresh egg, will permit of all the loose spores as well as the affected grains being removed, while the alkaline ley as given by Prof. Fletcher, of the Dominion Experimental Farm (a mixture of hardwood ashes to boiling water in the proportion of 1 to 3, and stirred frequently), will give satisfactory results, though perhaps not so effective as either the sulphate of copper solution nor the heating in warm water.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

That Bare Fallow.

BY F. J. SLEIGHTHOLM, HUMBER, ONT.

Primitive soil fertility is the pioneer's stronghold. An unwise use of this fertility, coupled with the grasping always-take-and-never-give system of husbandry, which is and has been the practice of the great majority of Ontario farmers during the past few decades of this country's settlement, has become to the present possessor a serious detriment.

Farms which are decreasing in value with each passing of the growing season, are too numerous. The tenant system has doubtless something to do with this, but it is equally certain that the landed proprietor of this country has much more. As evidence of a recognition by the farming community of the fact that soil fertility is not unlimited, is the introduction of the bare fallow, the too often supposed solution of depreciated and depreciating soils. But is it such a salvation? Rather is it not a mere putting off of the day inevitable under any system of slipshod farming.

As I understand the principles which govern the certainty of successful farming, whether viewed as a weed exterminator, a—falsely supposed—land renovator, either from a mechanical or chemical standpoint, or, as that purse-filling desideratum in our profession, *that bare fallow has no place in the first-class agriculture of the present day.*

"Some of the fascination of a rascal
Surrender judgment hoodwinked."

How blindly and unthinkingly we follow the example or teaching of our forefathers, regardless of the changed nature of our rural circumstances. The agri-

cultural text book of twenty five or fifty years ago can no more be suited to fill the needs of to day than the educational text-books of our public schools under a similar lapse of time could to day fill the requirements of a perfect school curriculum. No, no! we are either on the advance or the decline, and if we would be on the former we cannot safely accept unquestioningly the theory or practice of past generations.

We have questioned the use of a bare fallow in the three standpoints from which its strongest supporters argue. Let us see, then, its position as a weed exterminator.

In this respect thoroughness is the goal, profit the prize. It is a deplorable fact that the average bare fallow of Ontario is in this respect almost a total failure, and I hope, before I close, to have proved, beyond successful contradiction, that if it fails in this its race is surely run. What is the usual practice of tilling the bare fallow? Approximately this. First it is ploughed, perhaps in May, or by the careless, any time before September; then harrowed, possibly manured next, ploughed once, perhaps twice before harvest, and ridged in late August or September for the succeeding crop of fall wheat. Accordingly as time permits or inclination dictates, a harrowing or two, with possibly a touch of the roller intermixed, constitutes the process. Experience and observation warrant the statement that in many sections even this amount of tillage is rarely given. Except in the most unfavorable seasons for the growth of weeds, such a system can result only in disastrous failure.

Weed destruction is the essential work of the summer fallow, but how lamentably deficient is it. I could point to sections where bare fallowing has been tenaciously adhered to and regularly practised for the last quarter of a century, in which, to-day, the Canada thistle stands the most vigorous of plant life representatives. I am aware that in some sections the converse of this may be applied. But what the cost? "Ay, there's the rub." Shall we investigate a little? It is no uncommon thing to find one-tenth of the average farm of one hundred acres undergoing the renewal process—bare fallowing. Suppose instead of this it was in crop, and that crop oats. At a moderate estimate the ten acres would return to the farmer 400 bushels of oats and 8 tons of straw, which at present market prices would be worth to him \$220. But it can be claimed that a crop of oats is of more value to the farmer at home than anywhere else. If intelligently fed they are worth their market price at least, and the residue, as manure, is worth at least \$30, and if properly saved, twice that sum. What this feed and manure will do for the stock and farm the bare fallow can never possibly do.

But the rotation will be interfered with if this crop be substituted for the bare fallow. True, but I do not advocate this substitution, but simply show that this crop is preferable to none at all.

What should and will supersede the bare fallow are the green fodder and root crops. With these crops weed destruction can be waged as successfully as in the best regulated bare fallow in Ontario. Why not?

It is not necessary that cultivation should be ten inches deep in order to eradicate weeds. Weed destruction depends not upon the depth of cultivation, but in persistency, and thoroughness, both of these can be profitably attended to in connection with the hoed crop. Persistent surface cultivation is essential to success in any hoed crop, and if it be timely, weeds will have to submit.

As a factor in the renovation of soils the bare fallow cannot be considered as the *re plus ultra* of methods.

Maintenance and increase of fertility in soils depend not alone upon cultivation. Cultivation makes more available the ingredients of plant food contained in soils, but except in small quantity indirectly does not increase the total amount.

In this age of agricultural advancement no system of farming which does not make it possible not only to prevent a decrease of soil fertility but to insure an increase, is unworthy the practical consideration of intelligent men. I am not unaware of the fact that a thorough cultivation of soil is indispensable, especially upon heavy clays, but it is useless to sacrifice a crop to attain this end, when it can be done equally well without.

The most desirable condition of soil is not always obtained by summer cultivation under bare surface conditions. Sufficient and thorough cultivation in the early and late portions of the seasons with the growth of green crops properly attended, will secure the most satisfactory conditions of soil, mechanically and chemically that it is possible to secure.

Again, manure is indispensable in the maintenance of soil fertility, and this is one of the chief objections to bare fallow, which just to the extent of its adoption, curtails the possibilities of manure production. The more abundant crops we raise and the more manure return to the soil, the nearer we are to fulfilling soil requirements.

What are the possibilities of crop-production under green crop management? That ten acre field which in its turn has been regularly fallowed ever since the waning of its original fertility, is capable of producing feed which will support the average number of cattle kept upon the average one hundred acre farm of this province, from January to December, and that in better condition than the average practice of the present. It is the much in little species of farming which tells on the credit side in this cycle of agricultural depression.

Five acres of land under green fodder will, generally speaking, support as many head of cattle a given length of time as twenty five acres of the pasture lands of this Province; and I presume our land is rather too valuable to be used in this latter manner.

One acre of corn, ordinarily good, will, if ensiled, furnish, for a period of five months, for ten cows, thirty pounds per head per day of excellent feed. But it is unnecessary to add to the proved possibilities of green fodders. If the past few years of shortage in crops and low prices lead the farmer of this province to put less faith upon exclusive grain growing and more upon stock-raising they may prove a greater boon to our agriculturists than any possible abundance of crops could have done.

And how many things there are in connection with the bare fallow which are distasteful and unsatisfying to the farmer. Ploughing on a dusty fallow beneath a burning July or August sun is extremely trying work upon both men and horses, and when we reflect that it is labor which might be dispensed with, it becomes doubly disagreeable. Then when we recollect that the ensuing crop usually fall wheat—may be only an ordinary one, or even a failure, our ardor in the work is still more dampened.

That we are curtailing our ability for raising stock by the process and preventing the desired increase of the indispensable manure pile, without which land renovation is practically out of the question, is not a cheerful aspect to look upon.

Summer fallowing necessitates the keeping of more working horses than is desirable, as they eat up the profits at less busy seasons of the year. There is not that system of continuous labor and that equality of

labor in the different seasons, where bare fallowing is practised, that is such a desirable and profitable system. It is in this more equal distribution of labor throughout each month of the year, that we shall find at least a partial solution of the vexed labor problem. Labor is difficult to procure and very expensive when engaged but for six or eight months of the year; while on the contrary, not only is labor less expensive when engaged for the year, but it is this class of laboring men which are most conducive to the advancement of the farmer's interest.

I have said nothing of the evil effects of leaching by rain, resulting in the loss of valuable soil constituents, nor of the evil mechanical effects of washing, etc., matters of much moment to be considered by the advocate of this bare fallowing system, and which must be put down upon the debit side of the account.

These, then, are a few scattered thoughts hastily jotted down upon a subject of first import by the Canadian farmer, a subject than which there is perhaps none more neglected in our farming practice; and yet its proper understanding may be a plank in that platform upon which we are to build a superstructure that shall enable us to attain to higher levels.

The Growth of Green Fodder.

BY THOS SHAW, PROFESSOR OF AGRICULTURE.

The attention of the farmers of the Dominion has never been sufficiently drawn to the great advantages that flow from the growth of an abundant supply of green food for the stock of the farm. In this climate of short and oftentimes dry summers and of stem winters, which forever forbid the successful growth of permanent pastures of the European order and on the European plan, it will doubtless prove in the future the great resource of the farmer who is bent upon sustaining the fertility of his land, through that best of all sources, stock-keeping. Some of its advantages are:

1. It effects a saving in land to the extent of enabling the farmer with but 50 acres to raise more beef, mutton, milk, butter or cheese than the one with 100 acres, who pays no attention to the growth of green fodders.
2. It effects a great saving in fences, one of the largest items of outlay on a farm.
3. It secures a marked saving in food, and of animal muscle, in their not having to search for it.
4. It increases the quantity and quality of the manure to the extent of at least one-half of all that is made during the pasturing season.
5. Its effects upon the health and condition of the animals are beneficial, since the supply of food is uniform and sufficient, and they are free from annoyance, worry and exposure.
6. It greatly increases the quantity and quality of the milk, butter and beef product.
7. It very much enhances, in the aggregate, the fertility of the soil.
8. It largely obviates the necessity of summer fallowing, through its antagonism to weed growth.
9. It would prove a boon to the cottar, whose one cow must needs pasture on the highway.
10. In conjunction with the silo it provides green food for the stock all the year, hence every farmer in the Province alive to his own best interests will grow a greater or smaller proportion of green fodders every year.

The only objections that can be urged against it are:

1. That lack of exercise will impair the health of the stock, an objection that will be answered in a succeeding bulletin.
 2. The extra labor involved, which, however, is abundantly compensated by the increased returns.
- The following are some of the principal soiling crops best adapted to Ontario conditions:
1. Winter rye, best sown early in September; 2 bushels to the acre; cut before the blossom appears, and fed, if practicable, in conjunction with red clover.
 2. Red clover, yielding two cuttings per year, and cut until the time of blossoming.
 3. Orchard grass, which may be grown with clover and cut at same period.
 4. Lucerne, yielding two or more cuttings a year,

and when brought safely through the first winter yields a bountiful crop for years. It is best adapted to well-drained, rich loams, inclining to a sandy texture. It is not relished by the stock so highly as clover.

5. Timothy and Mammoth clover make an excellent green food, the combination being complementary to each other in their constituents, and ripening at the same time.

6. Alsike clover and timothy grown together answer equally well. By commencing to cut when the first blossoms appear, this crop may be fed for three or four weeks.

7. Oats and peas, oats and vetches or tares, or oats, peas and vetches, come next, sown mixed, at the rate of say $1\frac{1}{2}$ bushel oats, $\frac{1}{2}$ bushel peas, and $\frac{1}{2}$ bushel vetches to the acre, and at successive intervals of say 10 days apart. They make the best ration when the grain is in the milk, but feeding may commence when they first head out.

8. Common millet, Hungarian grass and Italian millet are all useful as green fodders. They may be sown from May 1st to 1st July, $\frac{1}{2}$ to 1 bushel seed per acre, and should be cut before early blossom for soiling.

9. Corn is the most valuable of all green crops for soiling purposes. It should be planted in drills for summer soiling at the rate of from $\frac{1}{2}$ to 1 bushel of seed to the acre, from 24th May to 10th June. It may be sown with the grain drill, from 30 to 36 in. apart, and suitable harrowing after planting and thorough cultivating are of much importance. Feeding may commence when the corn is formed in the ear.

10. Rape is valuable for fattening sheep and cattle, and may be sown in drills profitably on land handled in the first part of the season as a summer fallow on the same plan and with the same after-management as in turnip-culture; it is eaten on the land.—*Bulletin 38 Ontario Agricultural College.*

The Dairy.

TAKING for granted that a cow gives 3,000 lbs. of milk in a season of six months, on good pasture, and that the milk is sold off the farm, there will be sent with it the mineral substances contained in 20 lbs. of ordinary bones. These mineral constituents cannot be replaced otherwise than by direct application. Every calf raised takes off also in the near neighborhood of 10 lbs. per annum, so that it can be easily seen that to keep up the fertility of pastures so depleted it requires an application of about 40 lbs. of bone dust to cover well the deficit. It would take one ton of good farmyard manure to supply this mineral matter; but it must be remembered that the farmyard manure, while not only supplying the mineral constituents deficient, also adds considerably to the nitrogenous matter in the soil, and further produces a beneficial mechanical effect such as no special fertilizer will.

Do not compel your cows to eat the filthy urine-steeped straw of the horse-manure pile to satisfy their normal cravings for an alkali, but give it to them in a cheap as well as cleanly form by means of pure and clean salt, either as rock salt or the ordinary form of commerce. Some prefer the former because it is easier to feed and requires less attention, while others, with equal confidence advise the use of the latter, claiming that the cattle satisfy their appetites easily, which they do not always do in the other case, as their tongues become tired before their wants are satisfied. The real function of salt in the animal economy is not known further than that it serves somewhat in the capacity of a stimulant as well as an appetizer. From the avidity with which animals will lick spots of soil having a little alkaline substance in it clearly shows that it has a work to perform in their systems, and even if it only tickles their palates it is surely advisable to do so if it shows itself in the milk pail, as experience testifies, or at the scales.

THE great art of making a sweet-smelling and good-keeping quality of butter, lies in the fact that the more successful you are in getting out all the substances other than the pure fat, the nearer you come to the desired result. This cannot be achieved by the old dash-churn, for though the principle of the latter is good, yet it does not permit of a thorough cleansing of the buttermilk out of the butter, only partly so by way of the mashing and texture spoiling system, followed in a number of our farm dairies. The butter milk should be washed out, not worked out, for beside the latter method failing in its object, it also injures the keeping qualities by breaking the natural grain, a feature possessed by all good butter, thereby making it like grease in its structure. Pure fat will keep almost indefinitely, but the casein or milk-sugar are easily decomposed, and the skill of the buttermaker shows itself in the degree to which he can get rid of the latter substances found in milk. A small box churn, somewhat after the style of the ordinary creamery box churn, facilitates the thorough washing of the butter while in the granular form, and this is one of its most excellent features.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Butter Dairying in Peel County.

Among the many counties that are noted for their dairy production that of Peel stands well to the fore. This is given strength by the many prizes for butter captured by this county at the Toronto Industrial fair for a number of years past.

Years ago the attention of almost every farmer in the county was devoted to the raising of grain, which was converted into cash as soon as threshed, and Peel can boast of many farmers who have become wealthy by selling wheat and barley.

There have been a few good stock-breeders, prominent among whom we must mention the names of John Snell & Sons, of Edmonton; A. Frank & Sons, The Grange, and many others who have done and are yet doing a grand work in the improvement of the various kinds of live-stock in the county; but her success in butter-dairying must be credited, to a great extent, to the advent of the little Jersey cow in her midst.

We think Mr. Hugh Clark, now of Brampton, was the first to introduce this breed of dairy cattle in the county, by purchasing on the other side a pure-bred bull and cow. From these and future importations Mr. Clark worked up a grand herd, and was very successful in his work for many years, but losing his partner in life, Mr. Clark sold his farm and Jersey herd to his brother, James Clark. These Jerseys, although not in the A. J. C. C., were a grand lot, and did much to improve butter cows. Mr. Clark has since added to these some A. J. C. C. animals, and is carrying on the work so well started by his brother. A few years later Mr. Robert McClure, of Brampton, purchased a pure bred female, and has since worked up a valuable herd of dairy cows. He has been very successful in the show-ring, but more so in taking prizes for Jersey butter, both at Toronto Industrial and at our county show.

But since then many valuable herds of grade Jersey cows have sprung up, among the most noted of which is the herd of Mr. John McClure, of Mount Pleasant (near Brampton), who owns one of the best, if not the best herd of grade Jerseys in the county. After many years of good care and hard work Mr. McClure has built up a good-paying and a very fine working herd. The first grade cow he raised was a grand cow. She was sired by the first bull Mr. Clark imported. This cow has tested 18 lbs. of butter in 7 days, and

is still living, although 17 years of age, and is making 20 cts. worth of butter per day after milking steady for 360 days. This cow has left some fine young cows. None of her daughters has tested less than 9 lbs. in 7 days at two years of age. One of them tested at four years of age 14 lbs. 4 oz. in 7 days in 1 lb. rolls, and at five years old she tested 19 lbs. 12 oz. of salted butter in 7 days. Another daughter tested 14 lbs. in 7 days on grass alone, and was capable of making a test of at least 18 lbs. She died of milk fever while quite a young cow. She left a grand young cow to take her place, which was sold for \$100 cash on account of individual merit and beauty while quite young, which is a good price for a grade. Mr. McClure is satisfied that the Jersey cow is *the cow* for his purpose, butter dairying.

There are several other fine herds of grade Jerseys among which we may mention that of Mr. Hugh Clark and Mr. John Pulfer, who have both been successful in taking prizes for butter, and who have both good dairy herds.

Going further north, near Edmonton, we notice the herd of Mr. R. McCulloch, who is also working up a fine herd of Jersey grades, and is making a specialty of butter-making. Mr. McCulloch has lately added to his herd a pair of A. J. C. C. females. They are of St. Lambert and Signal stock. They were chosen by Mr. J. C. Snell at the sale of G. M. Beeman, of Napanee, along with two others, which Mr. Snell still owns. Mr. Snell knows a good animal and good pedigree in almost all kinds of farm stock. We expect to hear good things from this dairy herd in future.

But since we have headed this article "Butter-dairying," we cannot forget our veteran butter-maker, and prize-winner, Mrs. Wm. Dolson, of Alton, who has scarcely ever been beaten, and has taken many first prizes for butter at Toronto, Hamilton, Brampton and other fairs. She has found that butter pays if it is carried on in the right way, so as to command good prices.

Wishing the JOURNAL success, and that it may long live to work in the interest of Canadian farmers.
PEEL FARMER.

Canadian Cheese-making.

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

[An address delivered before a convention of dairymen in the United States.]

I address you to-day, happy in the knowledge that reciprocity of thought is always mutually beneficial to us as men, and to Canadians and Americans as dairymen. Said a dairyman to me some time ago, "When you have discovered the best system of making uniformly fine cheese, see that you keep it to yourself, and you can make a good thing out of it."

To their own loss dairymen in both countries have acted too much on such advice, forgetting that every poor, impalatable cheese, made anywhere, inflicts a measure of loss on everyone financially interested in the business. The making of any quantity of inferior cheese, ultimately by stopping consumption, lessens the possible demand to the extent of at least three times its own quantity and six times its own value. The offering of inferior goods by importers in Great Britain at attractively low prices, tempts the retailer to buy in hope of a larger profit, and tempts the consumer to buy in hope of obtaining a cheaper food. When a piece of such cheese reaches the consumer's table its extra keeping qualities keep him from again investing in cheese for a while, to the loss of every producer.

Mere statistics of the cheese trade of Canada would be of little interest and of still less service to you. I shall confine myself to a presentation and explanation of the principles and methods that have helped us to rapidly and profitably extend our cheese-manufacturing industry.

Our recognized primacy of reputation in the English markets has not been gained without persistent efforts, guided by intelligence and good judgment. Some years ago the highest possible price was not realized for our finest cheese in Liverpool or London, except under the blind of an American brand. It might be a more truthful, though less courteous construction to put on that unpardonable practice of some years ago, were I to say that many of our finest cheese wore the American brand, because of the status in the market which their superior quality gave to the name thus unfairly stencilled upon their boxes. The good sense universally accredited as the dairyman's trait of character, prevented any international complications from arising out of that one-sided business. Probably the acquisition of equally prudent judgment by the other classes of the population on both sides of the line may soon raise fishermen and politicians to the dairyman's plane of thinking and action. Then would follow speedily as well as mutually satisfactory and honorable settlements of all international disputes.

In the infancy of our cheese business the quality of the product of many of our factories was lamentably irregular and defective. The English markets offered an outlet and created a demand for the surplus of your dairy products as well as ours. To thoughtful men it was at once evident that the demand was practically limited only by our joint capacity to furnish uniformly fine food in the form of cheese at moderate prices. Every pound of poor, sour, hard, indigestible cheese that is sold to anybody shuts off the demand for at least three times as much cheese of fine quality. For that reason every dairyman is interested in the quality of the cheese made anywhere, when it finds its way to the plate of the consumer.

The Dairymen's Associations have been principal agencies through which the information indispensable to our progress was spread. Their annual conventions offered opportunities for the interchange of newer knowledge; and what had been before only detached theory, or hazy idea, was often by discussions shaped into definite information of real value. Then itinerant instructors were employed to visit as many factories as possible and to give actual demonstration of the best methods of handling milk, curd and cheese. The worth of that system was so generally recognized that its extension was desired. During the past season, eight persons holding the joint office of milk inspectors and cheese-making instructors, were employed by the Dairymen's Associations of Ontario. The expenses have been met from a fund formed by a grant from the associations, supplemented by contributions from the factories receiving the benefit of such services. The results have been satisfactory where competent men were employed. The inspection of milk, and the conviction and exposure of patrons who furnished it adulterated, have had a very wholesome effect on its general quality and condition. In the spring of the year, district dairy conventions are held for the particular benefit of cheese-makers. Occasional bulletins of timely information are issued from the Dairy Department of the Ontario Agricultural College. Through central meetings of patrons, and the medium of Farmers Institutes, helpful information on the care of milk and its preparation for cheese factories is circulated. Dairy literature in the press of the day has done us excellent and commendable service. These are the important organizations and agencies through which our cheese-making progress has been aided.

A few words may be devoted to an explanation of the theory of Canadian Cheese-making before I proceed to discuss the details of the best practice. Long experience has demonstrated certain methods to be well adapted to the certain production of fine cheese when the milk is all right. But as the raw material of the cheese-maker—the milk of cows—is seldom in precisely the same condition of quality upon two consecutive days, he should be able to intelligently modify the details of any method to meet the peculiarities of the milk he handles. As the work of dairying becomes extended, it seems that milk has new parasitic foes.

Some taints are growing undesirably common. Gassy curds, which years ago were the rare exception in a well managed factory, are now very general. There is an ever-increasing need for the dairyman not only to know the routine of the best processes, but to understand the "whys," "wherefores" and "wheres" of all parts thereof.

As related to the food consumed for its production, and to the conditions under which it is ordinarily given, milk is perhaps the most variable of all the

animal products. The milk of cows in the best of health, fed on the most suitable of feed, and with every condition and influence favorable for its production, is a most complex compound of compounds.

Dissolved in about ten times their weight of water, there is a mixture of casein, albumen and sugar, which holds in suspension from 3 to 5 per cent. of butter fat in the form of small globules from the fifteen hundredth to the fifteen thousandth of an inch in diameter. Such in a sentence is milk as the cheese maker needs to know it.

Besides its inherent tendency to decay, milk is a liquid most susceptible of contamination by any impurities that may be adjacent to it. It offers the many germs of destructive ferments with which the ordinary air swarms a most inviting and favorable field for their multiplication and operation. Hidden under the evident purity of its snowy froth, float the agents that immediately begin to work for its decomposition. Other organisms that live by its destruction are sown into it, ere ever the tiny stream from the milker's hand strikes the pail. This, then, is the perishable compound at its best, which it is the cheese-maker's business to preserve in a palatable nutritious condition at its best for adult human food, conveniently prepared for transportation.

The reduction of the bulk of the milk by the separation of part of its water is the first essential step in the process of cheese making. This should include or be followed by such a treatment of the portion retained for cheese as will make it most valuable in the food markets.

By rennet coagulation, parts of the milk—mainly its casein and part of the fat, which the casein envelopes—are separated from the water which still holds the albumen and sugar in solution. The nature of such coagulation, to put it in other words, is to solidify the curd out of its state of solution in the milk. Such solidifying or coagulation of the casein thereby encases in it the globules of fat suspended in the milk. After the rennet coagulation is perfect, 100 parts of the contents of the cheese vat may be described as

92 parts liquid composed of	<table style="border-collapse: collapse;"> <tr> <td style="padding-right: 5px;">87</td> <td style="padding-right: 5px;">parts</td> <td style="padding-right: 5px;">water.</td> </tr> <tr> <td style="padding-right: 5px;">4</td> <td style="padding-right: 5px;">"</td> <td style="padding-right: 5px;">milk sugar.</td> </tr> <tr> <td style="padding-right: 5px;">1</td> <td style="padding-right: 5px;">"</td> <td style="padding-right: 5px;">albumen.</td> </tr> </table>	87	parts	water.	4	"	milk sugar.	1	"	albumen.
87	parts	water.								
4	"	milk sugar.								
1	"	albumen.								
mixed with										
8 parts insoluble curd composed of	<table style="border-collapse: collapse;"> <tr> <td style="padding-right: 5px;">4</td> <td style="padding-right: 5px;">parts</td> <td style="padding-right: 5px;">casein.</td> </tr> <tr> <td style="padding-right: 5px;">3</td> <td style="padding-right: 5px;">"</td> <td style="padding-right: 5px;">fat</td> </tr> </table>	4	parts	casein.	3	"	fat			
4	parts	casein.								
3	"	fat								

These two composite parts of coagulated sweet milk are together really as a mixture of two compounds. The means whereby the separation as to contact is to be effected may be classed as mechanical and chemical. The mechanical means include the cutting of the curd to facilitate the passage of the liquid portion—the whey—out through the insoluble mixture of casein and fat. There is apparent need for perfect coagulation before the cutting is commenced, thus the fat globules will be firmly held while the watery compound—the whey—is being separated out from contact with them.

The cutting should be fine enough to permit and promote easy and sufficient separation without disturbing or destroying the physical structure or texture of the curd. The formation of a skin on each particle of curd causes the whey to be filtered through. Stirring the curd is undertaken to hasten and help the separation. Heat is applied to complete the coagulation—the firming and the drying of the curd. A temperature over 98 degrees leaves the casein less suited for the solvent action of subsequent fermentation. Sufficient moisture should be left in contact with it to permit of all the casein becoming easily soluble.

Among the chemical or vital means used to effect this separation between the soluble and insoluble, is the development of lactic acid. Its presence renders the casein less soluble. At the same time it promotes separation of the whey out from the particles of curd. When acid is developed to excess, the cohesion of the molecules of curd is weakened.

Lactic acid prevents the development and operation of the putrefactive ferments; it also makes slow the process of curing fermentation by which the casein is made soluble in the cheese. The degree of acid development will not be excessive if the separation of the whey out of the curd be well effected before it begins. The addition of salt arrests the action of the lactic acid in the curd. It also retards the curing fermentation. In the autumn months there is need for the addition of more salt than during the summer. Such extra salt will give a full, safe, keeping flavor and a slow curing, firm body.

In barest outline I have touched upon the theory of Canadian cheese making. I have supposed the milk to be in its normal or best condition; good, pure, sweet and from healthy cows. Much of the milk offered at factories is not of that quality. If the milk be tainted when drawn from the cow, the taint will be due to (1) volatile oils from her feed; (2) the presence of vitriones or other ferments from the air, the water or the feed; (3) to disease on her body.

Aeration of the milk is beneficial treatment in all of these cases. The presence of oxygen from the air prevents the vitriones from becoming active. The cooling of milk prevents the vigorous or quick action of the microbes that split the sugar into acid, and also retards the action of other ferments. Age, to the extent of twenty four hours, permits the preparation of the milk for a ready separation of the solids for cheese from the watery portion, by promoting to helpful degree the energies of the lactic ferment.

Tainted milk is with difficulty coagulated. I do not understand why, but I think that part of the casein has been decomposed by the microbes, the cause of the taint.

I have learned to use an additional quantity of rennet in such milk. The putrefaction of the casein or any nitrogenous matter in the milk which is not coagulated is very easy and rapid. Bad odors and bad flavors always result from such decomposition. Often cheese goes off flavor from the imperfect coagulation of the casein.

(To be continued.)

Silo Building.

BY L. H. ADAMS.

(Wisconsin Experimental Station Bulletin.)

LOCATION OF SILO.

When possible the silo should be located in the feeding barn, since it not only brings the cost of building within the reach of everyone who is really in need of a silo, but greatly facilitates the handling of the ensilage when feeding it out. Depth in a silo is always preferable to breadth, so that in the case of basement barns it is advisable to let the silo reach from top of barn posts to the ground floor of the basement; a door or opening can then be made from the silo directly into the basement where the ensilage is to be fed. The next best location is adjoining the feeding stable. In most dairy stables the cows are stanchioned in two long rows facing each other, and, whenever it is possible, it should be arranged so that the silo can be entered from the end of this feeding alley; a wooden track can be laid along the centre of the feed way and into the silo, upon which a low wheeled car can be operated to distribute the feed. If the silo building is located entirely separate, it should be planned to load the ensilage into a cart which can be drawn into the feeding barn, thus delivering the ensilage with little labor directly to the cattle. The idea of convenience should not be lost sight of, for by exercising a little thought and judgment the labor of waiting on the stock through the long feeding season can be greatly reduced.

FORM OF SILO.

In a square silo less lumber is required and less ensilage is exposed to the walls in proportion to the capacity than in a long narrow building; it is the part of economy to retain as nearly the form of a cube as the location and other circumstances will admit. Theoretically a circular silo comes the nearest to perfection, for this form requires the minimum amount of material and does away with the corners, in which there is always more or less decayed ensilage, but as we have had no experience with this form of building nothing can be said about it at this time.

BUILDING THE SILO.

The following detailed description of how to build will apply to the outside silo, built separately or as an annex to the stock barn.

It is always the part of wisdom to provide substantial foundations for farm buildings that are intended to be permanent, and the silo is no exception. An 18 inch stone wall should be laid deep enough in the ground to be beyond the action of frost, and raised high enough above the surface to admit of sufficient grading to divert all surface water; if the location be a high and well drained one there will be no necessity for raising the wall more than 6 inches above the surface. In digging the trenches, throw enough earth inside to raise the silo floor up to the top of the stone wall. Upon this stone foundation a sill made of three

2x10 planks should be bedded in mortar (see fig. 1). In laying the sill, the top plank should not be fastened to the others but left loose, for reasons soon to appear. The studding should be 2x10 plank, preferably 18 ft. long. After carefully sawing the studs to uniform length and squaring both ends, arrange them in a horizontal position, re-ting on the edges, and placed 16 inches apart; they should be supported on a level with and at right angles to the sill upon which the

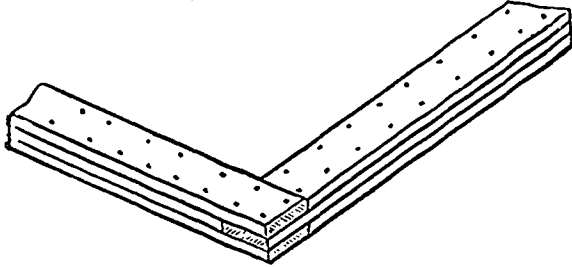


FIG. 1.—Showing how planks of sill are joined.

bent is to be raised. Then spike the loose plank of the sill to the foot of the stud; and when all have been firmly fastened as directed they should be secured at the top in the same manner. After fastening the studding to sill and plate-planks, the side or end, as the case may be, is ready for raising. After the bent has been raised in a vertical position to its place on top of the other two planks of the sill, the third one that was nailed to the foot of the studding before the bent was raised can be firmly spiked to the lower ones. This first bent can be held in place by temporary stays until the remaining sills are raised; the plates can then be nailed at the corners and the skeleton frame is complete; two 2x10 planks will give all the strength necessary for the plate. It will be observed that by following this plan the studs are securely fastened, top and bottom, and the full strength of sill and studding is saved, there being no mortises cut in the sill and no tenons on the studding. After the frame is up the next thing to be done is to bridge the studding. This is a very simple thing to do, but of so much value in strengthening the walls that it ought never to be omitted in a silo. In case the silo is 18 ft. deep, it would be advisable to put in two rows of bridging. By thus spiking planks between the studs it makes it just as impossible for the studs in the centre of the wall to spring out as it is for those nearest the corners. We are now ready to commence lining the silo. Each one can follow his choice as to the outside covering, since it plays an unimportant part in the preservation of the ensilage; some will prefer to use drop siding or ship-lap, others common lumber, and in some parts it is possible to put on a covering of low grade shingles cheaper than any other way. It is not necessary, for the preservation of the ensilage, that paper be used on the outside of studding, but to keep out frost it is advisable to use it, since it makes the silo much warmer. Since a good deal of moisture rises from the ensilage, it is well to provide for ventilation at the roof. This can be done by openings in the gable ends of the building, or a dormer window in the roof. It is much better to carry off the moist air by ventilation than to have it congeal on the rafters during cold weather and drop back again when mild days come.

LINING THE SILO.

Care should be exercised in lining the silo. The lumber for this should have no knot holes and should be dressed on one side, and is better if edged so that the joints will be reasonably tight. The lumber need not be of uniform width, but boards from eight to ten inches wide are preferable. The inside of the studding is first covered with boards, laid horizontally (see fig. 2), ten-penny nails being used; building paper is then tacked over the whole surface. Upon the paper nail a second layer of boards. Care should be taken to break joints, which can be indicated by chalk marks on the paper. This double lining, with paper between, must reach from the top of the silo to the bottom of the sill.

The floor of the silo need be nothing but the earth; as already mentioned, it is a good plan to fill in the silo until the floor is on a level with the top of the stone wall; a layer of straw spread on the bottom before commencing to fill with corn will prevent the loss of any ensilage.

The silo should be tied across the top at two or three places with joists, or a cheap cable; this latter

may be made by twisting three strands of galvanized wire, which costs about three cents per pound; five pounds will make a cable sufficiently long to reach across an ordinary silo.

If the silo is more than thirty feet long the sills should be secured at two or three places with a cable of this kind, which, as it rests on the ground, is entirely out of the way. The modern silo will not tolerate partitions of any kind, they are relics of the past. There are several methods employed for cutting off the four corners of the silo. Perhaps the simplest plan is to bevel the two edges of a foot wide plank and nail it securely in a vertical position in the corner. A dormer window in the roof of the silo affords a satisfactory means of getting the corn into the silo in the fall.

The door way should be made sufficiently large to permit the entrance of a cart or some other vehicle for moving the ensilage from the silo to the cattle. There is no necessity for running the doorway to the top of the plate since the ensilage always settles considerably, and even if it fills the silo above the top of the doorway there is little trouble in digging down

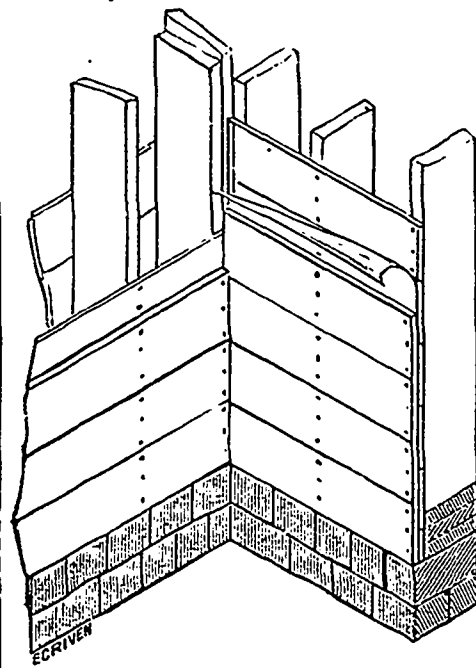


Fig. 2, showing double-boarding on inside of silo.

just at that point and making an opening. Of the numerous doorways described the simplest form is probably the best. Tack cleats on each of the studs which form the sides of the doorway, so that boards six inches wide running across the doorway come just flush with the inner lining of the silo. If the doorway is wide set a stud in the middle to prevent the boards springing. Repeat the cleat and boards for the outside walls. During filling, as the ensilage accumulates, place a layer of paper across from cleat to cleat and tack on six-inch boards until the doorway is closed; or it may be closed up at once when filling commences, and the silo entered by a ladder reaching a doorway on top of the plate. In opening the silo the boards can be knocked off as the ensilage is fed down.

HOW TO PAINT THE INSIDE WALLS.

Now that the silo is built the question naturally arises, what is the best and cheapest wood preservative that can be applied to the parts of the silo that come in direct contact with the moist ensilage. An examination of one of the Station's silos that had been treated with a coat of coal-tar possesses another great advantage: over ordinary oil paints, there being so much body to it that it readily fills up cracks in the lining, and aids greatly to make the silo air-tight. It is one of the waste products in the manufacture of gas, and can ordinarily be obtained in any quantity at the works at three or four dollars a barrel. As it comes from the gas works it is a liquid of about the

same consistency as molasses, and it is necessary to burn off considerable of the oil that it contains before it is in a condition to apply to a wall. This burning is a simple process: pour a quantity of the liquid into an iron kettle, set fire to a handful of straw and throw it in the kettle. The tar at once flashes up and burns with great heat. In order to tell when it has become sufficiently reduced, thrust a stick into the blazing kettle, then take it out and plunge it into a pail of cold water; when the tar clinging to the stick has become sufficiently cool to handle, take a particle in the hand and pull it out; if it will string out in fine threads a foot or more long, it has burned long enough and the fire can be put out by placing any tight covering over the kettle. It usually takes from one-half to three-quarters of an hour to reduce the tar to the proper consistency. This preparation must be applied hot, and it will be necessary to swing the kettle up from the ground and keep a fire under it until the work is done. The odor and smoke from the hot tar is very disagreeable, but by taking small quantities of the liquid and applying it very hot with mops or whitewash brushes, the surface can be gone over rapidly.

A single season's experience with a wood preservative cannot count for much, but we think very favorably of the method here described, and intend coating the walls of a large silo with coal tar the coming season for an additional test.

More than Pleased with their Silo and Silage.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—As the subject of silos and ensilage is a matter of interest to dairy farmers and many who can hardly be so described, but who keep a number of cows, perhaps our experience with the above may be of interest, and to some useful.

We built a silo last summer at the side of the barn and cattle stables, the floor of the silo being within one or two feet of the floor of cattle stables, so that access is easy. Quite late in May we planted five acres of the large Southern White corn, generally known as the B. and W. It grew to an enormous height and size, and was the wonder and admiration of all. Owing to pressure of work from building the planting was thus late, and in consequence it did not mature, very few ears having reached the glazed state. Frosty days and shortening nights admonished that it must be cut, whether mature or not. You will remember that last fall it was very wet, and this corn being on a piece of flat, low ground, made it difficult to get it wilted, as recommended by those most experienced. Fearing sharp frosts, we set a number of men to work, and cut the whole down with axes, thus covering the whole ground. We were very anxious lest it should be injured before we could get it into the silo, and this feeling was not allayed by "Job's comforters" around us. However, we took it philosophically, and having provided ourselves with a Smalley Ensilage Cutter and Carrier, worked by a steam engine, we set to work getting three saw-mill trucks, on which we nailed planks projecting a good distance over the wheels, and two teams and drivers. At the end of the cutter we built a platform on the level with the machine. We thus kept a wagon loaded with corn always standing near the operator, and we got the whole cut and into the silo in a little over four days. We had read advice as to partitions in the silo, and corn, and as that great authority on this subject, Hiram Smith, of Wisconsin, says there is no more use for a partition in a silo than there is in a pork barrel, we concluded to dispense with it. Our silo is 50 feet long, 20 feet wide, and 13 or 14 feet deep. The carrier was so arranged that the first day we dropped the cut corn about one-third of the distance in the silo, the second day a stage further on; the third day, at the final stage, and on the fourth day commenced again. We thought we had taken great pains in treading it down in the corners and at the sides, but the result shows that we did not do so as thoroughly as should have been done. This has been a condition against good silage to some extent; second cause was as stated before, corn not being quite as ripe as it should have been; thirdly, the silo was only half full, hence there was not sufficient pressure; and last and worst, after it was all packed in, circumstances necessitated turning up the bottom of the roof of iron, and the tinker, with singular stupidity, chose a desperately wet day for this purpose. Result, considerable water found its way in at one place. These

circumstances made us somewhat anxious about the result, but we had a very large crop of roots, which of course would not keep, whereas, if the ensilage was good, we knew it would keep. We did not open it till very recently, and we are glad to say that we are more than pleased. We should have felt very happy with one-half of it good, but we judge there will be three-quarters or four-fifths, which the cattle eat with great relish. All being well, we purpose growing ten or twelve acres this spring, but shall sow two kinds; one an early kind, so that we shall not be driven so late in the season before cutting. We feel sure to those who keep a considerable number of cows and go in for winter dairying, it will be found in Ontario as in Wisconsin, an economical and excellent way of feeding.

WM. DAVIS & SON.

Kine Croft Farm, Markham,
April 11, 1889.

Poultry.

FOR CANADIAN LIVE-STOCK AND FARM JOURNAL

Figuring Yourself Rich.

BY W. C. G. PETER, ST. GEORGE POULTRY YARDS,
ANGUS, ONT.

Many of the disappointed ones who have (according to their own idea) tried poultry raising and failed, have no one but themselves to blame for their want of success. This was brought forcibly before me lately by the remarks of a friend upon coming in to see my incubator. He began almost directly to ask questions: "What capacity was it?" "How often could it be set?" and the usual enquiry, "How long does it take the eggs to hatch in an incubator?" After we got through, and he had taken out a pencil and made a few strokes, "Why," said he, "at the rate you can put the eggs in you can get so many thousand chickens per year." I could not repress a smile, and he went over his notes again. "Why, yes you can; look here, it's as plain as day. I should think there *was* money in it, by Jove

Yes, said I, but do you know they will not take figures for cash in the bank. And so it is with many, they "figure it out," and it is only theory; and when the first disappointment comes, they are disgusted. These kind of people hear of some noted fancier selling a bird or two that has brought him, say \$50. They think, well, I'll get some of that kind if they sell so high. And if he pays a good sum for a pair he is quite surprised that orders do not rush in for them, or he cannot get the price he wished to obtain. He may think his birds as good as they may be, but the old fancier had something besides his birds: he had the reputation he had obtained by years of labor and thoughtful experiments in breeding, and the result of years of expensive advertising. The same applies to those who think that without any previous experience with poultry they can breed and raise them by the hundred, and make an *easy living* out of it. Not long since I had a letter from an invalid lady of reduced fortune asking me how many hundred birds I thought she could attend easily, as she was in poor health, etc. Now it would be simply cruel to mislead such a person for the sake of selling a few birds. No sickly person can attend to hundreds of birds *easily*, not even two hundred, if they intend to do all that implies, themselves. They can do it, but not *easily*. Then there is another point that these easy people are apt to forget. You can't be a "dude" and attend to a few hundred fowls at the same time. In fact the working suits of the "out and out chicken man" are—well—really they are beyond the power of tongue or pen to describe. And if you want to see "a rare fine chicken suit" come down some morning when Mrs. P. and I are at work and you will see two good ones. Another thing people forget—1,000

hens or 500 hens does not look much on paper, and they are easily looked after that way, too. But 1,000 hens or 500 hens to have every day dealings with, etc., represent considerable time and labor. Still the work is not hard; it is all pretty light and easily performed, but it is continually recurring.

It is well just at this season that a person who intends to engage in poultry-raising should consider these things. It is better that those not adapted for the business to keep out of it, and it is well to let every one know that while there is a field of certain profit in which to work, and an avenue of wealth open to all who are adapted for the work, it is no road for the lazy man to travel. The poultry business has many advantages that others do not possess; its quick returns on small capital are without a parallel. But brains are as necessary to a successful issue in this as in any other business. I would say to the beginner, Go slow; get good stock, of either birds or eggs; get them pure-bred at any cost; study their wants, gain their confidence, learn their habits and know the standard of the breed you keep. Do this, and if you are at all adapted for a successful fancier or poultryman you will want more land and bigger houses, and another variety, in less than two years.

Preventing Hens from Eating their Eggs.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—Would you kindly let me know through the JOURNAL if there is anything that will stop hens from eating their eggs. They get lots of lime, gravel, and soft wood ashes once a week. Every second day they are fed grain and soft feed, and also give them milk and fresh water once or twice every day. They have been laying since December.

W. G. MOHER.

ANSWER BY W. C. G. PETER, ST. GEORGE POULTRY YARDS, ONT.

The great cause of egg-eating is idleness, and the nests being so in the light that the hens can bother the one that is laying. She will, in trying to evade their prying curiosity, trample on the egg till it gets broken, when they all strive to get a share of it. And from that time will watch and devour the eggs as soon as they are laid. The best, I may say the *only* preventative, is, give plenty of room for exercise and not allow too many hens to one pen, as there will be more profit from twenty hens in a flock than from thirty unless there is a very large range for them. My plan for nests is as follows: I let the partition between the pens go down to 12 inches from the floor, the nests are made with a back 12 inches deep, and partitioned off to the same depth, the nests being 14 inches between each partition, and a narrow slip across top and bottom in front to hold it firm and keep the eggs from rolling out. The nests are in one piece and extend all the length of the partition of the pen; and so through into the next pen, about four or five inches. There is a flap with hinges on the partition to cover this, and we lift the flap to reach down for the eggs. There is a board running the entire length in front of the nests about eight inches away from them, and this makes a dark alley-way; the hens go in and are not seen by the others. It is the best plan I have yet hit upon, and I think it will prove of value to others besides the enquirer.

It seems from the letter they have exceptionally good management in feeding, and I think there is no more vexing experience than to find them eating their eggs. Some say, kill them; but the trouble is to find the one that begins it, as when you go in, it may be one of the others has taken it from her that began the mischief.

Poultry Papers.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR,—Kindly give me the address of any paper or papers published in Canada or United States devoted exclusively to poultry and pet stock? By so doing you will greatly oblige,
SUBSCRIBER.

The following are the only ones confining themselves solely to poultry and pet stock that we know of:

The Canadian Poultry Review and Kennel Gazette, and *Pigeons and Pets*, both published by H. B. Donovan, 27½ Wellington street East, Toronto.

The Poultry Monthly, published by The Fenix Publishing Co., Albany, N. Y., containing a Canadian department, conducted by Chas. Bonnick, P. O. box 184, Toronto, Ont.—Ed.

The Apiary.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL

Bees Taken From Winter Quarters.

BY R. F. HOLIERMANN, BRANTFORD, ONT.

During the past month very many have taken bees out of winter quarters, and no doubt, to many observing minds, the past winter, as every winter, has left its lessons: either we have learned that the conditions have been favorable or unfavorable for successful wintering. Of course, that any one has arrived at the best method of wintering is doubtful; yet there is a great difference in the present methods, and a great loss of bees or their vitality, and a great deal more honey required to winter colonies than is necessary.

To leave until the last moment the providing of a suitable repository, will not do. The farmer, especially, has to plan beforehand, and build as opportunity will permit. Then, too, if stone or brick walls are built, several months should be allowed for the wall to dry out.

Bees are kept in all sorts of places, and many of them so unsuitable, although, through ignorance, they are supposed to be excellent, and the bee-keeper has gone to trouble and expense to provide this place, worse than outside by far. How often are we told that "I had no luck with bees." Upon questioning the luckless individual, we find he has wintered his bees perhaps in a garret, or taken great pains to have them in some other *unsuitable* place. There are a few principles to consider, and by following these the place may suggest itself. A dry atmosphere is desirable; a change of atmosphere, an even temperature, just what that temperature should be is a disputed point, but probably 40° to 45°. As to light, it has never been shown to do any good, although probably, if the conditions are just right, light does no harm. On the other hand, if it has never been shown to be beneficial, and adds to the injury if conditions are not right, then we better exclude the light.

From the above it will be seen that a garret, or any other room above ground in a house, will not give us the desired condition. If there is a thaw, the mercury will stand high in the room, and if it turns cold suddenly, as it very often does in winter, within six hours, there will be a variation in temperature of perhaps twenty degrees. Changes in temperature are bad, but sudden changes infinitely worse. Both for ventilation and even temperature, an underground pipe is desirable, below frost and at least 100 ft. long, then another pipe running from say one foot of the cellar floor, or two, and up through the roof, should be given. It can connect with a stovepipe or the chimney.

The place should be large enough to keep the bees at least four feet from the cellar wall, three feet from the floor, and have the hives not more than two deep. The circulation of air is less close to the wall, and my bees last winter, next such a wall, consumed on an average six pounds more honey per colony; that means that it took about 75c. more per colony to winter them, to say nothing of the probable loss of vitality. This is not strange, for we are warned again and again to place our beds out from the walls in our room for the same reason. A place in a good, well

built stone or brick cellar answers very well, and with a good cellar no extra fixing need be resorted to for a few colonies, but such as have not this should try and put up some little place, or leave them outside with a packing of six to twelve inches of saw-dust or chaff at bottom or sides, and twelve to fifteen inches of chaff at the top. The entrance must of course be left open.

MOVING BEES.

As May is the proper time for an inexperienced or even experienced man to buy bees, the proper way to move them will be desirable information. The distance they have to be moved is important, and the nature of the road. A spring wagon is good, with six inches of straw underneath; a wagon without springs, but straw in the wagon, will answer. Combs in hives should run with the length of the wagon, and may so be carried a mile or two with safety. If the frame bars are glued down pretty well, a cloth can be stretched down tightly over the top of frames, and the entrance closed with wire cloth. They should be moved at night in any case when taken on a wagon. If bees have to be taken longer distances, they may at times be safely taken as above, but if the weather is warm, the bees for want of air may melt down the combs. It is not wise to risk it, and better to put a wire screen over the top after removing all the cloths. If the frames move loosely on their rests, then drive a light wire nail partly through the frames and hive, but not farther than you can draw them out. This should be done in any case if sending by rail. First-class colonies in Langstroth hives should not cost more than \$7.50, and can sometimes be bought for less. Be careful who you buy from, especially if you do not understand the business.

INCREASE IN THE APIARY.

Do not divide your bees, let them swarm naturally. There is no money in the sale of bees at present prices. To increase by dividing a colony is a doubtful method at almost any time. If you do not understand it, it is folly, and you may lose both colonies, and it is very likely at best that you will not get as much honey from them. Place your bees where the ground is sweet and dry, and they will get the morning and evening sun, but not much of the sun when it is high. On the edge of a shade tree answers very well.

Horticultural.

A Few Insecticides and How to use Them.

The progressive farmer and horticulturist meet with no problem of greater moment to them than that of combatting the attacks of the many insect enemies that are warring on their crops, and this becomes of more and more importance as time passes and the countries grow, for with our advancement these pests increase in both variety and numbers. New immigrants are constantly arriving with the introduction of new grains, and sallies are made by species hitherto thought harmless, on the products of the farmer's care, they being compelled by force of circumstances to make ravages on cultivated plants through the destruction of their natural foods. It has been estimated that there are about 350,000 already known species of insects in the world, and about as many more that have not been described. Of these about 25,000 species may be credited to this continent, and about a similar number prey upon the productions of man. Among the 7,000 or 8,000 that are said to be fruit pests, the apple alone is preyed upon by 210

species. This being so, it behooves the farmer and fruit grower to call to their aid all possible measures that will enable them to combat these foes, taking advantage of scientific experiment and research, and the practices that others have found successful, as well as coupling with these close observation of the habits of these depredators. If all strive and work with this object in view very noticeable results will as surely follow.

No other insecticides are more universally used than the two arsenical compounds, Paris green and London purple. The former is an arseniate of copper, and contains about 60 per cent. of arsenious acid. The constituents of Paris green, it being a chemical compound, always bear the same relation to one another, and consequently, unless adulterated, is always of the same strength. This however, cannot be said of London purple, as it is a refuse from the manufacture of aniline dyes, and hence its strength is not stable. It is an arseniate of lime, containing about 43.65 per cent. of arsenious acid and 21.82 per cent. of lime. It is of very great importance to secure pure Paris green, for many of the tirades directed against its use have sprung from the using of an adulterated article. To determine whether the brand offered is pure or not the following is given as a test: Take 100 grains of Paris green, place it in a glass vessel and add one ounce or so, according to its strength, of liquid ammonia. Stir this with a glass rod, and if the Paris green is pure it will all dissolve, forming a beautiful blue transparent solution, and if it is adulterated a sediment will remain. As white arsenic, another insecticide used by some, is also soluble in liquid ammonia, and cheaper, it might be used to adulterate Paris green without this test detecting it, but the lighter tinge given the Paris green would at once indicate its presence. This white arsenic has been spoken of highly by some, its cheapness and solubility being largely in its favor, while the easiness with which it might be confounded with harmless substances and the tendency to burn the foliage, that it possesses, unless very weak, are features of it that lessen its value.

Extended experiment and use in the orchard has demonstrated clearly that as a means of fighting the codling moth, the canker worm, and as many claim, the plum curculio, Paris green has no equal. Prof. Forbes reports as the result of his experiment, that the outcome of the examination of 2,418 apples from trees which had been sprayed with Paris green 1½ ozs. to 5 gallons water, and of 2,964 others from check trees, which had not been so treated, it appeared at the end of the season that 21 per cent. of the treated apples had been infested with the codling moth, and 67.8 per cent. of those not so treated; while 27.3 per cent. of the poisoned lot had been infested by the curculio, and 51.3 per cent. of those not sprayed. The London purple (¾ oz. to 10 gals. of water) saved about ⅓ of the apples that would otherwise have been sacrificed to the codling moth, and about ¼ of those otherwise spoiled by the curculios. Mr. E. L. Goff, horticulturist, of N. Y. Experimental station, came to the conclusion from his experiments, that the percentage of wormy fruit from trees sprayed with Paris green and water was about 22 per cent. less than those not sprayed. In an 1886 bulletin Prof. Forbes claims a saving of 70 per cent. of fruit by spraying once or twice in early spring, as soon as the fruit is fairly set, and not so late as the time when the growing apple turns downward on the stem. There is no doubt whatever but that spraying in conjunction with the using of bands around the tree, put on before the first of June, and kept on until every apple is off the tree, will effectually rid us of this

pest. The larva that escape the Paris green may be caught in this way if the tree is clear and free of all rough, loose bark.

At the late meeting of the Fruit Growers' Association it was brought out clearly that spraying in the proportion of 3 ozs. to 40 gals. is of sufficient strength, and the time to apply when the petals of the blossoms have fallen off, and thus prevent the poisoning of bees and other useful insects that visit the flowers. In smaller quantities than that given above, ⅓ to ¼ oz. to a pail of water. For cankerworm Prof. Fletcher recommends the liquid applications, 2 to 4 ozs. to a barrel of water (40 gals.), one before the buds open and the other as soon as petals have fallen; for plum curculio an application of similar strength to the foregoing sprayed over the trees as soon as the young plum has formed, and if necessary repeated, a fortnight later. The following method of dry application is recommended by the same authority: one part of Paris green may be mixed with from 25 to 50 of land plaster or common flour. This is given as useful on all plants of which the foliage is not used as food.

Another insecticide that has been used with success for some time past is pyrethrum or buhach. This substance so known commercially is the ground-up flowers, leaves and stems of the plants, one a native of the Caucasian mountains and the other of Dalmatia, viz., *Pyrethrum roseum* and *P. cinerariaeform*. These are very closely related to our common chrysanthemum. Pyrethrum possesses one important feature that makes it of great worth, and that is its being not at all poisonous to the higher animals. It is to be remembered that it kills by contact, and hence it is practically useless dusting the upper side of the leaves when the insects are on the under, for the principle contained in it is so quick acting in its effects and is very volatile. On this account also, unless the air is kept carefully from it, it soon becomes worthless with age. Its success as a remedy for the house-fly led to successful experiments on the cabbage-worm and all kinds of vermin that infest poultry and other domestic animals. A solution of it in cold water, a tablespoonful to two gallons of water, has been found to work with effect on cabbage-worms. It should be applied early so as to destroy the first brood. The same solution is of great use in destroying plant lice. Prof. Cook, of Michigan, gave the above solution a thorough trial with great success on the currant slug, rose slug, green cabbage caterpillar, and also on the zebra caterpillar. Experiments with about twenty insecticides on these insects, under the direction of the entomologist of the Washington department of Agriculture show that pyrethrum powder mixed in the proportion of one part of the powder to three parts flour, and dusted on the plants, gave the best results.

Other insecticides that have made rapid advances in the favor of those that have to meet the attacks of insect enemies, are the kerosene emulsions. Milk and soap are the two substances that have been found best to mix with the kerosene. The former preferably in its sour state, 1 part to 2 of kerosene, vigorously churned, while at blood heat, for from 15 to 20 minutes, results in a substance called "kerosene butter," that will keep well, and finely sprayed, in the proportion of 12 parts of water to one of emulsion, it will, as stated by the Washington authority, kill most insects without injury to the plant. The same authority recommends the following emulsion with soap, as equally good: kerosene or refined coal oil, 2 gallons; common soap ½ lb.; water, 1 gallon. Heat the mixture of soap and water and add it boiling hot to the kerosene. Churn the mixture for five

or ten minutes. The emulsion, if perfect, forms a cream, which thickens on cooling, and adheres without oiliness to the surface of the glass. This should be diluted before using with 9 times the quantity of water, making in all about 30 gallons of wash. This makes an excellent application for the limbs and branches of apple trees, proving effective on such insects as the scale bark louse, etc. The best time to do this is early in June.

For the CANADIAN LIVE-STOCK AND FARM JOURNAL.

Shade Trees.

BY J. D. NICOL, CATARAQUI, ONT.

The number and distribution of trees and shrubs about a country residence or suburban villa form an unerring indication of the taste of the owners or inhabitants. The many different varieties with their peculiar foliage and their infinite diversities of form, attract the eye and command the admiration of every right-thinking, intelligent person. There is, perhaps, nothing in nature more conducive to the love of home than the trees which form so important a part of the landscape with which the family were familiar in their youth.

The love of trees, however, is not a universal sentiment, otherwise many country homes that are now treeless, bleak and barren-looking, would be sheltered, shaded and beautified.

My object in writing just now is more particularly with a view of trying to correct some mistakes that are made in regard to the arrangement of shade trees, and the care of them after they are planted. Having been taught in my youth how to plant and prune trees, I hope to be able to offer a few suggestions which may perchance be of use to some of your readers.

One mistake we very frequently see made is, in planting trees too thickly, or rather in allowing them to remain too thick as they increase in size. Where shade and shelter is immediately desired, it is always advisable to plant thickly, for it is a well-known principle in forestry, that trees, when very young, do best when grown closely together; but allowing them to grow closely until they completely or even partially destroy one another, is such a great mistake that one can hardly believe it is often committed; yet it is no uncommon thing to see a thicket of shapeless, sickly scrubs, occupying a space sufficient only for one fully developed, well-formed tree. Now in order to derive full benefit from shade trees, those intended to be permanent should be planted first at distances apart 30 or forty feet, according to the requirements of the different kinds; then such as are desired for temporary shelter and shade may be planted in between, to be thinned out as soon as they begin to crowd one another, or to in any way injure the growth of the principal trees; thus securing better and more beautiful shade from a few healthy well-formed trees than from a thicket of half-dead, ill-shaped ones. Trees are beautiful only when they are well-developed and in healthy condition.

Planting too close to the dwelling house is another common error, seldom realized until too late. Shade in hot summer weather is essential to the enjoyment of fresh air out doors; but shading the house so as to exclude the purifying influence of the sun, is a mistake the evil effects of which many seem to be unaware of. Trees grow imperceptibly when we are sleeping as well as when we are awake, and almost before we are aware the branches of the closely planted trees are over-hanging the house, injuring the health of the inhabitants. One becomes fond of a tree he has planted and seen growing for years, and is re-

luctant to lay the axe at its root, and even if he makes up his mind that the sacrifice is necessary and wise, he is apt to be prevented by the sentimental pleadings and tears of the women of the household, though they may be growing pale and weaker day by day, and though their children may be growing up puny and white, like potato sprouts in a cellar, all on account of the trees, they refuse to have removed. This affection for trees, especially those planted around the home, is very creditable, and should be encouraged to a reasonable extent; but the unreasonable gratification of it is working harm in many instances. If people would be strong, healthy and happy, they musn't live always in the shade. In some cities there are streets which the sun of the longest days of July never penetrate, and houses with bed-rooms and living rooms into which the sun never shines, and we know by the wan and sickly look of the inmates, they are not destined for long life; yet they will persist in pining away in the shade rather than avail themselves of the benefits of the glorious unlight and pure air which their creator gives free to strengthen and invigorate.

Street trees are generally grown far too closely together, consequently very few graceful specimens of any kind of tree is to be seen in cities. Elms of thrifty growth form heads of from 30 to 50 feet in diameter; maples and lindens from 30 to 40 feet, but they are often seen growing to large size less than 15 feet apart, consequently never in good shape, and nearly always declining early. If street trees were planted 15 feet apart and every alternate one removed as soon as they begin to crowd, the remaining ones would become ornamental and live to a far greater age.

In connection with this subject there never was a more stupid mistake made than in allowing trees to grow up with two heads. This was more particularly noticeable in the ice-storm that in January last prevailed in eastern Ontario, where many trees were split to their base, resulting from the great weight of ice which formed on the tops.

Common sense demands that deciduous trees be neatly trimmed, and one would suppose good taste would suggest proper form. Yet we very frequently see them growing in this objectionable shape with one great crotch, forming not only an ugly-looking tree, but one that is liable to be split with the weight of its own foliage, or by strong winds or by ice-storms, and is but short-lived under any circumstances, as compared with a properly-formed tree with but one head. If when lifting young trees out of the forest more care was taken to select only stocky trees that did not need beheading, there would be less likelihood of having these objectionable crotches. They hardly ever occur except on trees that have been cut back, and never on properly-grown nursery trees. In any case they could be prevented by judicious pruning while the trees are young.

Fast-growing, soft-wood trees are short-lived. The yellow willow may be made to serve a good purpose as a temporary wind-break, but never as a shade tree; for no sooner has it attained any considerable size than it begins to die, and dead branches are continually dropping off, keeping all ground round about untidy. Being easily propagated, they have been freely planted throughout Ontario. Nothing so much mars the beauty of any landscape. No tree is so utterly devoid of beauty or of so little value. It is unfortunate for Canada that ever it was introduced.

The balsam poplar (a native of Canada) is a very fast-growing tree, handsome while young, but its beauty is of short duration. In mixed plantations it

invariably takes the lead, and sometimes before the owner is aware it has injured the growth of many more valuable trees. It should never be planted in city parks along with good trees, unless with the understanding that it is to be removed before it crowds the oak, the elm, the maple and the birch, that would otherwise endure and improve in symmetry for many generations. The evil effects of this tree as well as of the silver poplar and the aspen, to be seen in some city parks and other ornamental grounds, is really deplorable.

No doubt the first French settlers in Lower Canada introduced the Lombardy poplar with the traditional notion of its beauty in its native land, where, along with the horse chestnut (the most beautiful of all trees), it lasts for ages without signs of decay. There it is a thing of beauty; but in Canada, by its rapid growth it quickly attains a great height, and then lingers long in a continual state of decay. It is not well adapted for either shade or shelter; its timber is of very little value, and planting it when good trees can be obtained at a small cost, indicates a woful lack of good judgment.

I am often asked the question, which is the best shade tree? It is impossible to say which of all our native trees would, under all circumstances, be the best. It would be a pity if any one kind should have a general preference. If I had only space for half a dozen shade trees I would try to have them all different. But this matter would lead to a lengthened discussion.

There is, however, one more error, which the inexperienced planter is sometimes led into; that is, giving preference to some kinds of European trees—for instance, the elm. Not any of the European varieties are at all to be compared in gracefulness of habit with our own native white elm. Neither is the European linden (basswood) to be compared in this respect with the American linden. The European white birch is preferable to any of our native kinds, and the larch is a more graceful tree than our tamarac, but our native black walnut is much to be preferred to the English variety, because it is hardier. Our native maples will of course always occupy a prominent position. The ash-leaved maple, a very hardy tree and a vigorous grower, makes an excellent shade, but to enumerate is beyond the scope of this article.

Tree Planting—The Forestry Report.

EDITOR CANADIAN LIVE-STOCK AND FARM JOURNAL.

SIR—The spring is opening so finely this year, that everyone, apparently, will have an excellent chance to get his spring work done in good season. There will, however, no doubt, be more or less wet days, and what I am about to suggest is that one or two of these, if not too rainy, might well be spent in tree-planting. In the fast coming scarcity of good timber in Ontario, any farm with a good plantation of ash, elm, cherry, hickory, or other useful woods, will before long be worth a great deal more than those which possess nothing but cleared acres. It should be remarked here that good timbers cannot easily be grown except in closely planted groves. Isolated trees throw out too many branches for this purpose. There is little difficulty in most parts of the country in obtaining a few thousand young trees, which, by the way, should be always taken from the outside of the woods, where they have had a good deal of sunlight.

The Forestry Report for the year, containing much of interest to those who care for trees, is now being distributed, and will be sent to all who forward their address to me, while the edition lasts. It is a pamphlet, issued by the Ontario Government, in the interests of tree-preservation, and is sent free. There is no charge for the book and none for postage.

This spring, it is to be hoped, will see a large number of forest trees planted. Last year many farmers in the older districts planted largely, generally, however, in the form of long lines of trees, twenty or

thirty feet apart. These will serve an excellent purpose, but will not give the shelter in winter, that can be obtained from a plantation of some breadth, nor the clear timbers which in time it would afford. In single lines, evergreens give the best winter shelter.

R. W. PHIPPS,
233 Richmond St., Toronto.

April 15th, 1889.

The Home.

FOR THE CANADIAN LIVE-STOCK AND FARM JOURNAL.

Washing-Day.

BY MRS. HANKY.

Monday morning—washing-day—
Fetch the clothes out, soiled and grey;
Fill the boiler, fill the tub;
Now for a hearty rub-a-dub.

Here a squeeze and there a flit,
Keep a lively war with dirt,
Till from foamy suds below
Out we wring them, white as snow.

Rinse in water pure and cold,
All the new and all the old.
To give tone, a little blue—
There they are as nice as new.

Towels coarse and linens fine,
Hang them out upon the line;
Set the pins and let them fly.
You are glad and so am I.

Peace of heart and strength of arm
Give to washing-day a charm;
Worry weakens hand and head,
And makes washing-day a dread.

Caistorville, Ont.

“Not Upon, but Toward the Heights.”

BY MISS F. A. JEFFS, BONDHEAD.

Far away on the mental horizon loom up tall mountains, grandly majestic or delightfully beautiful—heights of fame, honor, wealth or power. The sublime heights, the unsurpassed grandeur, intoxicate and irresistibly draw toward the summits. The difficulties and dangers in the pathway only incite the ambitious toiler to renewed exertion; he feels that he has herculean strength, and almost hopes for an encounter with the Nemean lion.

Some in their eager haste rush blindly forward, regardless of their own safety or the comfort of others. Ambition becomes their ruling passion, their master. Their natures are dwarfed and their views are narrowed. While straining to keep the height in view they lose the beautiful scenes which are stretched out all around them; they selfishly neglect those travelling the steeps with them, and lose the pleasure which comes from helping and cheering others.

But when this ambition is curbed and regulated it becomes not an evil, but one of man's best qualities; indeed, without aspirations he is of little worth to himself or the world. We should strive for all that is good and great, though we may not attain our greatest wish. Even if the goal prove as delusive as the child's fabulous pot of gold at the end of the rainbow, we shall have what is better than gold, experience.

Mankind is improved in this onward struggle; every difficulty surmounted, every duty faithfully performed, makes men noble and stronger; the world is benefited by every such attempt. “Placing for ourselves high standards and wishing to reach them without any further effort on our part, is not enough to elevate us in any great degree.” Contact with difficulties expands the capabilities, and man is led out to higher positions of honor and trust. And while few may ever be upon them, yet all should press steadily towards the heights.

All great achievements are the result of the efforts of some ambitious spirits who saw possibilities on before, and were not content to remain in the valleys or upon the plains—their triumphs are aids to us. Thus the researches of one scientist become the basis for the investigations of another. The experiments of a mechanic or a chemist serve as stepping-stones to a higher knowledge.

The fact of striving implies progress, though the highest heights or the surest summits may never be gained in this world.

We hear much of the obstacles and impediments in the way, hindering an easy ascent, yet we have many things to encourage and help us. We should never dread or hesitate before the faintly defined terrors in the misty distance, for obstacles which seem insurmountable often vanish as we approach, and the way is seen to be smooth and easy when we reach it. Our path is often brightened by unforeseen beauties hidden from our sight until they burst upon us, refreshing and cheering us while we rest by the wayside. We also fall in with many other toilers who brighten the way by cheery words, or encourage us when we would be despondent. We are benefited and strengthened by their counsel and led by them into better paths. The example of eminent men who have lived noble and useful lives are bright beacon lights far above, and urge us forward more strongly than we imagine.

Yet the paths which lead to these coveted heights are often steep and wearisome, beset with difficulties and trials. Industry, perseverance and confidence will be severely taxed on this long and tedious journey. Some will begin with us and swiftly outstrip us on the way; let us not be discouraged or envious. We may pass others; let us pluck as many thorns aside and cut as many thistles from their pathway as we can. If others stumble and fall, let us not be pressing forward so eagerly or thoughtlessly that we may not wait and help them to rise, or guide them into a surer path.

In our own pathway we shall have every day work, endless and monotonous. The grand deeds and the leisure will come later on, if they come at all. Therefore let us keep steadily onward! How much better is the steady flow than the rushing torrent, or the sweet sunshine than the lightning's flash in the midnight. For if we are not thus pressing forward in our lives, growing wiser and better, and striving toward the heights, we must of necessity be receding—there is no state of inaction.

Then, if we persevere in everything, both small and great, the Fates will spin the cheerfully performed little duties into one continuous golden rope, so firm and beautiful that it may be a comfort and a support to others.

“Great deeds are trumpeted, loud bells are rung,
And men turn round to see;
The high peaks echo to the peans rung
O'er some great victory.
And yet great deeds are few. The mightiest men
Find opportunities but now and then

“Shall one sit idle through long days of peace
Waiting for walls to scale?
Or lie in port until some Golden Fleece
Lures him to face the gale?
There's work enough, why idly then delay?
His work counts most who labors every day.”

A MAN, with the blue badge of temperance in his button-hole, was addressing a Sunday-school in Michigan, and put this question: “Now, can any little boy or girl tell me why I do not drink, and why I am not a drunkard?” “I can,” said a little fellow. “Very well, my boy; now speak right up so all the children can hear. Why is it?” “Because this is a prohibition town!”

Jottings.

Prize Cups for Shropshires.—We learn just as we go to press from Messrs. Lythall, Mansell and Walters, secretaries of the Shropshire Sheep Breeders' Association, Shrewsbury, England, that their society offer the following cups for Shropshire sheep the coming season: 1. A silver cup at the Buffalo show for the best Shropshire ram and five of his get; the get to be under two years old; to be bred and owned by the exhibitor. 2. A silver cup at the Indiana Fair, at Indianapolis, for the best ram of any age, and 4 ewes, 1 year old or over, and 2 ewe lambs.

Ont. Agricultural College, Y. M. C. A.—The following from the corresponding secretary of the association, Mr. J. P. Thomson, will please the many parents whose sons are at present attending the above institution: “Last February the Y. M. C. A. of the University College, Toronto, sent Messrs. Fraser and McLean as a deputation to visit the students of the Ont. Agl. College, Guelph. As a result of this, with the assistance of Messrs. Cole and Fraser, a Y. M. C. A. was organized at the College, Saturday, the 9th inst. There has been a large attendance at the students' weekly prayer meeting and it is gratifying to know that all the students, except 5 or 6, have become either active or associate members of the association. This indicates the moral tone of the O. A. C. students. The officers for the ensuing year are; E. A. Rennie, of Hamilton, President; C. A. Zavitz, B. S. A., of Coldstream, Vice-President; H. Hutt, of Thorold, Rec. Sec. and Treas.; J. P. Thomson, of Upergrove, Cor. Sec.; Messrs. N. Monteith, of Stratford, C. F. Whitley, of London, Eng., F. Linfield, of Godenck, Committee.”

Important Experiments.—At the last Annual Meeting of the Experimental Union of the students and ex-students of the Ontario Agricultural College, a committee was appointed to conduct experiments in connection with live-stock. The following experiments were decided upon: 1. Heating Water for milk cows; 2. Soiling vs. Grain Feeding for pigs; 3. Dry vs. Wet Food for pigs; 4. Warm vs. Cold Food for pigs, winter feeding; 5. an Ensilage vs. a Hay and Grain Ration for any kind of stock. The questions involved in these experiments are agitating the minds of farmers, and those undertaking any of them will be the ones who will derive the most of the benefit which may arise therefrom. If you would like to undertake one or more of these experiments, send the names of the experiments you would like to try to F. J. Sleightholm, Humber P. O., Ont., at as early a date as possible, and there will be sent you a few simple instructions, easily followed. The object of this is to have all the experiments of one kind conducted on the same general plan. Comparative conclusions can then be drawn, which otherwise could not be done. Show this notice to your neighbors, and send along with your own the names of those who are willing to undertake any of the experiments.

The Exports of Canada and other Countries to Great Britain.—The late report of the High Commissioner of Canada, Sir Charles Tupper, acquaints us with the fact that in 1887, Canada exported to Great Britain £1,089,352 worth of “oxen and bulls,” and in 1888 a lessened amount, £1,036,269, resulted from the same trade, while that of the United States from £1,849,307 in '87, increased to £2,840,911. The latter country has the largest trade of all others. In respect to cows, Denmark heads the list, with exports to Great Britain valued at £410,867, Canada £40,354, and United States £12,415. Denmark sent calves to the value of £15,959, Canada £454, United States nothing and Holland £128,863. In sheep and lambs, Holland heads the list with £954,268 for her credit, Canada £29,272, and United States £1956, and for swine, Denmark obtains £54,521, Holland £18,230, and Canada and United States nothing. In respect to our butter trade the commissioner states “I am sorry to notice that Canada seems to be falling rapidly out of the list in connection with the export of butter. Of over 15 million cwt. imported during the year, only 973 cwt. came from the Dominion.” Our cheese trade with the mother country amounted to £1,523,833, and that of the United States to £1,905,776.

Dr. Barnardo's Home.—Elsewhere in our columns appears an advertisement from Dr. Barnardo's home, an institution having for its object the placing our English boys among the farmers of the Province. These institutions in England at present maintain over 3000 orphan boys and girls, and each year a small number are sent out to this country and placed out by the agents of the home. Those who are sent are very carefully selected, and every effort is made to send none but physically healthy boys, and boys of good character such as are likely to do well and grow up useful citizens. The great majority of those already sent out are said to be doing well, and many farmers all over the country who have experienced the great difficulty of getting necessary help will no doubt appreciate the benefit to themselves and the country of this annual supply of useful help. There is, no doubt, abundant room in the country for those that will prove industrious and zealous workers, such, we believe, as Dr. Barnardo earnestly endeavors to supply, and it materially widens the prospect of those that in England have little choice in bettering themselves. The address of the home is 204 Farley ave., Toronto where the agent, Mr. Alfred B. Owen, will always be pleased to receive applications from parties needing help.

Stock Notes.

Those who have trouble with their cows in respect to caked bags, will do well to see adv. J. Geo. P. Pilling & Son re milking tubes in breeders directory, inside page of cover.

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 anyone 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.*

Horses.

Mr. W. H. Hutchinson, of Napanee, Ont., who imports registered Sires, Cleveland Bay and Yorkshire Coach horses, places a breeder's card in our directory. Mr. Hutchinson, having a number of first-class animals awaiting disposal, is prepared to meet the demands of any intending purchasers. See his card.

Messrs. Barton Bros., of Beeton, bought from Mr. A. F. Tegar, of Tottenham, a pure bred Clydesdale colt that, according to those that pretend to have an eye for a good horse, is going to give a good account of himself in the near future. He was foaled 1887, is brown in color, and of good proportions. His sire is Brigadier (4266), dam Moss Meg (7556), by New Times (562), g. dam Kaploch Jess (4831), by young Sir Walter Scott (1031).

Through the secretary, Mr. R. M. Willson, we learn that an international horse fair is to be held at Brantford, on May 23rd and 24th, under the auspices of the South Brant Agricultural Society. Over \$2500 in prizes are given, and as a consequence, much competition is looked for. The prizes are well divided up in classes, the largest being the trotting purse of \$250, which will be likely to attract good horses. The usual quota of outside attractions have been secured, and everything so far indicates an unqualified success.

Mr. Adam Inch of Glandorf, recently gave us a call and informed us that he has a pure-bred Clydesdale filly 10 months old that weighs over a half a ton. This prodigy is asserted to be of good bone and muscle, and also of nicely balanced proportions. She is sired by Fitz James, owned by Mr. Inch, and out of a pure bred Clydesdale mare Nannie, an importation of this same gentleman. Mr. Inch, with his brood mare and foal, secured first at the Hamilton Fair last fall, first at Ancaster, and also first at Caledonia. All his stock is doing well and another foal is soon expected from the same mare.

The sale of Judge Finkle's thoroughbred horses took place at Woodstock, on the 10th of April last. The following were the prices realized: Simon, aged brood mare, \$600, to W. H. Milman. Woodstock; foal 5 days old, by Vandame Simon, \$185. W. H. Milman; Moonlight, brood mare, 6 years old, \$195, J. R. Martin, Cayuga; foal by Mikado Moonlight, \$185. Dr. J. A. Rudd, Woodstock; Moonshine, five-year-old stallion, by Princeton, winner of Montreal Derby 1887, withdrawn, yearling filly, by Saltpetre Simon, \$210, G. Forbes, Woodstock; Rose Maybud, three-year-old filly (entered for Montreal Derby and also for the Woodstock Plate), by Stuzhine Moonshine, \$475, G. Forbes.

Messrs. Graham Bros., of Claremont, Ont., report the sale of 3 stallions and 3 fillies since their stud made such a gallant exhibit at Toronto spring stallion show. Not only was it a triumph for them, but it adds still more to the honor and renown of the already world famous Macgregor (1487), for MacBean, the winner of the sweepstakes, and MacClaskie, winner of first in a stong class of two year-olds, are both the offspring of this redoubtable stallion. These winnings should be highly prized by their owners, for there was strong competition both in numbers and quality in their respective classes. They report that their horses, especially the two above mentioned, are doing nicely.

The *Farming World* says: "Mr. M. Turk, from Manitoba, sailed from the Clyde last week with three first-class mares and one stallion, purchased in Dumbartonshire. The stallion Glenburn 581, was purchased from Mr. Mather, High Dykes, Dumbarton, and is a horse with splendid feet and legs and good action. The mares were bought respectively from Messrs. Wm. M. Kinlay, Ardoch; Paul, Heighfield, and Snodgrass, Millig, Helensburgh, and are of more than average quality, having taken prizes at Dumbarton and Helensburgh shows. They are got by Lord Fitzroy 1747, Duntreath 2750, and Belted Knight 1395, and should greatly advance the popularity of the Clydesdale in the North-West Territory.

Mr. Robt. Craik, of Binbrook P. O., has personally informed us that his stallions are in splendid trim for the season's work. Mr. Craik is a breeder of pure-bred Clydesdales, and he has at present four stallions. Bob's the Boy (4256), the elder of this stud, was foaled 1884, and is a son of the well-known Lord Blantyre (2242), vol. v., that made such a sensation in Chicago in 1883 by capturing the draught sweepstakes over all breeds. The sire of this highly honored stallion is the great Darnley (222). It will be seen from this that Bob's the Boy is a horse of the best of breeding, and his individual qualities are vouched for by the fact that Mr. F. Ramsay, of Dunnville, has already given him two of his best mares. The others that are owned by Mr. Craik are Clifton Lad (6608), Bankswood (vol. xi), and Neil Gow. The first mentioned was sired by Cheviott (2672), a son of Darnley (222), dam Fanny of Clifton 4523, by Lothian Chief (503). He was a foal of 1885, Bankswood, vol. xi, is a foal of 1887, bred by Jas. Muir, Lochfergus, Kirkcubright, and is sired by Mr. Fothergill's Prince of Airds (4541), a horse that is acknowledged by all to be of superior merit as well as breeding. Bankswood's dam is Violet, by Pride of Brogue. Bob's the Boy will travel this season through Kaiserville, Dunnville, etc. Neil Gow is with Mr. Moffatt, of Teeswater. Mr. Craik certainly deserves all patronage for his enterprise in importing such horses as those, for their breeding indicates that they certainly would be a credit to any neighborhood, possessing, as competent critics say they do, personal qualities of a high order.

Advertising Rates.

The rate for single insertion is 18c. per line, Nonpareil (24 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.

FIRST-CLASS STOCKMAN WANTED. Married man preferred, to take on shares from 3 to 5 years, 320 or 480 acres of good farming land in south-eastern Dakota, which will be stocked with 30 to 40 registered Shorthorn and grade horses. Contract to be renewed, if satisfactory to both parties. A splendid opening for a good feeder and stockman. Such only need apply. Address, "J," care of *Live Stock Journal*, 48 John St. South, Hamilton.

IMPORTED AND CANADIAN-BRED SHROPSHIRE SHEEP. For sale, registered pedigrees. Agent for Dana's Sheep and Cattle Labels. **INO DUNKIN**, Brucefield, Ont. mar-1

FOR SALE
CHOICE YOUNG SHORTHORN BULLS and a fine lot of Berkshires, very, very **CHEAP**. Send for prices. **EDWARD JEFFES**, Bond Head, Ont. ja-3

Cleveland Bay Stallions and Brood Mares for Sale.

Imported (reg.) Stallion and Brood Mare in foal; 1 Grade Cleveland Stallion, rising 2 years; 1 Carriage Brood Mare; 1 Grade Shire Filly, in foal to Shire Stallion. Write, **R. ROW**, Avon, Ont.

SUFFOLK and BERKSHIRE PIGS
6 weeks old, \$5 each. Bred from imported stock. Eligible to register. Order at once. **F. J. RAMSEY**, Moultondale Stock Farm, Dunnville, Ont. my-1

BERKSHIRE PIGS
A number of choice spring pigs for sale, boars and sows, sire Lord Polard, winner of sweepstakes for two years at Provincial show. Dam, (imp.) Lady Mary. They will make good show pigs. Address, **JAMES GIBB**, Brookdale P. O., Ont. my-1

FOR SALE—3 SHORTHORN BULLS
from 12 to 16 months old, from imp. bulls and cows, also a Golden Drop cow and heifer, got by Count of the Empire, imp., and several other cows and heifers. They are all first-class animals: all red and in fine condition. Come and see, or address **R. R. SANGSTER**, Lancaster, Ont.

SHORTHORN BULL FOR SALE.

12 months old, Cruickshank blood. Sire and dam both won first prizes at Provincial fairs.

H. & W. D. SMITH, Hay P. O., Ont. Exeter Station, on G. T. R., ½ mile.

FOR SALE—The stock bull, **BRITISH SOVEREIGN**, a pure Mantilini Booth, 4 years old, for three years at the head of the Riverside herd, Woodburn. He is a grandson of the great Sir Simeon, red in color, and has proved himself an exceedingly fine stock getter. Will be sold cheap.

THOMAS SHAW, GUELPH, Ont.

PONIES FOR SALE.

One dark brown, 13 3/4 hands, 700 lbs., from T. B. mare and half Arab stallion. One light brown, 13 hands, 600 lbs., from a minute trotting Exmoor pony mare, and a 14 1/2 hands, Phil Sheridan stallion, 2 40. Both very kind and nicely broken to saddle. Address,

JAMES MOODIE, Eshcol Grove Stock Farm, Dec. 6th. **CHESTERVILLE P. O., Dundas Co., Ont.**

Shorthorn Bulls

1 bull, aged 5 years; 1 bull, aged 19 months; 1 bull, aged 14 months; 1 bull, aged 12 months. All of Dom. S. H. H. B. registry, except the bull aged 19 mos., which is eligible to N. S. H. B.

A. C. BELL, Troutbrook Farm, New Glasgow, N. S.

GERMAN CARP

Last year's fry, at \$3.00 per 100, or \$20.00 per 1000. **NICOL & SONS**, Catarqui, Ont.

Kentucky Star, bred by Mr. M. Miller, Ky., a standard bred trotter standing close on 15 hands high, and weighing in the neighborhood of 1200 lbs., is owned by Mr. T. H. Rolla, of Listowel. He is out of a pacing mare with a record of 2:28. Mr. Rolla also has a young stallion, Grand Central, eight months old, by the well-known Wedgewood 692, record 2:10, and sire of such as Favonia 2:15, Connaught 2:24, Nugget 2:26 1/2, and Ulva 2:27. Wedgewood is by Belmont 64, sire of Nutwood 2:18 1/2, and 20 others in 2:30 and better; also sire of 17 sires with 48 performers in the 2:30 list. Woodbine, the dam of Wedgewood, is also dam of Woodford Mambrino 2:21 1/2, sire of Abbotford 2:19 1/2, and many other noted horses. A brood mare, Jessie K, in foal to a stallion of the Wilkes family, is also owned by this gentleman. We understand it is Mr. Roll's intention to start a stock farm and raise heavy draught horses as well as standard bred trotters.

Kidd Bros., of Listowel, are the owners of several standard bred trotters, of the best of breeding. Blizzard 3751, one of their stud, will stand at Listowel for 1889. He was sired by Onward, who has 16 of his get in the 2:30 class. The famous George Wilkes 2:22, is his sire, and he has 65 of his sons in the 2:30 group. The dam of Blizzard was Little Fortune 2:32 1/2, dam also of Attraction 2:28 1/2. The dam of Onward was Dolly, also dam of Director 2:17, and Thorndale 2:22 1/2. Mambrino Chief, the sire of Dolly, is recognized as the well spring of one of the best families of America's trotters. Other noted and world famous strains appearing in his pedigree are the Wilkes, Hambleton, Clay and Mambrino, with a strong infusion of the thoroughbred blood. Ohio Wilkes by Brown Wilkes 2:17 1/2, a rangy, dark bay, with black points, is also a member of this stud. Brown Wilkes stands at Forest City Farm Ohio, at \$150 per mare the present season. Companion with him is a thoroughbred Rothschild by Red Eyes, a horse of grand proportions, standing over 16 hands. He is described as being a magnificent horse, with a good frontage.

Mr. N. H. Meagher, of Halifax, N. S., has made a heavy draught of the bluest blood of America's trotting stock, at the Forest City Farm, Cleveland, Ohio, the home of Patron, 2:14 1/2. He purchased the brood mare Howe, by Hermes, 2:27, son of Harold (sire of Maud S), dam Jessie Douglas, by Stephen. A Douglas, sire of Handicap, 2:22. This mare is sister to Heresy 2:27 at 4 years. She is described as being "as handsome as a picture." At Sunnyside farm, Waterville, Me., two fillies were chosen, Theresca, foaled '87, by Nel-on, 2:21 1/2 at five years, dam Lady, by Gen. Knox 2:31 1/2, and a public trial of 2:24 at 16 years old. He has sired Lady Maud 2:18 1/2, Beulah 2:19 1/2, Camors 2:19 1/2, and 11 other 2:30 horses, 64 with records from 2:31 to 2:48, and 19 of his sons have representatives in the 2:30 list. The other filly chosen was Glimmer, foaled '87, by Wilkes; dam, by Gideon, sire of Ezra L. 2:21 1/2. Wilkes is by Alcione 2:27 at 3 years, and a son of George Wilkes (sire of the greatest number of 2:30 trotters, viz., 64 in all). Dam of Alcione, Alma Mater, by Mambrino Patchen, sire of 17 performers and 23 sires of performers. Gideon is the get of Rydysk's Hambleton (sire of Dexter 2:17, Nettie 2:18, and 39 other 2:30 horses) and out of Dandy, dam of Cleora 2:18 1/2. A mere cursory glance through the above will tell even the novice that Mr. Meagher has a valuable lot of the best of breeding, backed up by individual as well as ancestral performance, and we feel confident in saying that such a selection would do honor to any breeding stud.

We desire to call the attention of those who are appreciative of a good offer and have a liking for a good horse, to the avowment of Mr. T. Wilson, of Tara, Ont., setting forth that his two standard bred trotting stallions, Wilson Eddy 6874, and Almont George, will stand for mares the coming season. The former is stated to be a rich cherry bay, standing fully 15 1/2 hands, weighing 1200 pounds, and a foal of 1885. As to personal appearance of the horse, we let him speak for himself, but his ancestors speak volumes for his capabilities. His sire, Jerome Eddy, stands at the head of the well known Jewett stock farm, and is held for service at \$200 per mare. His breeding is the best, uniting as he does in himself the blood of such horses as Louis Napoleon 207, sire of at least a dozen in the 2:30 list; Volunteer 55, sire of St. Julien 2:17 1/2 and 26 others in 2:30; Hambleton 10, sire of the dams of 49 trotters in 2:30; and the Harry Clay 45, sire of the dam of St. Julien 2:17 1/2, and through his dam, Kitty, Wilson Eddy traces to Hambleton's Patchen, sire of 2 in the 30 list, and of the dams, 8 inside of 2:30; George M. Patchen 2:23 1/2, sire of many 2:30 horses, and further, a son of Cassus M. Clay, the get of the noted Henry Clay. He thus has in his veins the bluest of trotting blood, and must prove a thrower of colts of great speed and stamina. Almont George is a gifted son of a noted sire, Almont Jr., record 2:26. He stands 16 hands high and weighs 1225 pounds, and is a foal of 1884. Almont Jr. has sired such horses as Bell Hamlin 2:13 1/2, Globe 2:14, Justina 2:23 1/2 and 6 others under 2:30. His sire, Almont (33), is the getter of 34 horses in 2:30 class, and a son of Alexander's Abdallah (15), sire of Goldsmith Maid 2:14. The world famous Rydysk's Hambleton (10), the sire of Alexander's Abdallah (15), sired Dexter 2:17 1/2 and 41 others with records of 2:30 and better, and also the grand sire of 672 trotters in 2:30 class. On the dam's side Alexander's Abdallah (15), such noted horses as Mambrino Chief, sire of the dams of Director 2:17, Piedmont 2:17 1/2, and 20 others inside of 2:30; Pilot Jr., 2:12, sire of the dams of Maud S. 2:08 1/2, and the J. I. C. 2:10; Black Hawk, sire of Ethan Allen 2:16 1/2 and a number of 2:30; Almont George, through his dam traces to Springville Chief 2:30, sire of four in the 2:30 list; Field's Royal George (83), sire of General Love 2:30, and grand sire of 45 trotters in 2:30 and better. The breeding of these is looked upon by all authorities as being of the best that the American trotters can supply.

Shorthorns.

Messrs. Green Bros., of the Glen Stock Farm, Innerkip, report the following sales since last issue: The roan yearling Shorthorn bull Highland Chief = 11506 =, to Messrs. A. & J. Knox, of Chesterfield. This bull was the winner of second prize at the Southern Fair and other prizes last fall. The pure-bred Berkshire sow Clara, sired by imp. Real Briton (488), to Mr. H. J. Davis, of East Zorra.

Mr. W. J. Biggins writes under date of April 6th, as follows: "I made the following sales from the Elmhurst herd last

month: To Messrs. W. Hill & E. Mitchell, Ben Miller P. O., the young Matchless bull Royal Pilot - 10576, a first-price winner at the N. W. Exhibition last fall. His sire imp. Excelsior and dam Matchless of Elmhurst 6th, both gained first prizes and diplomas at the same exhibition. Messrs. John Mackay & Sons, of Kippen, Ont., breeders of Clydesdale horses and Shorthorn cattle, secured the nine months old Matchless calf Royal Saxon - 10557, a very promising youngster. He is sired by imp. Excelsior, dam Matchless 19th, by imp. Statesman (32007). I am getting some very nice young calves this spring sired by the stock bull imp. Excelsior (51233).

Jas Smith, of Maple Lodge, Ont., writes us as follows: "Our sale of Shorthorns on 28th March was well attended, and the weather, although cold and raw in the forenoon, was pleasant during the sale. The cattle were well distributed over Ontario, Michigan and the North West Territories. We considered the cattle the best lot we have ever offered at public sale, and many of them sold below what we thought them worth, yet although the average was not high—about \$110—it is not so unsatisfactory just now, when everything is selling at bottom prices, and will be all the better for those who were fortunate enough to buy them. We still have nearly 40 head in our herd, all doing well; among them are a very promising lot of young bull calves."

Mr. J. R. Martin, of Cayuga, writes: "I am happy to say that my stock of Shorthorns have got through very well. I have 15 calves by Baron Constance 10th, and they and the yearlings will be a feature of my sale. My horses and sheep are very well on for the season, and hay and feed of all kinds in abundance, and grass so far advanced now, 26th of April, that by Monday cattle may go to pasture. Hogs are also in fine condition." Mr. Martin holds his sale on the 9th of May, as made known in our last and present issue. It has been his aim, to not sacrifice the milking qualities of his cows, and hence a number of the young animals to be offered are milkers of the first order. Those seeking first-class animals at moderate prices, would do well to make a point of attending this sale. See adv. this issue.

Mr. S. W. Jacobs, of Madison, Dakota, formerly of Ontario, writes us under date of April 12th, that he has at present a herd of pure-bred Shorthorns, 75 in number, headed by Bates and Bates topped bulls, he having imported in the spring of 1888 a car load of pure-bred Bates and Cruickshank animals. Mr. Jacobs has also in the neighborhood of 100 head of Percheron, French, Coach and Hambletonian horses, including many prize winners among this number, both across the line and in other countries. Lakeside Stock Farm, owned by this gentleman, comprises 1,500 acres of choice land on southern banks of Lake Madison, three miles from city of Madison. Mr. Jacobs claims that the climate there is magnificent, warmer if anything than Detroit in winter.

Mr. Arthur Johnston, of Greenwood, writes to say, that as usual, a bad beginning makes a good ending. "The demand for bulls during the first part of the season was exceedingly dull, but during March and April it was quite as brisk as I have ever known during these months, the best being easiest of sale as usual. Breed young Shorthorn bulls good enough, and they are as sure sale as anything produced on the farm, not only that, they will pay quite as well as anything that a farmer can produce. To produce good bulls you must have good cows, but above everything you must not buy a muddling bull to head your herd, ever use a good bull or quit. Do not listen to the man who tells you that though such and such a bull is not a good looking bull, he must get good calves on account of his breeding. This sometimes happens, but I say, get a good looking bull everytime or sell your cows. I have an exceedingly good lot of young females for sale at moderate prices for the quality and breeding. Will be pleased to send catalogue to all applicants."

Mr. H. K. Fairbairn, of Rose Cottage Stock Farm, Bosanquet, Lambton Co., Ont., writes us: "My herd of Scotch Shorthorns now number 6 head, 5 females and 1 bull, the 12th Duke of Sylvania, a heavy, thick boned animal, with a good coat of long silky hair, weighing 2600 and will carry two more easily. He is a dark red, and was sired by Prince Albert, Thos. Nicholson and Sons' silver medal bull in 1886 at the Provincial, and now owned by W. D. Smith, Hay P. O., Ont. Of the females, the 5th Maid of Sylvania has dropped me three very fine calves since I purchased her, one by Prince Albert, and two by imp. Warrior. They are a fine lot, and some of them will make their mark in the near future. I use the 12th Duke of Sylvania in my grade herd with the best possible results. He is a sure calf getter, as the fact that having given 60 calves out of a service of 61 cows. The cows, 5th Maid of Sylvania and Frances Fulsome, are again in calf to imp. Warrior, owned by R. and S. Nicholson, Sylvania, Ont."

Holsteins.

The Bollert Bros., of Cassel, Ont., write under date of April 20th: "Our crop of calves this spring is the finest we ever had, showing what high breeding may do when well directed. Gelderje and is a rare beauty, and one might go a long way to find her equal. Gelderje, her dam, is now giving 64 lbs. of very rich milk per day, and is gaining with every milking. She does this on ordinary feeding, without any crowding. Her Holland record is 84 lbs. per day, and 19 lbs. of butter in 7 days on grass only. Jennie E. also has a very fine heifer sired by Barn-ton. Barn-ton is undoubtedly a great sire, his calves are eagerly sought after, and bring higher prices than those of any other bull of the breed in Canada. He fully substantiates the high opinion which Dudley Miller, Esq. of Oswego, N. Y., expressed of him, he pronounced him one of the best bulls of the breed in America. The demand continues very good from all quarters. Since last reported we sold to Mr. Wm. Thompson Jr., of Derwent, Ont., Agricultural Editor of the Weekly Advertiser, the bull Lord Lytle. Individually he is one of the finest specimens we ever saw, and for quality and breeding he is unsurpassed. Mr. E. Truscott, of South Monagan, took the bull Linden Court Prince. He has for grand dam the sweepstakes butter prize winner at the world's fair, Amsterdam. Mr. Robt. Atterly of Tally Ho, Algoma, gets Barn-ton Jr. This is the first animal of the breed going to that district. He is a very good one, and will undoubtedly prove a good investment, through the improvement of their dairy stock."

From the Holstein Friesian Registry we take the following: Mr. Whipple reports a sale just made to Mr. Geo. Rice, of

BOYS FOR FARM HELP!

The managers of DR. BARNARDO'S HOMES desire to obtain good situations with farmers throughout the country for the boys they are sending out from time to time from their London Homes. There are at present nearly 1000 children in these Homes, receiving an industrial training and education, to fit them for positions of usefulness in life, and those who are sent to Canada will be selected with the utmost care, with a view to their moral and physical suitability for Canadian farm life. Farmers requiring such help are invited to apply to

MR. ALFRED B. OWEN,
AGENT, DR. BARNARDO'S HOMES,
204 Farley Avenue, Toronto.

1889 SEASON 1889
SPEED, SUBSTANCE AND STYLE.

Standard-Bred Trotting Stallions
WILSON EDDY 6874

Sired by JEROME EDDY, 2164, will stand for mares at

Walkerton, Ont. Service fee, \$25.

ALMONT GEORGE

Sired by ALMONT JUNIOR, 226, will stand for mares at

Tara, Ont. Service fee, \$16.

Send us your mare at once Write for particulars to

T. WILSON, Tara, Bruce Co., Ont.

See page 117 for further information.

English Pedigree Live Stock

TO IMPORTERS AND BREEDERS
HEREFORD AND SHORTHORN CATTLE,
SHROPSHIRE, DORSET-HORN
AND OTHER SHEEP.

E. G. PREECE, Live Stock Agent and
Exporter, SHREWSBURY, ENGLAND, has choice selections of these breeds, of full registered pedigrees, always on sale at moderate prices. He has the privilege, by special appointment, of selecting from noted stocks and herds, the best types of English live-stock, and will be glad to assist importers in their selections. The purchase and shipment of any pedigree stock executed, on commission, on personal responsibility. Special facilities for freight and transit. Correspondence invited. Highest English and foreign references. Extensive trade with N. and S. America, the Colonies, S. Africa, etc.
ALL IMPORTERS SHOULD COMMUNICATE.

1889 SEASON 1889

FOR SALE
A NUMBER OF

Shorthorn and Hereford Bulls

also COWS and HEIFERS of both breeds, at reasonable prices. Good Animals and of the purest breeding. Also

Pure-Bred SUFFOLK-PUNCH Stallion
F. W. STONE, 42 Gordon St., Guelph, Ont.

IMPORTANT DISPERSION SALE

OF
Heavy Horses, Hereford and Grade Cattle
and Shropshire Sheep.

The entire herd of over 20 head of imported and pure-bred Hereford cattle, and about 35 Shropshire sheep, all of which are registered or eligible, and 50 head of Hereford and Shorthorn Grades, and seven fine young horses, will be sold by

PUBLIC AUCTION
AT THE

Meadows Stock Farm, Shanty Bay,

One mile east of Gowan Station, and seven miles east of Barrie,
on N. & N. W. Division of G. T. R.

ON WEDNESDAY, MAY 15th, 1889.

SALE AT 9 O'CLOCK A. M.

TERMS—\$25 and under, cash; all sums over that amount, nine months' credit on furnishing approved joint notes. Sale bills furnished upon application.

W. SCHREIBER, Allandale P. O., Ont.

Currie's Crossing, Ont., Can. He states to me that Holsteins are not very plenty in his section, although a few are beginning to invest. There could be no better advocate than Mr. Rice; he is a bright, enterprising fellow and thoroughly acquainted with dairying. His purchase was two young bulls and two two-year old heifers. The bulls are Althea Promoter's Netherland, and Jewel 3rd's Daisy Netherland. Females, Daisy Texel and Maid of Netherland. Two of these animals' breeding trace back to the first registered Holstein cow in this country, Agoo, No. 1, H. H. B.; the two are equally as well bred. They are all backed with 100 pound records, and butter records as large as 4 lbs. in one day. With the energy and push Mr. Rice has, and with the rare specimens of this breed, I shall expect the Canadian breeders to be benefited by this sale. Ontario should feel proud of this purchase." Mr. Rice writes us that Daisy Texel record 48 1/2 as a two-year-old, and Maid of Netherland, record 42 lbs. per day as a two-year-old, have been passed by inspector for advanced registry, and are now in calf to Pieterse 2nd, Holland King, whose dam, Pieterse 2nd, has the largest milk record of any cow in the world. His service fee last year was \$100 each, and has cows booked to him at \$500 each, which is the fee for this year. Jewel 3rd's Daisy Netherland is a grandson of the famous cow Jewel, who won the milk prize at the Buffalo show, and is the greatest prize winning cow in America.

A. C. Hallman & Co., New Dundee, report as follows: "We have had some very valuable calves dropped lately, and made a very important sale. Princess Margaret, H. H. B. 5256, butter record 20 lbs. 1 1/2 ozs. in 7 days, as a 4-year-old, dropped a very fine bull calf, sired by the most noted butter bull in America, Netherland Prince. We believe this calf to be without an equal in point of breeding in Canada, 8 half-sisters 3 year-olds, and 5 two-year-olds made weekly records that average 16 lbs. 11 1/2 ozs. One of his half-sisters, Clothilde 4th, made 23 lbs. 10 1/2 ozs. butter in 1 week as a 3-year-old, and Neth. Princess 4th made 21 lbs. 10 1/2 ozs. butter in same period as a 2-year-old. We could greatly strengthen the records by taking in cows closely related. We have other calves of nearly equal pedigree which we will report later. The sale was made to Mr. Isaac Parliament, Cannington, Ont. This gentleman bought an aged bull from us a year ago, and was so well pleased with results, that he now secured a very valuable pair in the shape of a yearling bull and heifer. For individual merit and choice breeding they cannot be surpassed, and reflect great credit to him for making such good choice. The bull, Beryl's Joe, just imp., is as handsome as a picture. His dam, Beryl, gave 68 lbs. milk in 1 day on common food, and yielded 20 per cent cream. Her dam, Queen Bess, made over 17 lbs. butter in 1 week from 3 quarts. The dam of his sire, Johanna, gave 88 lbs. milk in 1 day, and won first prize as much cow of any breed, and was in herd that won gold medal. Beryl is a daughter of Billy Boly, sire of Pledge, record 110 1/2 lbs. in 1 day, 610 1/2 lbs. milk in 2 months, and Capia, 99 1/2 lbs. milk in 1 day, and also sire of Burly, a bull at the head of T. G. Yeomans & Sons' famous butter herd. The heifer, Anna Rooker 4th, a descendant of old Rooker, the fountain head of the Aaggie family, the dam of which gave 57 lbs. milk in our herd as a 2-year-old. The sire of this heifer, Emperor of Canada, a grandson of Netherland Prince, inherits all the great butter performing qualities of that noble family. With such breeding she cannot fail to make a great performer some day. Her g-dam Carlotta, gave 72 lbs. 5 1/2 ozs. of butter in 7 days. Our cattle have wintered well and look fine and healthy. Parties wishing calves in pairs should not fail to see our stock before purchasing."

Messrs. Smith Bros., of Churchville, Ont., write as follows under date of April 2: "We brought into quarantine last week, four heifers from Smiths, Powell & Lamb's herd, and two from T. G. Yeomans & Sons' herd. From the former we got Baroness Clothilde, Netherland and Statesman's Benola, Netherland Heroine, and Aaggie Idaline 6th's Princess. Thus we have heifers strong in the blood of Clothilde, Netherland Benola, Artis and Aaggie strains. The sire of Baroness Clothilde has in his ancestors, Prince Imperial, Netherland Prince, and Clothilde 4th, with a butter record of 23 lbs. 10 1/2 ozs. in 7 days as a 3-year-old, Clothilde with butter record of 28 lbs. 2 1/2 ozs. in 7 days, and Carlotta with a butter record of 22 lbs. 1 1/2 ozs. in a week. Her dam, Netherland Baroness 2nd's Princess, has a 2-year-old milk record of 42 lbs. 14 ozs. in a day, and 686 lbs. 8 ozs. in a year. Netherland Statesman's Benola's g-dam took 1st prize at the Buffalo International Exhibition last fall for the most butter made in 3 consecutive days. The g-dam of our young heifer is Lady Fay, who took sweepstakes prize as cow giving most milk of any breed, at the New York dairy show in 1887. Netherland Heroine has for ancestors, Aaggie Cornelia's 3rd of Netherland, Aaggie Cornelia 3rd, with a milk record of 17,350 lbs. in a year, and 17 lbs. 7 ozs. of butter in a week, she by Alexander. Aaggie Idaline 6th's Princess has for sire the Prince of Artis. His 9 sisters and 1 niece (one 2 year-old, three 3 year-olds and five 4 year-olds) averaged 16 lbs. 1 4/9 ozs. of butter in a week. His 10 sisters (8 two years old, 2 three years old) averaged 19,088 2-5 lbs. of milk in a year. Her dam, Aaggie Idaline 6th, gave 46 lbs. 4 ozs. of milk in a day, and 12,402 lbs. 8 ozs. in a year. From T. G. Yeomans & Sons, we got Modest Girl 3rd, she from Prince Aaggie Wayne and Modest Girl. She is an imported cow and is in the advanced registry. Prince Aaggie Wayne has 1/2 same blood as Princess of Wayne, who gave 20,469 lbs. 9 ozs. of milk in 1 year, and 91 lbs. 3/4 oz. butter in 30 days; 1/2 same blood as Aaggie 2nd, who gave 304 lbs. 5 1/2 ozs. of butter in 90 days, and 20,763 lbs. of milk in 1 year, and Aaggie Gem 2nd, from Prince of Wayne 5th and Aaggie Gem. These heifers are rich in the Aaggie and Wayne strains, and give promise of becoming excellent cows."

Guernseys.

We desire to direct the attention of our readers to the advertisement appearing in this issue, pertaining to the Guernsey herd of S. P. Taber Willis, of Roselyn, Long Island. The Guernseys have made rapid strides in the estimation of dairymen, winning the good grace and patronage of many of our American friends, by the excellent accounts they have given of themselves in the dairy. They claim strength of constitution beyond that of the Jersey, with equal, if not superior, butter making qualities. As to the standing of this individual herd, we need only refer our readers to the advertisement, where it will be seen from the many prizes they have won, that they must be of excellent personal merit, as well as of the best of breeding.

Jerseys.

At the head of the Saybrook herd, owned by J. S. Hart, of Wycoomagh, Cape Breton, there stands as the stock bull, Oscar of St. Lambert, 11547 (A. J. C. C. H. B.). He is a son of Baron of St. Lambert 5225 (sweepstakes medal, Toronto '83), the latter being identical in blood with the famous Mary Ann of St. Lambert, except that the parentages are differently distributed, while the dam of Oscar of St. Lambert, Cowslip of St. Lambert, possesses 87 1/2 per cent. of the blood elements of Mary Anne. The herd comprises at present over 50 head, including some of the best bred and leading individual performers in America. Mr. Hart expects a good demand, and is prepared to meet the wants of all intending purchasers.

The auction sale of part of Oaklands noted Jersey herd took place on the 4th and 5th April. The attendance was good and the prices fair. The best of the herd have been reverted to sell in New York, May 1st. It is to be regretted that a number of the best animals went across the line. The following is a list of some of the best prices realized, with buyers' names given: Lisgar's Rose 2660, cow, Prof. Shaw, Agricultural College, Guelph, \$300; Oakla Belle, heifer, B. W. Folger, Kingston, Ont., \$190; Oaklands Cora 3d 2737, cow, John Hendrie, Hamilton, Ont., \$160; Thalma's Meines 2661, cow, John Hendrie, \$100; Yankee's Dream 3282, imp. cow, A. H. Moore Philadelphia, Pa., \$130; Helen St. Helier 3d 2795, cow, Prof. Shaw, \$180; Cana Meines, heifer, B. W. Folger, \$100; One Hundred Per Cent 1650, bull, C. A. Penny, Cedar Grove, Ont., \$350; Pegis of Flamboro 1821, bull, Agricultural College, \$100; Meines 3d 2741, cow, Wm. Rolph, Markham, Ont., \$130; St. L. Banstead 2175, bull, W. Roberts, Hamilton, \$180; Sweet Lemon 2278, imp. cow, A. H. Moore, \$250; Sweet Lemon Cana heifer, B. W. Folger, \$100; LeClair's Marjoram, 3635, cow, Wm. Rolph, \$240; Anna of Glencairn 1020, cow, A. H. Moore, \$280; Belle of the Manor 3250, imp. cow, J. H. Stratford, Branford, Ont., \$170; Nora Pegis unreg. cow, I. H. Carlet, Toronto, \$115; Pussie's John Bull 2160, bull, A. C. Burgess, Carleton Place, Ont., \$210; Catharine 2320, imp. cow, L. Phillip, Courtright, Ont., \$130; Emergentia 2320, imp. cow, A. H. Moore, \$100; Lady Coropois 3128, imp. cow, A. H. Moore, \$200; John Bull's Pussie, 4966, cow, John Hendrie, \$200; Goldessie 2886, imp. cow, G. P. Glazier, Chelsea, Mich., \$180; Violet of Glencairn 1021, cow, A. H. Moore, \$160; Cana Pepita, heifer, C. A. Penny, \$140; Cana Gilea 5564, heifer, W. Millen, Cottam, Ont., \$140; Cana Helier, heifer, C. P. Glazier, \$110; Helena Percenta, heifer, W. Milne, \$140; Oaklands Faith Pegis 4576, cow, G. P. Glazier, \$140; Etta of Riverview 9338, cow, A. H. Moore, \$240; Easter Joy 2124, cow, Mark Carter, \$120. The rest sold for sums under one hundred dollars.

Sheep and Pigs.

Mr. Anthony Edwards, of Chatham, Ont., writes us: "I am glad to write you that I have had excellent luck with my Shropshires this year. I have twenty-six lambs from fifteen ewes, and one to lamb yet, but I am sorry the greater part are bucks. They are all doing well. I have some very strong lambs from ewes I purchased from Mr. Campbell, of Woodville, three years ago, and from one of his bucks from that wonderful ewe of his that recently died.

Messrs. G. and B. Deo, of New Sarum, write as follows. "Our flock of pure bred American Merinos will number about 200 head at the close of this lambing season, all in fine shape for the spring shearing, which has commenced by taking off some of those 20 lb. and over fleeces, which the individuals of no other breed can equal. The Merino is the only breed of sheep that can produce first-prize mutton actually free of cost, as their fleeces pay for all they eat, and the judges give them the first place nearly every time they have come in competition with all other breeds. Great interest and inquiry for breeding ewes." With the foregoing came a sample of the clip of this season, which in point of soundness of fibre, fineness of texture, and evenness of growth speaks volumes for the wool producing qualities of this flock in particular, and the Merino sheep in general.

A. Gilmore, prop. of Oakdale Farm, Huntingdon, Que., writes as follows. "My stock has done well the past season. I have had very good success at the last fall shows. My advertisement in your JOURNAL has brought me more orders for Yorkshire pigs than I can supply. I advise all having anything to sell to advertise in your JOURNAL as I believe it to travel amongst the best class of farmers in the Dominion. Have made the following sales of Yorkshire pigs in Ontario: Geo. B. Hood, Guelph, 1 boar and 2 sows; Dougald McMaster Laggan, 2 sows in Quebec; Jas. L. Gillis, Kelso, 1 boar; Chas Crawford, Kelso, 1 sow; Samuel Boyd, Athelstane, 1 sow; Frederick Davis, Athelstane, 1 sow; Robt McGinnis, Athelstane, 2 sows; Geo. Chambers, Athelstane, 1 sow; Thos. Kelly, Huntingdon, 1 sow; Chas. Marshall, M. D., Huntingdon, boar and sow; Lester Onery, Huntingdon, boar and sow; Ed. Blanchard, Herdmans, 1 sow; Julien Herbert, St. Martine, boar and sow; Mrs. E. Donnelly, Dewittville, 1 sow; Isaac Parnell, Lennoxville, boar and sow; Michael Mooney, Franklin Centre, 1 boar; Henry Renie, Rockburn, 1 sow; John Brown, Huntingdon, 1 sow; Jas Donnelly, Athelstane, 1 sow; W. R. Sayer, Athelstane, 1 sow; C. Blanchford, Huntingdon, 1 boar.

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ECONOMICAL WOMEN should have one or both of these aids to cheap comfort. THE DOWSWELL WASHER THE STANDARD WRINGER have the Clothes, the Health, Time, Money Sold by Hardware Dealers, or direct from Standard Mfg Co. 34 James n. Hamilton.

Intending to go to Europe in June, my ANNUAL SALE OF SHORTHORNS HEAVY and LIGHT HORSES SHEEP and PIGS WILL BE HELD AT MY Clareville Stock Farm, Cayuga, On Thursday, the 9th day of May, 1889 Catalogues now ready. Terms—Six months on joint approved notes; small sums, cash. Sale commences at noon. J. R. MARTIN, CAYUGA, ONT.

POULTRY. X EGGS from pure-bred PLYMOUTH ROCKS and LIGHT BRAHMAS, prize winners. Carefully packed in baskets and satisfaction guaranteed. \$1 for 13. Address: G. H. RICHMOND, 81 HUNTS ST. EAST, HAMILTON, ONT. AWAY AHEAD AGAIN. Prize-Winning Birds for Sale. LIGHT and Dark Brahmans, Plymouth Rocks, Langshans, W.F. Black Spanish, Houdans, Colored Dorkins, Bronze Turkeys, Roupen and Pekin Ducks, Toulouse Geese. Upwards of 116 prizes at the recent Poultry Shows. EGGS FOR HATCHING IN SEASON From the highest scoring birds in the Dominion. Send three cents for circulars. Birds and prices right. WM. HODGSON, Box 12, Brooklin, Ont.

W. C. G. PETER, Importer and Breeder of Light Brahmans, Silver-Laced Wyandottes, Barred Plymouth Rocks, Rose Comb Brown Leghorns, Rose Comb White Leghorns, Single Comb White Leghorns, Langshans, B. B. Red and Silver Duckwing Game Bantams. Eggs—\$3.00 per setting; 2 settings for \$5.00. Stock for sale at all times. Send for circular. ST. GEORGE POULTRY YARDS, ANGUS, ONT. A. G. H. LUXTON, HAMILTON P. O., ONT., is prepared to supply eggs from prize-winning Black J., B. B. Red Games, Light Brahmans, Black Spanish, Black Hamburgs, Buff Cochins, Partridge Cochins, Plymouth Rocks, Houdans, Langshans, Silver Grey Dorkings, Golden Poldans, Brown and White Leghorns, Cayuga Ducks, also B. B. Red Game, Golden and Silver Seabright Bants, at \$1.50 per setting of 13. I won 120 prizes—40 1st, 45 2nd, 23 3rd—last fall and this winter, also 8 diplomas for breeding pens. Birds for sale. Satisfaction guaranteed.

BELVOIR HERD OF PURE-BRED SHORTHORNS. The Bates portion of herd is headed by imported 8th Duke of Leicester = 9270 = and consists of the following families: Waterloo, Constance, Princess, Charmers, Darlington, Filargies, Garlands, Seraphinas, etc. There are some imported Booth, Cattle, and Scotch strains also included. Purchasers can depend upon fair treatment and liberal usage. KOMOKA STATION 3 MILES. RICHARD GIBSON, Delaware P.O.

ARTHUR JOHNSTON, Greenwood, Ont., Can. 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. Claremont Station, C. P. R., or Pickering Station, G. T. R. Write or wire me, when and at which station to meet you. Send for catalogue. No business, no harm.

ABERDEEN-ANGUS POLLS. 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.

Cream Separators THE DOMINION DAIRY SUPPLY CO. General Agents for the FAMOUS DANISH SEPARATOR AND THE RISING BACKSTROM SEPARATOR Creameries, Butter Factories, Have Your Choice. Danish, A size, skimming... 2750 lbs. per hour " B " " " 1150 " " " Hand Mach. " " " 160 " " " Foot " " " 225 " " Backstrom Separator, skimming... 800 " " The cheapest on the market and the best. Before buying ask for our circulars and prices, and descriptive pamphlet, showing points on which to judge of Separators. Factory plans free to our customers. Write to J. de L. TACHÉ, General Manager, box 1023, Quebec. Western Agency—S. M. BARRÉ, Winnipeg. JOHN S. PEARCE, London, Ont. Jan 4

GUERNSEYS!

THE GRANDEST OF DAIRY BREEDS.

Combining the richness of the Jersey with size approximate to the Holstein or Shorthorn, but standing alone and unequalled in producing the richest colored butter in mid-winter on dry feed. Gentle as pets, persistent milkers, and hardy in constitution, they combine more qualifications for the dairy or family cow than any other breed.

IN THE OLD BRICK GUERNSEY HERD

are daughters and grand-daughters of the renowned Island prize-winners: Excelsior 1st, Cato, Fair Lad and the famed Squire of Les Vauxbelets, of St. Andrew, Jeweler and Lord Fernwood and nearly all the descendants of the famous Swain sisters, "Katie" and "Cottie," a strain not exceeded, if equalled, by any other. Jeweler 13th, son of Jeweler, out of I. J. Clapp's tested cow Hazelnut 1788, leads the herd with Lord Fernwood's son, whose dam won special premium at the N. Y. Dairy Show. Squire Kent, grand-son of the noted Lady Emily Foley and Squire of Les Vauxbelets and Konnoor, also winner of first premium at N. Y. Dairy Show, are coming into service. All particulars in regard to the breed and herd, individually, cheerfully given.

When writing, please mention C. L. S. & F. JOURNAL. my-6

HILLHURST HERDS

HEREFORD,

Aberdeen-Angus and Jersey

HEIFERS, COWS AND YOUNG BULLS FOR SALE

At reasonable prices, Send for new catalogues.

M. H. COCHRANE, Hillhurst, Que., Can.



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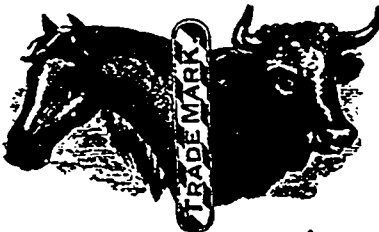
Sutton West, Ont.

Choice of 60 head of

SHORTHORNS

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

F. C. SIBBALD



D. ALEXANDER,

Brigden, Lambton Co., Ont.

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.

HAMILTON Thorley Cattle Food

TESTIMONIALS

HAMILTON Oct. 24th, 1888
TO THE THORLEY CATTLE FOOD CO., Hamilton
GENTLEMEN,—We have been using your prepared cattle food amongst our horses for some time, and we have much pleasure in recommending it to horsemen as being a good article of food, and especially when horses are affected with influenza. With the latter we had a great many horses affected this fall, and by using your valuable food we were able to work them every day whilst affected. Yours truly,

THE SHEDDEN CO. (LIMITED),
J. HAMILTON, Agent.

John Dryden, Esq., M. P., of Brooklyn, Ont., writes: "I believe you have the best cattle food used in the country. I have tried several others, but find none answering my purpose as well as yours. We do not use it constantly for food, but simply as a stomach tonic when needed, and find it serves an excellent purpose."

NOTE.—Mr. Dryden is one of the most successful breeders of Shorthorn cattle on the American continent.

The following are names of merchants and others who purchase in 500 lb. lots and over. John Mitchell, Port Hope Messrs. R. G. Ough, Millbrook; Metropolitan Grocery, Peterborough; John Tisdall, Omemee; A. Campbell, Lindsay; J. B. Weldon, Little Britain; Groh & Rosenberger, Berlin; Hume Bros., Milton; Pelletier & Son, Fraserville, Que.; Jos. Hewer, Guelph; J. M. Reynolds, Stratford; Robt. Sims, Rockwood; H. J. Rolls, St. Catharines, J. A. Pratt, Niagara Falls; Lawson & Walker, Thorold; E. H. Pardy, Port Perry; H. S. Wilcocks, Picton; H. P. Gould, Castleton; Samuel Nisbett, Brighton; Dr. Gallagher, Campbellford; Wm. Burnett, Cobourg; E. Hill, Warkworth; Adam Henry, Belleville; Henry Douglass, Napanee; R. S. Patterson, Kingston; N. E. Runton, Kingston; Dennis Sullivan, Rockville; D. Darling, Gananoque; H. Willard, Prescott; A. James, Athol; Robt. Bates, Merricksville; John J. D. McBeth, Smith Falls; McEvoy Bros., Ottawa; Fee & Henderson, Ottawa; W. B. Saunders, Stagner; M. Patterson, Almonte; Geo. Craig, North Gower; J. A. McQuade, Osgood P. O.; Lorne & Harkness, Iroquois; N. J. Cleland, South Mountain; J. Birks, Cardinal; Blackburn & Co., Kemptville; H. A. Gibson, Morrisburg; Alex. McCracken, Cornwall, Ont.; Geo. Wait & Co., Montreal, Que.; A. Mitchell, Cayuga, Ont.; Dr. M. Gallagher, Campbellford, Ont.; J. Common, Princeton, Ont.; Robt. Sherra, Caledonia, Ont.; W. F. Kay, Otterville, Ont.; Karr & Pollock, Norwich, Ont.; Woolson & Murdoch, Ingersoll, Ont.; Geo. Phelps, London, Ont.; McNaughton & Mareauette, Chatham, Ont.; Israel Evans, Chatham, Ont.; Harris & Ballard, Kingsville, Ont.; J. Evans, Leamington, Ont.; W. C. Crawford, Tilbury, Ont.; S. Wilkinson, Essex Centre, Ont.; F. J. Douglas, Windsor, Ont.; Kannady & Besson, Windsor, Ont.; John Murphy, Wallaceburg; Blackburn & Co., Kemptville; Fred Ferras, Ingersoll; Dominion Mercantile Co., Waubesauchene; Wm. Johnson, Sarnia; J. J. Clament, Sarnia; D. Graham, Strathroy; W. B. Collins & Co., Wyoming; John Jeffers, Brampton; Fred Armstrong, Fergus; S. Springer, Elora; John Ballentine, Georgetown; Graves & Stewart, Seaforth; Simon Snyder, Waterloo; John R. White Galt; C. McGeorge, Ayr; Thos. O'Neal Paris; John S. Pearce & Co., London; W. J. Leary, Mitchell; A. Taylor, Blyth; Peter Deans, Wingham; T. G. Ryley, St. Marys; E. F. Stevenson, Park Hill; Sifton Bros., Dutton; Ross & Wilkins, Tilsonburg; Turvill Bros., St. Thomas; W. Weldon, St. Thomas; J. Chaloner, Digby, N. S.; T. Cranston, Caledon East; Stevenson Bros., Meaford; R. A. Watson, Beeton; McFarlane & Co., Durham; W. C. Hall, Shelburne; John Miller, Harrison; G. R. Monkman, Orangeville; E. Murphy, Mount Forest; John Ball, Hanover; J. H. Fielding, Wianon; Geo. Curler, Mildmay; J. E. Foster, Palmerston; Andrew Wilson, Paisley; A. Smith, Tara; M. McGilvray, Listowel; Berry & Day, Lockport; John Moffatt, Kincardine; David Mahaffy, Kincardine; John Walker & Co., Tiverton; Thompson Bros., Port Elgin; S. Labrose, St. Eugene; R. A. Smith, Newmarket; Harold Sorby, Portage la Prairie.

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BE SURE YOU GET THE HAMILTON THORLEY

\$4.50 per 100 lbs. Special rate for large quantities. Address,

THORLEY HORSE AND CATTLE FOOD CO., Hamilton, Ont.

JAMES DRUMMOND, Petite Cote, Montreal.

Importer and Breeder of PURE-BRED

AYRSHIRE CATTLE



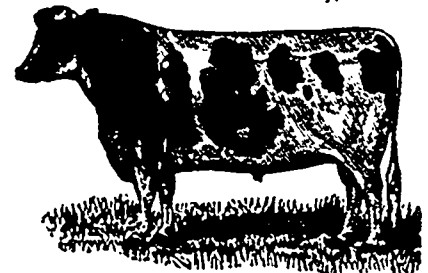
Of Large Size, and from Choice Milking Strains.

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. fe-1y

J. E. PAGE & SONS, Amherst, Nova Scotia

On line Intercolonial Railway.



Importers and Breeders of

HOLSTEIN-FRIESIAN CATTLE

Including strains of the best milk and butter families living. Herd headed by CLOTHILDE and's ARTIS, whose dam Clothilde 2nd, gave at 4 years old 23,609 lbs. of milk, and made 23 lbs. 4 oz. of unsalted butter in seven days when six years old. G. Dam, Clothilde, winner sweepstake prize at New York Dairy Show, has milk record of 26,080 lbs. of milk and 28 lbs. of unsalted butter in seven days. Sire, Artis, winner first prize at New York Dairy Show.

Young stock, all ages, for sale, including Carlotta's Netherland Prince, dam Carlotta, with butter record of 22 lbs. 3 oz. unsalted butter; sire, Netherland Prince. Prices low for quality of stock.

A. C. HALLMAN & CO. NEW DUNDEE, WATERLOO CO., ONT.



Importers and Breeders of Thorough-bred

HOLSTEIN-FRIESIAN CATTLE.

Herd headed by the noted prize-winner Prairie Aagie Prince H. F. H. 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.

The Tushingham Herefords

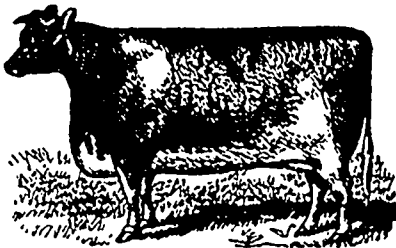


THIS herd, grounded on selections from the best blood in England, is remarkable for the number and uniformity of the good calves that it has produced during the three years of its existence, owing in a great measure to the excellence of the stock bull Tushingham (8127), by Charity 3rd (6359), by The Grove 3rd (5051). Several young bulls of his get are held for sale. J. W. M. VERNON, Tushingham House, Waterville, P. Q.

WATERVILLE is on the main line of G. T. R., not far from the United States boundary.

JOSEPH REDMOND

PETERBOROUGH P.O. - ONT., CANADA.

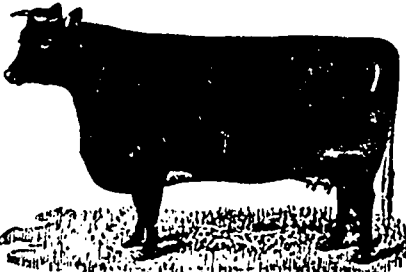


I have still on hand and for sale an excellent lot of imported bulls, heifers and young cows, besides an exceedingly good lot of home-bred heifers and bulls all by imported sires and mostly from imported dams. I can supply intending exhibitors with first-class show animals of either sex and of various ages, from calves upward. Of my last imported ten were from Bruce and Cruickshank breeding, all show animals.

Peterborough is on the C. P. R. and G. T. R. Six trains daily. Write or wire me when to meet you. Will be pleased to show the stock, whether you purchase or not.

JOSEPH REDMOND.

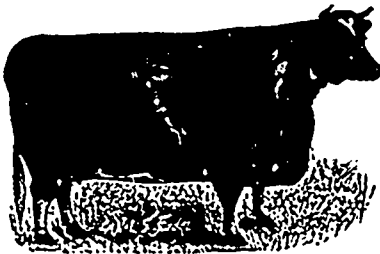
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R. R. STATION, LONDON. P. O., WHITE OAK.



BREEDERS OF SHORTHORNS AND SHROPSHIRE

Have a grand lot of bull calves sired by our imp. Cruickshank bull Vermillion (50587), and a very choice lot of heifers, now in calf to Vermillion; also shearing rams and ram lambs from imp. sire and dams. Prices moderate. Terms easy.

BOW PARK HERD
OF



PURE-BRED SHORTHORNS

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

ADDRESS, JOHN HOPE, Manager,
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CREDIT VALLEY STOCK FARM.
SMITH BROS.
CHURCHVILLE, (PERI. CO.) ONTARIO.



THE GREAT BUTTER MILK HERD

OF PURE-BRED REGISTERED

HOLSTEIN-FRIESIAN CATTLE

Best strains, as Mercedes, Mink, Aaggie, Siepkje, Tensen and Ykema, for sale. Particular attention paid to individual excellence and good breeding combined. Prices low for quality of stock and within range of all farmers. Send for catalogue.

The Park Herd of Herefords.



THIS herd embraces over 50 head of choice animals. All registered. Catalogues sent on application.

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Farm, half a mile from C. P. R. and
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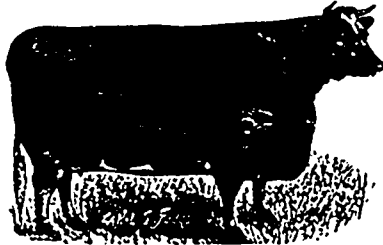
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Importer and Breeder of
SHORTHORN CATTLE,
CLYDESDALE HORSES,
AND SHROPSHIRE DOWN SHEEP.
Stock of both sexes for sale

J. Y. REID, HILLSIDE FARM,

2 1/2 miles south from Paris, on the G. T. R.



WE have on hand and for sale a superior lot of show cows, heifers and young bulls. This season's calves being mostly from the imported Scotch bull Earl of Roseberry. Intending purchasers will be met at Paris station. Apply

James Geddie, Manager, PARIS, ONT.

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HOLSTEIN AND FRIESIAN CATTLE
A SPECIALTY.

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The largest herd of Holstein cattle in Canada, from which we are prepared to sell bulls and heifers. If you are in want, come and see us. Prices reasonable. Correspondence solicited.

Address

WM. B. SCATCHERD,

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Secretary, Wyton, Ont.

CRUICKSHANK SHORTHORNS,

CLYDESDALES

AND

Shropshire Sheep



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JOHN DRYDEN,

BROOKLIN, ONT.

FOR SALE-SEVEN IMPORTED BULLS

of superior excellence and extra individual merit, also

ONE IMPORTED TWO-YEAR-OLD STALLION.

PRICES MODERATE.

Inspection invited.

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IMPORTER AND BREEDER OF

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Breeding and Individual Merit
Unsurpassed.

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Importers and Breeders of OHIO IMPROVED CHESTER WHITE PIGS, registered pedigree. Booking orders for spring pigs. Satisfaction guaranteed. Write for prices.

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Cheap, Convenient and Effective.

The Best Non-poisonous Sheep Dip and Cattle Wash in the World.

A "CHEMICAL FOOD" FOR THE WOOL

Rapidly increases the quantity and improves the quality.

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have been awarded to Little's Patent Fluid Dip in all parts of the world.

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SUFFOLK PIGS, greatly improved. All registered.

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Shorthorns, of Cruickshank blood, and Southdown Sheep from Webb's stock. Young stock of all the above for sale. All orders promptly attended to.

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SOUTHDOWN SHEEP.

Flock first established 1857. Commenced exhibiting 1867. Since then have taken over 1,200 prizes, including a large number of medals and diplomas.

Imported Rams used only.

Stock for sale.

ROBERT MARSH Proprietor.

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THE GLEN STOCK FARM,

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**SCOTCH SHORTHORNS,
SHIRE HORSES,
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Herd headed by imported Earl of Mar (4785), winner of the gold medal at the Grand Dominion and 39th Provincial Show, and numerous other prizes. P. O. and Telegraph Office at Innerkip. Farm is one mile from Innerkip station on the C. P. R. (Ont. div.), and a short distance from Woodstock station on the Canada Pacific and Grand Trunk R. R.

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**ORMSBY & CHAPMAN have Removed
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ADDRESS, Letters—Springfield-on-the-Credit P. O.
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**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 Clarendon 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., Clarendon, Ont.

RESIDENCE ONE MILE FROM CLAREMONT STATION.

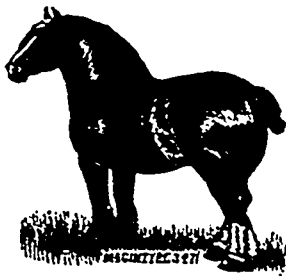
IMPORTERS OF REGISTERED
Clydesdales

—AND—
Hackneys
Stallions and Mares
constantly on hand

FOR SALE
on reasonable terms.

The importations of 1888 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), Harold (6326), Crown Jewel (2708), Lord Marinton 2620, St. Lawrence (3220), and others of like merit. Also a few choice Shetland Ponies. Correspondence solicited. New catalogues just out. Visitors are always heartily welcome.



Imported Clydesdales For Sale.

IMPORTATION OF 1888.

At prices moderate and terms to suit purchasers we offer a SUPERIOR LOT OF

**CLYDESDALE
Stallions and Fillies**



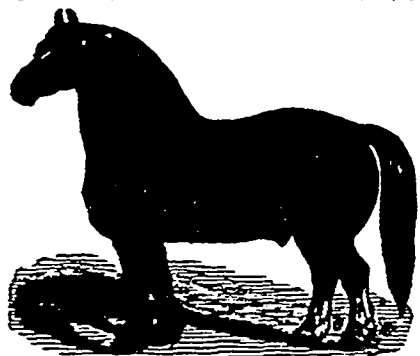
ranging from one to four years old. Several prize-winners in the leading shows of Scotland and Canada, securing three 1st prizes and two 2nd and a third at the Provincial Exhibition, Kingston; also first and third at the Canadian Clydesdale Association Show, Toronto, 1888. Including gets of such celebrated horses as Darnley, Macgregor, Lord Erskine, Lord Hopetown, St. Lawrence, Sir Hildebrand, Doncaster and Old Times. Our horses are all selected with the greatest care by one of the firm from the best studs in Scotland. Parties wishing to purchase richly-bred animals of superior individual merit should inspect our stock. Catalogues furnished on application.

DUNDAS & GRANDY, Springville P. O.

Residence about 1/2 mile from Cavanville station, C. P. R. By telegraphing us visitors will be met at Cavanville.

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

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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.

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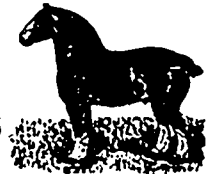
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CLYDESDALES

—AND—

Hackney Stallions

FOR SALE



Highest Prize-Winners in the Leading Shows of the World

And the gets of famous sires, such as Lord Erskine, Darnley, Old Times, McCammon, Garnet Cross, Prince Edward, Prince Henry, Sir Windham, Good Hope, Fireaway and Macgregor. Prices reasonable. Catalogues furnished on application.

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OFFERS

On Reasonable Terms
Choice

**STALLIONS
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FILLIES**

Registered in the British Clydesdale Horse Society.

One of his present importation, Duncan Bruce, was first prize winner at the Stormont Union Show, Scotland, and is half-brother to the famous Pickwick; another, Lord Rollo, was first prize winner last fall at Huntingdon, P. of Que., (both now rising three years).

Correspondence solicited, and visitors welcome.

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New Glasgow, Pictou Co., N. S.,

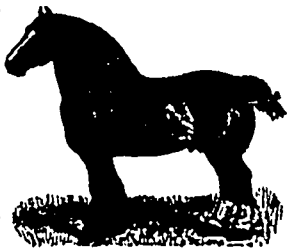
STANDARD-BRED TROTTERS
American Cattle-Club Jerseys.

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-I, 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.



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MALTON, ONTARIO, CAN.

Breeders and importers of
**CLYDESDALE & SHIRE
HORSES.**

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

JAMES GARDHOUSE & SONS

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Highfield P. O., Ont.



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Home of the Provincial Renowned
Manfred (1753)

Prize-Winners. Rare Individually
Lowest Prices.



Have on hand for sale, on very reasonable terms, & very choice and carefully selected

REGISTERED CLYDESDALES

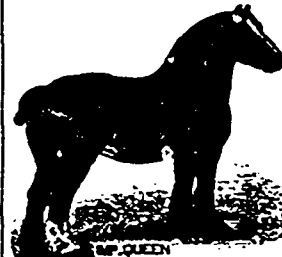
consisting of 1st, 2nd and 3rd prize winners at Provincial Exhibition, at Kingston, 1888, as well as winners at big shows in Scotland. Every stallion but one prize winners at leading shows both in Canada and Scotland, and from such noted sires as Lord Erskine, Cairnbrogie Kier, Good Hope (by Darnley), Crown Jewel and others.

Intending purchasers and all horsemen are invited to inspect our stock. Correspondence solicited.

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MANITOBA LINSEED CAKE,

UNRIVALLED FOR COWS, CALVES, HORSES AND SHEEP. "Crushed," "Nuttid," Meal, COTTON Seed Meal, Palm Nut Meal, Locust Beans, Calf Meal (milk substitute), Large Lump Rook Salt—the most economical and only safe way to salt horses and cattle.

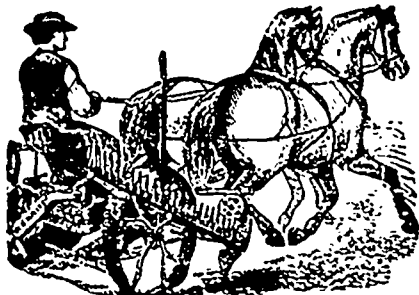
Don't feed these alone: add to ordinary food produced on the farm. You improve your live-stock and enrich your land by feeding them.

FERTILIZERS, ETC., ETC.

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Farmers will find it profitable to read the advertisements, and will confer a favor by mentioning this Journal when corresponding with advertisers.

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The "Warrior" is Second to None.

IT IS THE
SIMPLEST,
LIGHTEST DRAFT
AND
MOST DURABLE

Mower made. The Warrior has 2 1/4 inch sections, making it impossible to stone the knives.

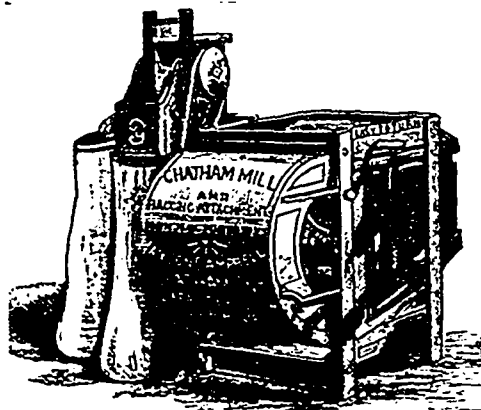
Every Machine Fully Guaranteed.

If there is no agent near you selling the Warrior, write direct to us for prices and terms.
Write for circulars and testimonials.

J. F. MILLAR & SON,

Morrisburg, Ontario.

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THE WORLD-RENOUNDED CHATHAM FANNING MILL

with Bagging Attachment, made by

MANSON CAMPBELL, Chatham, Ont.

1000 sold in 1884
1330 sold in 1885
2000 sold in 1886
2300 sold in 1887
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More than double the number turned out by any other Factory in Canada

17,000 MILLS NOW IN USE.

Mills furnished with or without the Bagging Attachment; also the Knock-Down Shape for shipment and packing for export.

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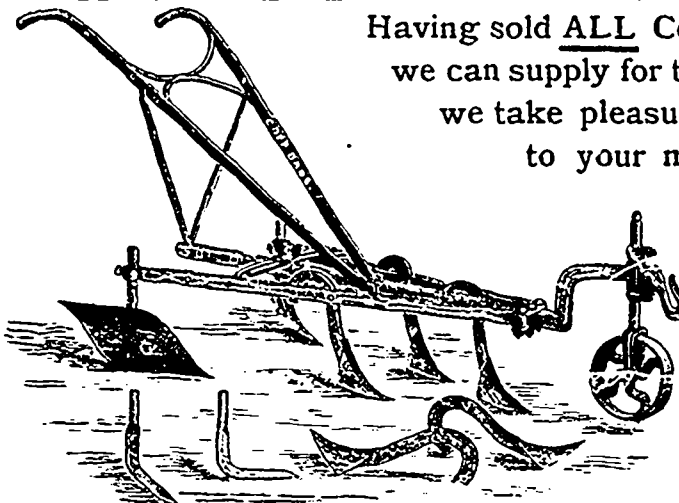
E. G. PRIOR & Co., agents for British Columbia.

For sale by all agents of THE MASSARY MANUFACTURING Co. in the Maritime Provinces, Quebec, Manitoba and N.W.T.

ON 30 DAYS' TRIAL.

EGGLESTON'S ELASTIC TRUSS

Has a pad different from all others, is cup shape, with self-adjusting ball in center, adapts itself to all positions of the body, while the ball in the cup presses back the intestines just as a person does with the finger. With light pressure the hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail circulars free. EGGLESTON TRUSS CO., Chicago, Ill.



Having sold ALL Copp's Sulky Plows we can supply for the Spring Trade, we take pleasure in bringing to your notice our

QUEEN Cultivator.

This Cultivator possesses all the good points of those now on the market, besides being of a far more durable character. The **TEETH** are of particularly good model, to make the best work obtainable. Send to us for special circular.

MANUFACTURED BY

COPP BROS., HAMILTON, ONT.



TENDERS.

SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Indian Supplies," will be received at this office up to noon of THURSDAY, 6th May, 1889, for the delivery of Indian Supplies during the fiscal year ending 30th June, 1890, consisting of Flour, Bacon, Groceries, Ammunition, Twine, Oxen, Cows, Bulls, Agricultural Implements, Tools, etc., duty paid, at various points in Manitoba and the North West Territories.

Forms of tender containing full particulars relative to the Supplies required, dates of delivery, etc., may be had by applying to the undersigned, or to the Indian Commissioner at Regina, or to the Indian Office, Winnipeg.

Parties may tender for each description of goods (or for any portion of each description of goods) separately or for all the goods called for in the Schedules, and the Department reserves to itself the right to reject the whole or any part of a tender.

Each tender must be accompanied by an accepted Cheque, in favor of the Superintendent General of Indian Affairs on a Canadian Bank, for at least five per cent of the amount of the tender, which will be forfeited if the party tendering declines to enter into a contract based on such tender when called upon to do so, or if he fails to complete the work contracted for. If the tender be not accepted, the cheque will be returned.

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Deputy of Superintendent-General of Indian Affairs.

Department of Indian Affairs, Ottawa, April, 1889.

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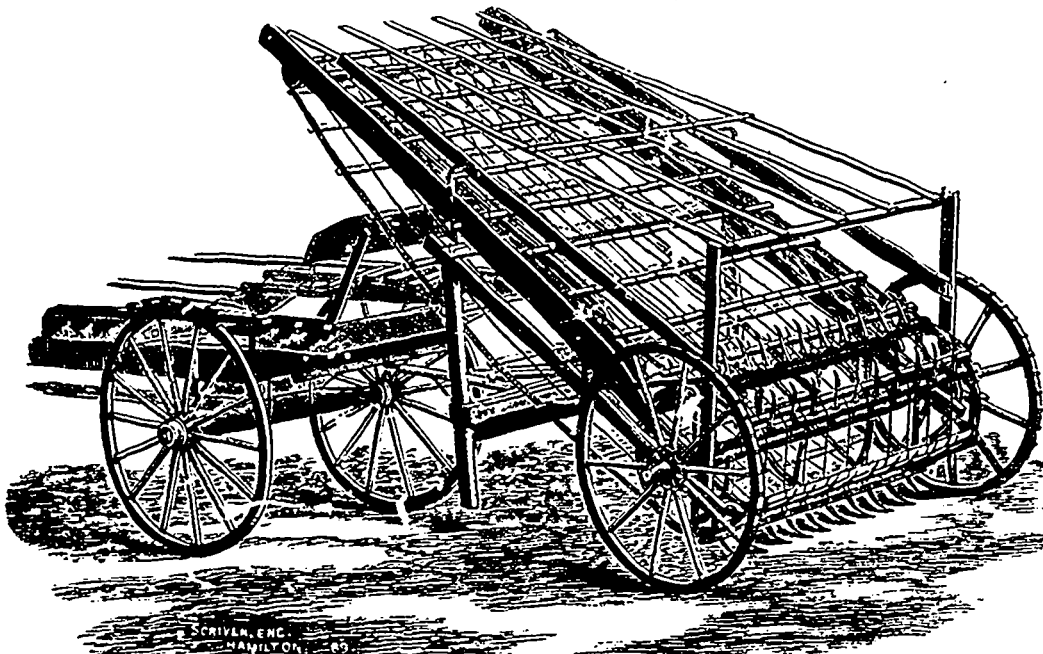
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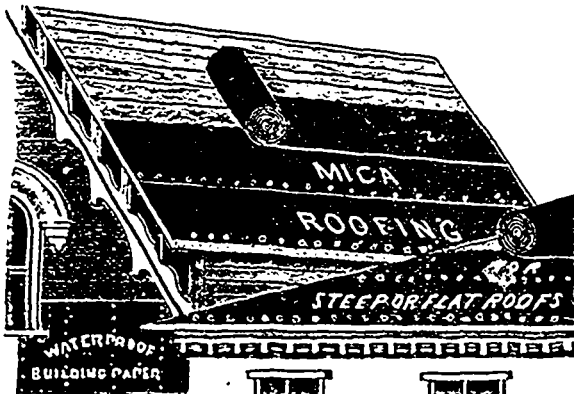


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WM. SHEPHERD, Lansdowne, Ont., P. O. box 37, Prescott, April 20th, 1889.

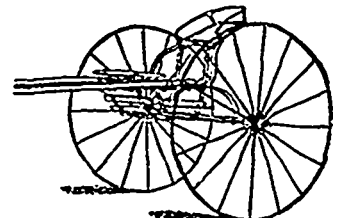
(These gentlemen were present: J. P. Redman, S. J. Johnston; Daniel Ingham, Jno. Hickford, Francis Surplus, Robt. Shepherd, Jas. Graham. The trial was held on the farm of Mr. Shepherd.)

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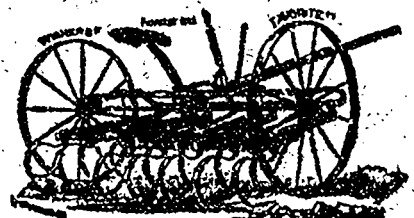
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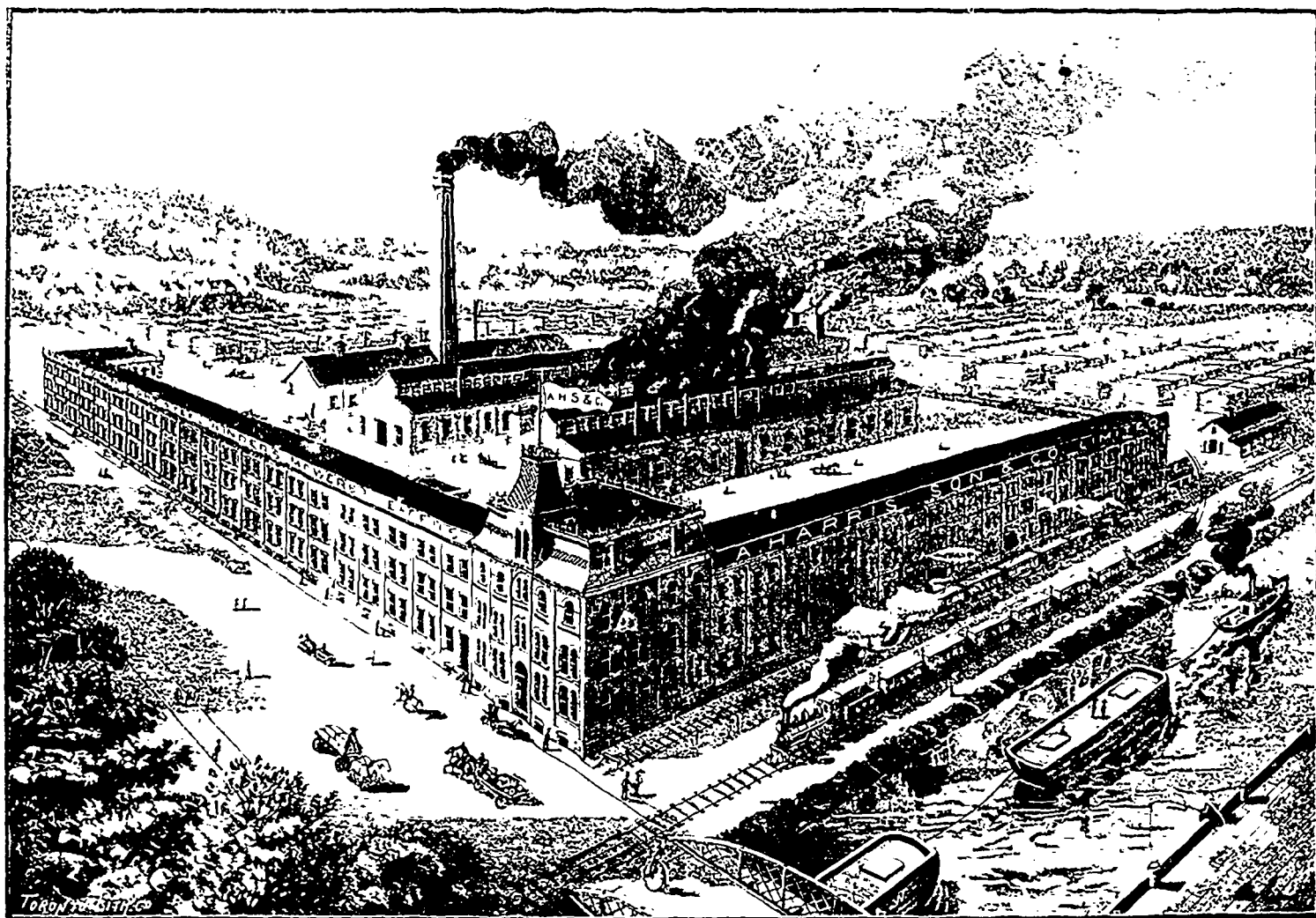
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