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VOL. XXXIV. LONDON, ONTARIO. APRIL 15, 1899. WINNIPEG, MANITOBA. No. 476

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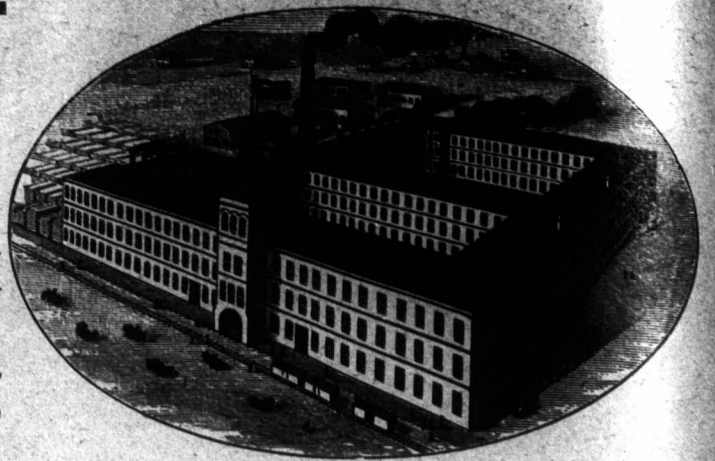
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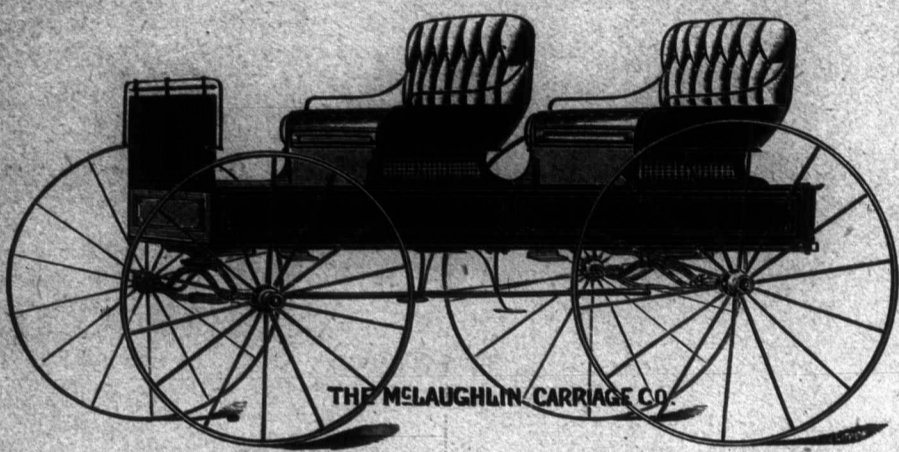
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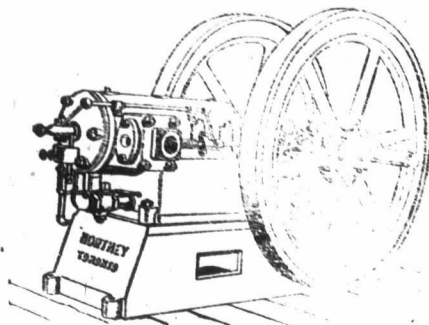
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* AGRICULTURE, STOCK, DAIRY, POULTRY, HORTICULTURE, VETERINARY, HOME CIRCLE. *

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No. 476

EDITORIAL.

Liquid Air—A Nineteenth Century Wonder.

The closing days of the nineteenth century are being distinguished by brilliant achievements in mechanic arts. The forces and the elements of nature are being put to use for the service of man as never heretofore. The question arises, Why not put to new uses air, the world's cheapest and most abundant material? Cheap power the world is searching for. Air in motion drives the windmill. In any form can it do more? Till some twenty years ago, air, which is composed mainly of oxygen and nitrogen (four-fifths of the latter), was regarded a "permanent" gas; but Prof. Jas. Dewar, of England, liquified it, but by a process so expensive that the first ounce cost \$3,000, latterly reduced to \$500 a pint. Mr. Chas. E. Tripler, an experimenter of New York City, after eight years' work, has now perfected a plan by which he produces fifty gallons per day, at a cost of about twenty cents per gallon. It is done by means of intense cold and compression, which also causes heat to be given out. In his apparatus, air is compressed to between 2,000 and 3,000 pounds per square inch, and cooled down by water flowing round the pipes. No ice or other cooling substance is used. A proportion of the compressed air is allowed to escape, and flows back over the outside of the coil through which it has come. Pressure is continually maintained by the pump; and the apparatus is packed with felt, to prevent the entrance of heat. The air which escapes expands, is cooled, and cools the inner coil of pipe. Hence there is a continuous fall of temperature of the air within the pipe till it liquifies, at 312 degrees below zero. Mr. Tripler states that he has made about ten gallons of liquid air by the use of three gallons in his engine, so that he has a surpluse of seven gallons produced without expense, and which can be used as power elsewhere. He thinks he can keep on repeating this surpluse indefinitely. The practicability of this process is, however, disputed. In fifteen minutes after starting his engine he has liquid air. But whence the power? the reader asks. One cubic foot of liquid air contains 800 cubic feet of ordinary air which we breathe—a roomful pressed into the size of a small pail! Its expansive power is enormous—100 times greater than steam! When exposed to the air of ordinary temperature, it proceeds to return, as a gray, frosty vapor, to its original form. But it can be regulated, and Mr. Tripler has been driving an engine with it in his laboratory—an engine running without fuel or water, smoke, ashes or steam. And what a revolution in transportation on land and sea if this cheap—yea, almost costless—power be applied in practical machinery! It will not then take one bushel of our No. 1 hard wheat to carry another to market, or over one-quarter the value of a fat steer from Canada to market him in Liverpool. But the subject is of interest in other ways. Liquid air is so cold (312 below zero) that it will freeze alcohol and mercury. In his public exhibitions in New York and Washington, Mr. Tripler has frozen mercury into the shape of a hammer, solid enough to drive nails into a hardwood board. It will make iron and steel as brittle as glass, and boil—or freeze—an egg so hard that when broken by a sharp blow from a hammer it looked like a piece of quartz. It makes lead elastic as steel, and a rubber ball as fragile as an egg-shell. Mixed with other substances, it has tremendous power as an explosive. Still, says the inventor, you can safely do almost anything with it you can with water, except shut it up tight. It will sear the flesh like a white-hot iron, and can be used in surgery to eat out diseased flesh more quickly and safely than caustic potash or nitric acid. A New York physician has already used it in cancer treatment. For hospital use it will be absolutely pure air, and a vitalizing air, because the proportion

of oxygen is very large. Oxygen liquifies at 300 degrees below zero, and nitrogen at 320, so that when in the form of liquid air the nitrogen evaporates more rapidly. Ice at 32 degrees F. is hot compared with liquid air (344 degrees warmer), so that a kettle of liquid air placed on a block of ice will actually boil violently, throwing off a white vapor. It has a remarkably cooling effect on rooms where a small quantity of it is used, and this suggests its use in refrigeration, where Mr. Tripler foresees another revolution, because the machinery is not expensive, and can be set up in a tenth part of the space occupied by an ammonia-gas refrigerator machine.

He predicts its general utility even in houses, and says in ten years a hotel guest can order a "cool" room in summer and be just as sure of getting it as a warm one in winter. Incidentally, a curious test has been made, showing the remarkable vitality of seeds though exposed to frost. Such seeds as barley, oats, peas, cucumbers, and squash, all grown in the temperate zone, were kept in liquid air for 110 hours at 312 degrees below zero and then thawed slowly for 50 hours. Yet after that severe treatment they germinated and grew. Liquid air is the talk of the scientific world, and bids fair to form a fitting finale for the achievements of a wonder-working century and give a great start to the next.

The Beef Cattle Industry.

The acknowledged scarcity of well-bred and well-formed beef cattle in the country at the present time doubtless accounts in a large measure for the improved prices being paid by dealers and shippers for the class of cattle suitable for the export trade. This fact also accounts in a great measure for the active demand for pure-bred bulls of the beef breeds, and the higher prices which are being obtained for such animals. It is gratifying to know that the farmers of Canada are waking up to a realization of the situation and of the needs of the times, and are, in increasing numbers, acting on their convictions and putting themselves in line with the requirements of our markets, as they apply to not only beef cattle, but also to dairy products, pork, and poultry. There is, however, yet much room for improvement and expansion in all these lines, and we need have no fear of overstocking the market, if we are only careful to produce the best quality. The live stock market reports furnish interesting reading for farmers and feeders, and the startling differences between the prices of well-bred cattle for beef and those paid for ill-bred animals should lead all who read to cherish the ambition to improve their stock, and thus to share in the best prices going. It is not at all uncommon to note a difference of 75 cents to \$1 per 100 lbs. between the prices paid for a bunch of ordinary ill-bred butchers' cattle averaging 1,000 lbs., and that of a well-bred and well-finished lot of export cattle averaging 1,350 lbs., and a little figuring will serve to show that, rating the former at say \$1.25 and the latter at \$5 per cwt., the difference in the value is just \$25 per head; \$250 on ten head of cattle, or \$500 on a carload of twenty head. And this may fairly be reckoned as the profit on one class over the other, as the scrub cattle have cost nearly if not quite as much to raise and fatten as have the well-bred ones, to say nothing of the pleasure and satisfaction which comes to all concerned in handling the better class. It is our entire confidence in the soundness of the doctrine that well-bred cattle are infinitely the most profitable to raise and to feed that prompts us to so persistently preach the gospel of good blood to our farmer readers throughout our vast constituency, feeling assured, as we do, that the general adoption and practice of these precepts would in a very short time add many millions of dollars to the value of

our farm stock, and to the wealth of our farmers individually.

Entertaining this view, we offer no apology for devoting a considerable amount of space in this issue to an illustrated review of the prizewinning records at the Royal Agricultural Show of England of outstanding animals in a breed of cattle that has played, perhaps, a more prominent part than any other in improving the beef stock of not only the Old Land, but also of this continent, and which from its proved cosmopolitan character is doubtless destined to extend its leavening influence in all parts of the world where beef is produced. While we say this in perfect sincerity, we would not for a moment reflect upon the other useful beef breeds which have each made themselves an enviable reputation, have their enthusiastic friends and admirers, and have made splendid records in the Fat Stock Show competitions in Britain and America, both in the pure-bred and grade cattle classes, and frequently top the markets in the great live stock emporiums in both continents for quality and price. If there is room for all these to be profitably raised in the limited territory of the British Islands, as they undoubtedly are, there is surely room for them all in the vast domain of the Dominion of Canada, and we would advise no man who has a herd of any of the beef breeds to give up what is giving him satisfaction, but rather to seek to improve them and extend their sphere of influence in improving the common stock of the country, which any pure breed, if judiciously handled, will certainly do.

Evolution of Farm Machinery.

Farm work has in the last quarter of a century been greatly lightened by the invention and introduction of machinery calculated to economize time and labor. These inventions have been made to apply to nearly all the hardest jobs on the farm, and have contributed vastly towards the removal of the principal complaint against rural life. When we reflect that it is quite within the recollection of many living men that all the harvesting of the hay and grain crops in Canada was necessarily done by hand—mainly with scythe and sickle, involving untold aches and pains of muscle and spine—we may well be thankful that the inventive genius of mechanics and the enterprising spirit of manufacturers have brought within our reach the means of mitigating the hardest labor of the farm and making it so much more generally a pleasant and profitable occupation.

Necessity is said to be the mother of invention; and, no doubt, it was the increasing difficulty in securing hired help to harvest the crops when so many of the early immigrants had secured homestead farms for themselves that led the way, as fields were cleared of stumps and stones, for the introduction of horse-power machinery for harvesting purposes as well as for cultivation of the land. The help question has continued to grow a more serious one as the years have gone by—so much so, indeed, that without the aid of labor-saving machinery it would have been simply impossible to have handled the ever-increasing bulk of the products of our farms. Then, again, with the progress of time, and the growing of new classes of crops, the tilled portion of the land in Eastern Canada began to require drainage, and very different methods of cultivation, which necessitated new types of implements—a process of change which is still going on. The opening up of the prairie lands of the West, and wheat-growing on a large scale, soon brought about improvements needed to suit these new conditions. The development of dairying has brought with it revolutionary changes in apparatus, the most noteworthy being the centrifugal cream separator and the Babcock test for determining the quality of milk. Remarkable advances, too, have been made in the production of

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LONDON, CANADA.

power on the farm. A most important part of the farmer's business to-day is the judicious choice of implements and machinery suited to his soil and system of farming.

The degree of perfection to which farm machinery has been brought is one of the most satisfactory features in the experience of the present-day farmer, and the cost of improved machinery, which when first introduced was high, has been steadily reduced till it is now placed upon the market at prices which the average farmer can well afford to pay; indeed, he can not well afford to be without it. And the use of iron and steel in many parts of modern machinery, which were formerly of wood, has rendered it much more durable, so that with proper care it may reasonably be expected to last much longer, and owing to less liability to warping and twisting, from the effects of the weather, is calculated to do better work, while lightness and strength being combined makes it more satisfactory in every respect.

Upon the proper care and use of farm implements depends, more largely than most men are willing to admit, their satisfactory work. The keeping of the wearing parts and bearings well oiled and free from grit or gumminess, and keeping the cutting parts well sharpened, makes the draft very much less and the character of the work more complete. This applies to implements of cultivation as well as to those of harvesting and chaffing. We have known instances where a cultivator with dull hoes which would slide over hard places without effect, making an uneven and unsatisfactory seed-bed, has done good execution after being sharpened—the work of a few minutes by the blacksmith and at a trifling cost. Yet many farmers neglect to have implements put in proper condition to do work, and then lay the blame on the implement or its maker.

We are free to admit that absolute perfection in agricultural implements has not yet been attained, but all, we think, will agree that gratifying progress has been made, and we have full confidence that the enterprise and ambition of our manufacturers will prove equal to the demands of the times in providing such improvements as are needed and practical, and will hold their own in the keen competition they have to meet and cope with in

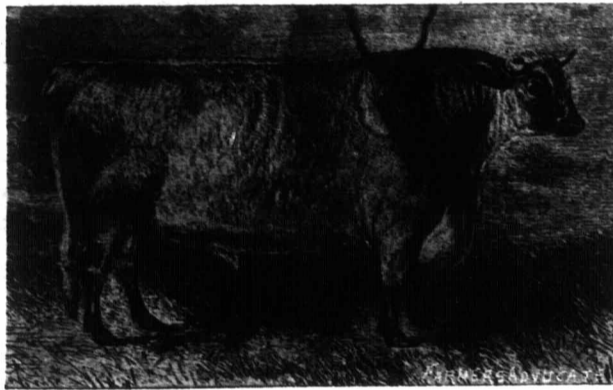
this line of work. The statements published elsewhere in this issue by a number of our leading manufacturers regarding outstanding improvements which have been incorporated in various classes of machines, and the article describing the implements of a half-century ago, will be read with great interest.

Agriculture at the Recent Session of the Ontario Legislature.

It will be remembered that at the first session in 1898, legislation was passed dealing with the

SAN JOSE SCALE.

During the past year, Mr. Geo. E. Fisher, with a large number of assistants, has been carrying on an extensive inspection of nurseries and orchards, principally in the Niagara Peninsula. Messrs. Bennett and Woodbridge have looked after Essex and Kent. In order to make the Act more workable, a few amendments were proposed this year by the Minister of Agriculture. One is that in case an orchard is found to have infected trees scattered here and there through it, and it is thought advisable and in the public interest to cut out and destroy the whole orchard, this may be done after a report by a second inspector, thereby saving the expense and time of having every individual tree examined. This is considered warranted because of the terrible devastation of the insect, as proven in several of the States. It was reported that in Maryland one block of 27,000 peach trees was destroyed last year. The next point in this Act is one that is of still greater importance. From the 1st day of April, 1899, no nurseryman or agent is allowed to sell any nursery stock until the same has been fumigated by hydrocyanic acid gas, in accordance with regulations provided by order of the Lieutenant-Governor-in-Council. We understand that the carrying-out of this work has been entrusted to Prof. Wm. Lochhead, the Entomologist at the Ontario Agricultural College, Guelph, who has lately visited some of the States where such work is being carried on, and who is now at work among



COMET (155).

BORN IN 1894. DIED IN 1895. BRED BY CHAS. COLLING. SOLD AT THE KEITON SALE, 1810, FOR 1,000 GUINEAS. GOT BY FAVOURITE (252); DAM BY FAVOURITE (252), OUT OF THE DAM OF FAVOURITE (252).

the nurserymen, advising as to methods, inspecting fumigating-houses, etc. Every bunch or package of nursery stock purchased must have attached to it a tag with certificate of fumigation. The enforcement of this part of the Act should give us clean stock, for it is well established that all forms of insect life are destroyed by hydrocyanic acid gas, but the trees themselves are uninjured. In order to meet the increased work under this Act, the grant has been increased to \$20,000. If, however, our fruit-growers are saved from the enormous losses that have fallen to American fruit-growers, it will be money well spent. This scale is the most destructive enemy that has threatened Canadian orchards.

BUTTER AND CHEESE EXCHANGES.

The next bill affecting agriculture is one providing for the organization of butter and cheese exchanges. At the present time there are a score of "cheese boards" in Ontario. These are gatherings or associations for the purchase and sale of cheese and butter. They are somewhat loosely organized, and do not fully meet the end desired. In many cases the sales off the board greatly exceed those made on the board, and many disputes have arisen, for the settlement of which due provision has not been made. This Act proposes to provide for such associations, based on a statutory foundation, and providing for by-laws and regulations that can be enforced in courts of law. The organization is simple and inexpensive. An agreement is drawn up and the by-laws submitted to the Minister of Agriculture. When these are approved, the declaration and by-laws are filed in the local registry office, and incorporation thereby takes place. The expense, therefore, is practically nothing. The by-laws of such an exchange will provide for an inspector, who will have power to settle disputes between buyer and seller, and thereby both parties will be placed on an equal footing. The Act, of course, is not compulsory, but purely voluntary, and those who prefer to buy and sell to suit their own convenience are as free to do so as before. It places cheese boards on somewhat the same footing as cheese- and butter-manufacturing companies.

AGRICULTURAL EDUCATION.

The subject of agricultural instruction in public schools came up several times, being introduced by members on both sides of the House, and the opinion was apparently unanimously in favor of such instruction. The Minister of Education put through a bill empowering rural public schools to engage, if desired, the services of graduates of the Agricultural College to give instruction. To these classes, farmers and others interested might be admitted if they desired to attend. The Minister explained, however, that this was purely optional with school trustees. He stated that, beginning with Sept. 1st, agriculture would be a compulsory subject in all rural public schools, and that an examination in the subject would be required. It is presumed that it will be placed in the fourth form. Some subject now in the course will have to make way for it. This will be a matter to be dealt with in the Regulations of the Department, which may be looked for in the next month or so.

MISCELLANEOUS.

The Western Dairy School at Strathroy came up for discussion; and the announcement was made also that Mr. Sleightholm had resigned, and that another Superintendent would have to be appointed. The selection has not yet been made.

With the exception of the doubling of the grant for scale inspection, the votes were about the same as in 1898. Special deputations waited on the Government in behalf of four new grants. The Guelph Fat Stock Club asked for \$500. They got \$150 as a contribution on behalf of the College in connection with instruction of the students. A deputation representing the students and the Experimental Union asked for a new hall at the College and increased accommodation for students. There is no grant this year for this purpose. Representatives of some of the live stock associations asked for an extra \$1,000, to extend a sales scheme, but the Government did not accede to their wishes. The Board of the Toronto Industrial asked for a grant for a Provincial dairy building. Five thousand dollars (with conditions) was placed in the supplementary estimates, but when the champions of London and Ottawa and other exhibitions had been heard from, the Premier suggested that the vote be dropped, and this was done accordingly. It will be seen from this that the Government does not grant every request for money, and it should be further stated that the Opposition does not approve of every grant that the Government does sanction, for they moved that the agricultural vote be reduced by \$8,100, made up as follows: Western Dairy School, \$2,600; Pioneer Farm, \$1,000; instruction in spraying, \$2,500; and printing of reports and bulletins, \$2,000. This, however, the Government did not accede to, and the grants therefore stand.

STOCK.

Polled Angus-Ayrshire Cross and the General Purpose Cow.

To the Editor FARMER'S ADVOCATE:

SIR,—I notice in your issue for March an enquiry as to crossing Polled Angus bulls on Ayrshire cows. I have had some experience in Scotland with this cross, but can scarcely agree with Mr. Ferguson's opinion that "the best beef cattle cross from an Ayrshire is through the Polled Angus bull." This dictum may be true as to quality and early maturity, but the element of size or weight has to be considered, and if this is taken into account, I have no hesitation in saying that the Shorthorn cross is the most profitable on Ayrshire cows. This is true also of undersized cows of any breed or grade. As is universally admitted, there are no better butchers' cattle than the Polled Angus and their crosses; but bulls of that breed should be put to cows of some weight and substance. Ninety per cent. of the calves will be polled and black. From Hereford cows the white face will appear on the black body. From white cows the calves will generally be blue-grays. In Scotland—apart from the pure-bred herds—farmers' cattle are generally Shorthorn grades with a strain of Ayrshire blood. The steers are splendid butchers' cattle and come early to maturity. The heifers make good dairy stock. To use a much-abused term, they are "general purpose" cows.

In Manitoba the question is often asked at farmers' meetings, "What is the best breed of cow for the Manitoba farmer?" The answers are various. If a dairy expert is present he will probably reply: "You must not attempt to combine beef-making with dairying. If you go in for dairying you must have cows of one of the distinctive dairy breeds. You must sacrifice the beef-making qualities to the milk pail." "But what shall I do with my steer calves?" asks an innocent enquirer. "Oh, knock them on the head," says our expert. This is mischievous doctrine, and enough to discourage any farmer who is a lover of live stock from embarking in the dairy business. There is no incompatibility between dairying and beef-raising. The one is the complement of the other; and here, as in Scotland, the man who recognizes this is more likely to make a success than his neighbor who knocks his dairy-bred steers on the head.

Eastern Manitoba.

AGRICOLA.

The Honor Roll of the Royal Show.

Mr. Richard Gibson, who is widely and well known as a connoisseur of Shorthorn cattle breeding and an expert judge, the result of a lifelong experience and exceptional opportunities for observation, has kindly prepared for the information of our readers, a list of the winners in the mature classes of Shorthorns at the Royal Show, from its inception to this date.



DUKE OF NORTHUMBERLAND (1940).

BRED BY THOS. BATES. FIRST PRIZE AT THE ROYAL SHOW, 1839.

younger classes as well would occupy more space than we could consistently afford to devote to any one breed of stock, and the list as presented serves the purpose tolerably well of showing the lines of breeding which have produced the winning cards as a rule during different periods in the history of the breed covered by this record.

Mr. Gibson's comments upon notable numbers in the list will be full of interest to new beginners and the younger generation of breeders, while the illustrations accompanying the article will be found interesting as object lessons on the different types that have been produced by the various lines of breeding.

OXFORD, 1839.

Duke of Northumberland (1940); bred and exhibited by Thos. Bates, Kirklevington.

Oxford Premium Cow, Vol. V., p. 752; bred and exhibited by Thos. Bates.

The first show of the English Royal Agricultural Society was held at Oxford in 1839, and Mr. Bates' Duke of Northumberland won in aged bull class.

CAMBRIDGE, 1840.

Hero (4021); bred by Mr. Topham, West Keal; exhibited by Mr. W. Paul, Pentney.

Red Rose 13th (afterwards named Cambridge Premium Rose), Vol. V., p. 125; bred and exhibited by Mr. T. Bates.

Hero was by Eclipse, a "Crofton" bred bull, out of Polly, by Young Rockingham, a "Raine." No better combination could be found in those days.

LIVERPOOL, 1841.

Cleveland Lad (3407); bred and exhibited by Mr. T. Bates.

Bracelet, Vol. V., p. 103; bred and exhibited by Mr. Booth, Killerby.

Cleveland Lad won first for Mr. Bates. This was the last Royal at which Mr. Bates competed, and the one at which the Booths won their spurs, and from this date until after the Manchester meeting in 1869, seldom is the name of Booth missed from the Royal prize list—more especially, however, for females.

BRISTOL, 1842.

Sir Thos. Fairfax (5196); bred by Mr. Whitaker, Burley; exhibited by Messrs. Parkinson and Mr. J. Booth, Cotham.

Necklace, Vol. V., p. 726; bred and exhibited by Mr. John Booth, Killerby.

Amongst others must not be omitted Sir Thos. Fairfax, shown in 1842 by Messrs. Parkinson and J. Booth, Cotham; bred by Mr. Whitaker; also used by Mr. Fawkes. There raged quite a controversy between Mr. Parkinson and Mr. Bates as to the merits of the bull.

Scottish breeder is now reaping of it to its fullest extent. In 1844, Mr. Cruickshank bought a grandson of Sir Thomas Fairfax from Mr. Torr.

DERBY, 1843.

Musician (4523); bred by Earl Spencer; exhibited by Mr. Barnard, M. P., Gosfield Hall.

Rosey, Vol. VII., p. 532; bred by Mr. J. Colling, White House; exhibited by Mr. T. Crofton, Holywell.

In 1843 a white won first, bred by Earl Spencer, by Warlock, who was sold to Australia; out of a Mason cow (No. 23).

SOUTHAMPTON, 1844.

Strelly (7500); bred and exhibited by Mr. J. Cooper, Thurगतon.

Birthday, Vol. VI., p. 271; bred and exhibited by Mr. J. Booth, Killerby.

Strelly won in the bull class. He had but two registered bulls in his pedigree of three crosses, and apparently was as quickly hidden in obscurity as he had risen from it.

SHREWSBURY, 1845.

Cramer (6907); bred by Mr. Parkinson, Ley Fields; exhibited by J. B. Stanhope, Revesby Abbey.

Ladythorn, Vol. VI., p. 429; bred by Mr. J. Booth, Killerby; exhibited by J. B. Stanhope, Reves, by Abbey.

NEWCASTLE-UPON-TYNE, 1846.

Belleville (6778); bred and exhibited by J. Mason, Hopper.

Hope, Vol. IX., p. 300; bred and exhibited by Mr. R. Booth, Warlaby.

Belleville, the unconquered, was winner and afterwards became a pillar of the Herd Book. New York Mills original herd was very full of Belleville blood, and even "Rosedale" owed not a little of her wealth of flesh no doubt to his influence.

NORTHAMPTON, 1847.

Captain Shaftoe (6833); bred by Mr. Lax Ravensworth; exhibited by Mr. Parkinson, Ley Fields.

Cherry Blossom, Vol. IX., p. 299; bred and exhibited by Mr. R. Booth, Warlaby.

Capt. Shaftoe won in 1847 for Mr. Parkinson, who gave \$1,625 for him at the Trusthorpe sale. He was out of the same cow as Col. Craddock's Musselman, noted as being the bull that John Booth selected to introduce fresh blood into his herd, for that purpose sending Bracelet to Hartforth for service.

YORK, 1848.

Deception (7957); bred by Mr. Garne, Brodmoor; exhibited by Mr. R. Keavil, Melksham.

Violet, Vol. VII., p. 599; bred by Mr. Glaister; exhibited by Mr. J. Mason Hopper.

NORWICH, 1849.

Andrew (12396); bred by the Duke of Buccleuch; exhibited by Mr. Todd, Elphinstone Tower.

Charity, Vol. IX., p. 295; bred and exhibited by Mr. R. Booth, Warlaby.

Andrew, the first from Scotland to get on the roll, was a white without a recorded sire.

EXETER, 1850.

Senator (8548); bred by the Earl of Carlisle; exhibited by Mr. Ambler, Watkinson Hall, Halifax.

Isabella Buckingham, Vol. IX., p. 104; bred and exhibited by Mr. R. Booth, Warlaby.

WINDSOR, 1851.

Earl of Scarborough (9064); bred by H. Lister Maw; exhibited by Mr. Wetherall.

Plum Blossom, Vol. X., p. 526; bred and exhibited by R. Booth.

Mr. Wetherall won with Earl of Scarborough, who traces to Belvidere, Bellerophon, and Waterloo, all names dear to admirers of R. Colling's best families.

LEWES, 1852.

Phœnix (10608); bred and exhibited by Mr. L. Chrisp, Hawk Hill, Alnwick.

Butterfly, Vol. XI., p. 354; bred and exhibited by Col. Towneley.

For the first time Col. Towneley's name appears. Note how persistently the Booth cows have been winning right along.

GLOUCESTER, 1853.

Pat (13456); bred and exhibited by Lord Berners, Keythorpe.

Vellum, Vol. XI., p. 733; bred by Sir C. Tempest; exhibited by Mr. H. Smith, The Grove, Notts.

Vellum, the winner, was afterwards bought for Mr. Alexander, and imported to Kentucky, where she founded one of the favorite families at Woodburn.

LINCOLN, 1854.

Vatican (12200); bred by the Earl of Ducie; exhibited by Messrs. Sandy & Smith, Nottinghamshire.

Beauty, Vol. X., p. 265; bred by Mr. Bannerman; exhibited by Col. Towneley.

CARLISLE, 1855.

Windsor (14013); bred and exhibited by Mr. R. Booth.

Bridesmaid, Vol. XI., p. 348; bred and exhibited by R. Booth.

Mr. R. Booth wins both prizes, the first time up to date that this feat has been accomplished since Mr. Bates showed the way in 1839.

CHELMSFORD, 1856.

Master Butterfly (13311); bred and exhibited by Col. Towneley.

Roan Duchess 2nd, Vol. XII., p. 578; bred and exhibited by Col. Towneley.

Col. Towneley followed suit by winning with two capital animals, the bull going to Australia at a price of \$6,000.

SALISBURY, 1857.

John O'Groat (13090); bred by Mr. Fawkes, Farnley; exhibited by Mr. Stirling, M. P., now Sir Stirling Maxwell.

Victoria, Vol. XII., p. 644; bred and exhibited by Col. Towneley.

This year produced a winner in John O'Groat, bred by Mr. Fawkes, and who made his reputation as a sire in Scotland.

CHESTER, 1858.

Fifth Duke of Oxford (12762); bred by Earl Ducie; exhibited by Earl of Feversham.

Nectarine Blossom, Vol. XII., p. 54; bred and exhibited by Mr. R. Booth.

Of this year's show we can speak from eyesight. It was our first Royal, and 5th Duke of Oxford, as he stepped around the ring, left an impression that has never been effaced: large, heavily-fleshed, with a dignity of carriage seldom seen. Booth's Nectarine Blossom was his consort for the honors, and the male and female deities of our first Royal have not yet been obliterated.

WARWICK, 1859.

Radford (15122); bred by Mr. Lythall, Leamington; exhibited by J. H. Bradburn, Lichfield.

Matchless 4th, Vol. XIV., p. 596; bred and exhibited by Mr. R. Stratton, Broad Hinton.

In this year, Mr. R. Stratton makes his initial bow. He, for awhile, bred more winners (not at the Royal) than any English breeder, especially at Smithfield. He created a distinctive type, and had he been wise enough to have had an American agent, his herd might have taken the rank that Aberdeenshire cattle have since. He has never received the recognition at the hands of English breeders and newspaper scribes that his efforts deserve.

CANTERBURY, 1860.

Royal Butterfly (16862); bred and exhibited by Col. Towneley.

Rosette, Vol. XIV., p. 633; bred by Mr. Wetherall; exhibited by Mr. Eastwood, Burnley.

This was the year of the Canterbury pilgrims. We would like to quote the Druid's poetical sketch, but in these solemn chronicles there is no room for the "Kist o' Whustles." Royal Butterfly, the winner in 1860, was own brother to the winner in 1856—a rare record for Butterfly, their dam, Mr. Eastwood won with Rosette in female class.

LEEDS, 1861.

Skyrocket (15306); bred and exhibited by the Earl of Feversham.

Duchess 7th, Vol. XIV., p. 430; bred and exhibited by Capt. Gunter.

Leeds, 1861. This was Capt. Gunter's year, as he won 1st in cow class with Duchess 7th, R. Booth 2nd with Queen Mab, Lady Pigott 3rd with Duchess of Gloucester. Two-year-old heifers—Capt. Gunter's Duchess 7th 1st, R. Booth's Soldier's Bride 2nd. Yearlings—Capt. Gunter's Duchess 83rd 1st, Hon. G. S. Lascelles 2nd, Johnathan Peel 3rd.

BATTERSEA, 1862.

Lord Adolphus (18208); bred and exhibited by Mr. J. Woods, Darlington.

Queen of the Ocean, Vol. XIII., p. 673; bred and exhibited by Mr. R. Booth, Warlaby.

Booth's Queen of the Ocean was one of the incomparable coterie of Queens, a quartette never equalled or perhaps approached by own sisters. The others were Queen of the May, Queen Mab, and Queen of the Vale, all by Crown Prince, out of Red Rose.

WORCESTER, 1863.

Duke of Tyne (17751); bred by Mr. Spraggon, Nafferton; exhibited by Mr. Jacob Wilson, Woodhorn Manor.

Pride of Southwick, Vol. XV., p. 663; bred by Mark Stewart; exhibited by Lady Pigott, Branches Park.

Duke of Tyne was by a Towneley bull (mixed Booth and Bates), and out of a cow of Booth foundation, with Bates top crosses. It will be noticed from this time that mixed breeding is beginning to forge to the front. Pride of Southwick, by Mr.



BRACELET.

FIRST AT THE ROYAL, 1841. TWIN WITH NECKLACE.

Turk (a Bates bull by Grand Turk), out of a mixed Booth foundation, introduces Lady Pigott's name on the roll. She was a strong competitor, and many a noted winner returned to Branches Park with trophies galore. It is needless to say she was a strong Booth adherent.

NEWCASTLE-UPON-TYNE, 1864.

Forth (17806); bred by Mr. W. Stirling (Sir Stirling Maxwell); exhibited by Mr. A. Cruickshank.

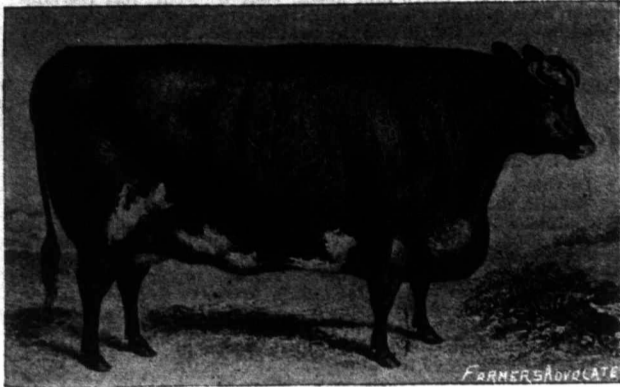
Evelina 4th, by Sir Colin (16553). Evelina 2nd, Vol. XIII., p. 447, bred and exhibited by Sir M. W. Ridley, Bladon.

1864 introduces the name of A. Cruickshank for the first time, who exhibited Forth, bred by Mr. W. Stirling, afterwards Sir Stirling Maxwell, a bull of sterling character and influence, whose portrait we give.

PLYMOUTH, 1865.

Lord Chancellor (20100); bred by Jonas Webb, Braham; exhibited by Mr. Sharpe, Courtlands
Corriane, Vol. XVI., p. 398, bred and exhibited by Mr. Woods, Stanwick Park.

1865 brings to notice that Jonas Webb could not only breed Southdowns, but could breed cattle to win at the Royal. Lord Chancellor was by Usurer, the Mason bull, bred by Lord Spencer, and bought by Lord Ducie to cross upon the Duchesses. Usurer was a blot upon the escutcheon of the Duchesses of Wetherby and Tortworth for a time, but the wisdom of the out-cross was eventually proved. The dam was of Mr. Bates' favorite Cambridge Rose family.



NECKLACE.

FIRST AT THE ROYAL, 1842. TWIN WITH BRACELET.

Two years' shows were withheld on account of cattle plague.

LEICESTER, 1868.

Commander-in-Chief (21451); bred and exhibited by T. C. Booth, Warlaby.
Lady Fragrant, Vol. XVII., p. 568; bred and exhibited by T. C. Booth, Warlaby.

1868 was a memorable year for Warlaby, as Commander-in-Chief, a bull of mighty presence, won in aged bull class, and Lady Fragrant in cow section, while Jolly Queen, a beautiful cow, was 2nd. She was afterwards imported to the U. S. *Botivar* here put in his first appearance, and won as a yearling. His old coat had been preserved (he was a light roan), and the old hair was stained and discolored—looking rusty, as it were—but nothing could approach him in straightness of outline. I asked the herdsman how he preserved the old coat? "Sure and it's buttermilk." "Externally?" "I just dab him with it, and he gets a quart of sour buttermilk in his new milk." Here probably is the secret of the starter for buttermaking. An illiterate man was using this sour buttermilk as an aid to digestion thirty years ago, and those who attended the Royal shows in those days did not fail to be struck with the wealth of flesh and extraordinary coats carried by the young things Mr. Meadows showed.

[TO BE CONTINUED.]

Mr. Crossley on the Horse Question.

I have read the two articles on the horse question from April 1st issue and agree with practically all they say. It certainly has always appeared to me strange that a government which has deemed it advisable, through the medium of the Farmers' Institutes, to give a series of lectures throughout Ontario on almost every known branch of farming, has so far almost entirely neglected one of the most important branches, namely, that of horse raising.

However, whether this subject could be advantageously added to the series to produce any practical good is to my mind an open question. Certainly a lecturer who could not carry his examples around with him would be somewhat at a disadvantage as compared to the one who can make his butter on the spot whilst he is explaining the process of manufacture. A few general remarks might, however, be given with advantage. It must not, however, be forgotten that the showyard is the best school in which to learn the practical lessons of breeding and crossing of all kinds of animals. There is hardly a district in Ontario which does not receive this opportunity for self instruction through the generosity of the Ontario Government towards its local show. Many a man has made his first exhibit at some one or other of these shows, and has gradually worked his way up until he has become a sweepstakes winner at the Industrial.

There are undoubtedly many evils in connection with horse breeding throughout the country. Anybody would think that it was an easy matter to remedy them; in fact, one would think that a farmer's own common sense would show him the remedy. Yet such is not the case. Everybody thinks that he was born to be a farmer, just as everyone at some time of his life has thought that he was especially brought into this world to serve Her Majesty in the army or navy. Unfortunately, farmers are not heaven-born, and every farmer knows, just as is the case in business, that nine farmers make a failure where perhaps one makes a reasonable competency or even a good living. Having attended hundreds of breeders' meetings, agricultural shows, and so forth, at which I have met thousands of farmers, it is natural that this subject has been discussed in my presence many times. There are scores of different opinions on this matter, but I have never yet heard of a practical suggestion for a remedy of any one of these evils.

Some talk of governmental interference—for instance, licensing stallions. Well, one can hardly say that that is a practical suggestion. It is an inherent right of every Englishman to do as he likes with his own money. No government in the world would dare to dictate to a man what stallion

he should use, and even if they dare, what course would they pursue? Judging by my own experience, there is one pedigree stallion in Canada for from sixteen to twenty non-pedigreed, useless animals. Even the system of recording animals leads to abuse, as follows, and is illustrated in every country in the world:

There is a fashion for a certain breed, which naturally creates a large demand, followed by increased prices. Every male is, as a consequence, recorded, probably sold and used for breeding purposes, just because everyone must have a horse of this breed with a pedigree. The breed becomes deteriorated at once through the increased demand and the consequence which follows of keeping entire animals which would not make good geldings.

Mr. Innes speaks in his letter of the plan of insurance adopted in this country. I must say that I entirely agree with him. I often hear of the abuses of breeding in Canada, but do not think they can compare with the abuses of this system of travelling horses. I do not agree with Mr. Innes about the price of stud fees, but think myself that for the class of horse generally used they are too high, and are made so by this very practice. We will take a horse that cost \$1,000. He has 100 mares a year at \$15 per mare, of which 50 per cent down. He would realize right away \$750. Fifty per cent of his mares ought to be in foal, so that he would still have \$375 coming to pay all his expenses. There are few horses which travel and are really worth more than the above sum. If there were no insurance at all, but a moderate fee were charged, it seems to me that a stallion owner ought to make a good season and pay for his horse in four years, when he would still be worth 50 per cent of his original value and he would still have made a good profit. Say, for instance, 100 mares at \$7.50 paid down. This would realize \$750, of which \$250 to capital account and \$250 to profit, and still his horse would fetch \$500 at the end of four years. In my experience, the farmer when he puts his mare under the insurance plan often does not care whether he gets his mare in foal or not, as is shown by the fact that though the stallion travels two months, at least 50 per cent of the mares never come until the end of the season. As a consequence the owner does not get anything. It appears to me unreasonable that a stallion owner should be treated in this way, but so long as this system prevails the owner is compelled to charge more than he should.

There are many ways in which a government can help the horse industry; for instance, by bonusing stallions travelling in certain districts at stipulated fees (low). The different governments of Canada have tried different ways, but probably the European countries have had the most experience. As a consequence, it has always seemed to me that Ontario or the Dominion ought to appoint a commission for the purpose of thoroughly sifting this matter before taking any steps to remedy the abuses complained of. HORACE N. CROSSLEY.

A Cattle Exporter's View.

To the Editor FARMER'S ADVOCATE:

SIR,—Regarding the report that Argentine competition would yet drive the exporters of cattle on the hoof into dead-meat shipment instead, I may simply say: The present method is adopted because the English purchaser pays more for what is killed in England, and enough more to make the other method by contrast undesirable. So soon as the purchaser decides that Canadian-killed cattle are, say, as good as English-killed Canadians, we may expect the difference saved in cost of carriage of dead animals to induce that method of shipment. I think there is no prospect of the English taste so degenerating as to prefer mussy handled, and even very slightly musty, meat to the article which now sells freely as English-fed, and of which a large percentage is Canadian-grown.

Governments might blunder into such experiments as carcass shippers, but not the sensible business men engaged in this trade, unless they saw sufficient compensating advantage in a money bonus from a soft Government. There is no danger of Argentina having any influence upon the question raised (the system of shipment).

The price to be realized for Canadian cattle will of course be influenced by whatever competition presents itself in the market, and you do your best possible service to the cattle grower in developing the best methods of producing the best animals. Such ringing editorials as yours of March 1st—Away with Scrub Sires!—show the ADVOCATE to have an eye on real preventable grievances, and knows how to show them to its readers.

The balance of trade has been and is severely against the farmer, and shipments of cattle from Ontario show the poverty of the country, both in quantity and quality, but under the conditions existing, prudence in the selection of sires and stock retained for stock purposes becomes more than ever necessary. Let the farmer work both his head and his hands, and maybe he'll see a lot of things that can be remedied outside the farm also—all reducing the drain on his estate.

The so-called grievance of the trunk lines and steamship lines offering lower rates to American than to Canadian cattle does not seem preventable. Canadians can no doubt secure the same advantages through American soil, and on their vessels, when in a position to avail themselves of it. There is no set price, as far as steamships are concerned, for space. Sometimes half a dozen shippers will have

as many prices as there are shippers. When you go to take space you go to a "Jew shop," so to speak, with apparently the same principle—"get all you can," and that's one reason why the farmer should not ship. As a last resort to fill the vessel sometimes an American is quickly wired a very low rate. It's what they call "business." You can't help it. No ship company is an exception to this rule. The Allans did once, and priced to all alike. So honorable were they that in those old days the price of freight was sometimes not known until the vessel was down the river with the stock. The shipper was told it would be "current rate and all alike," and it was so, and their price *always*, I think, was as high as their full anticipations, and sometimes much higher. A change has come over the scene—it's still "business," and you must know the game to stay in it.

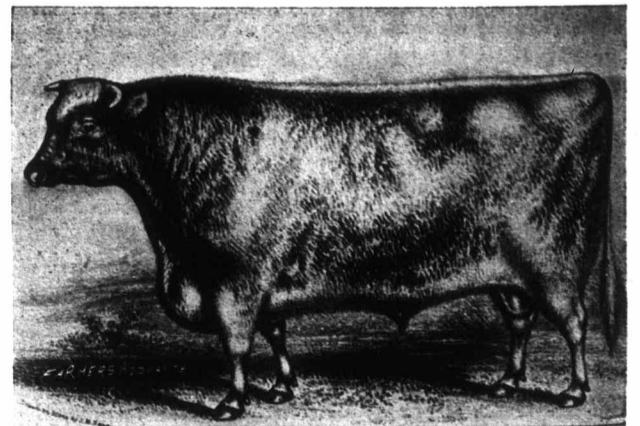
However I have digressed, say what you like of this to your people—all if it please you; and believe me in full sympathy with the farmer and the ADVOCATE. Respectfully yours,
 W. A. WILLIAMSON.
 Montreal, March 27, '99.

Turning Out the Flock.

BY J. M'CAIG, PETERBORO, ONT.

The change from winter-feeding to pasture is rather a violent one if not made with some care and judgment. Grass contains about 80 per cent of water, and it is to be expected that an abrupt and complete change from stored foods to grass will bring on a strong flushing of the animal processes. Diarrhoea will be followed by a great lowering of temperature, flaccidity and relaxation of the muscles. If the digestive processes go wrong in a sheep, it goes down very fast. Its digestive machinery is very strong, but its vascular and circulatory system, on the other hand, is very weak, so that it cannot throw off adverse conditions easily. Its capacity for self-restoration is not nearly so great as that of the horse or cow. So much is this the case that if a sheep takes sick it is generally expected that it will die. They seem to be hard to diagnose and hard to cure. A western man, who started in with a band of a thousand and lost them all the next year, without being able to tell what was the matter with them, went out of the business, saying that he "didn't like to be handling stock that would die without a cause." It is impossible to emphasize too strongly the necessity of prevention in sheep rather than cure, and more particularly with reference to the business of nutrition.

The aim of the shepherd should be to make the change as gradually as possible. This can be done by making the winter-feeding and grazing overlap. The grass-feeding should not constitute the whole food of the flock for ten days at least after the first turning-out, and night shelter will be necessary for still longer. The first time they go out it should be only for a couple of hours in the warmest part of the day, and for sun and exercise rather than grass. If the grass is too short to make a full bite, all the better, as there will then be no possibility of gorging, and the sheep will still have some appetite for inside food. For this reason it is hard to get them out too early. Besides, the spring air and sun are fine for the lambs. There is nothing more wholesome for either shepherd or lambs than the moving spring breeze, with the sun shining on it. It is the time at which the doctors talk of ozone. Let the little fellows out on the side of a dry hill, and let them stamp and race around the little knolls: it will increase their capacity for food and growth. The morning hours are better than the evenings or afternoons. After the more than customary exercise, it would be a mistake, especially in the case of very young lambs, to let them lie out on the damp



FORTH (17866).

FIRST AT THE ROYAL SHOW, 1864.

ground after the sun's heat begins to fail. They should be active outside, but should rest inside, in their dry, well-littered pen. After four o'clock the air gets chilly.

If it is good for ewes with lambs to run out early, it is still better for ewes that have not lambed. Grass is a great stimulant to milk secretion, and it is generally the case that pregnant ewes on heavy grass are more subject to udder trouble than those that have lambed in March, for example. For this reason such ewes should go out on short pasture, so that they will have to rustle for what they get, and thus check by exercise the tendency to rapid milk-secretion.

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Ewes should be well fed before going out in the morning, in order to break their appetite. After the grass begins to improve, the appetite for hay will be slight, and only a little of the best hay will be necessary. If slops are fed they may be greatly lessened or discontinued, and likewise turnips, though English shepherds continue the feeding of roots after the grass forms the chief food of their flocks. Dry oats are the best kind of grain food at this time. They are tonic in their effect, and help to counteract the looseness caused by the grass. The flock should have plenty of salt. This itself is, indeed, both a preventive and cure for diarrhoea. If young lambs are affected with violent purging, a teaspoonful of powdered chalk given in milk, repeated, if necessary, after five or six hours, will generally cure them, though they generally right themselves.

On account of the closeness of the feeding of the sheep, they check the growth of the grass in the spring, with the result that the sun burns it out later in the season by getting at the roots. On this account a field that is to be pastured for cattle should be closed to the sheep, and they should be kept away from meadows. There are few farms, however, that have not a piece of broken land covered with natural grass, on which the sheep may be turned early in the season. Failing this, the lanes may be used, or such fields of sod as are to be broken up for crop in the spring or early summer.

The Cost of Pork Production.

BY AN EXPERIMENTER.

The problem of profitable pork-production to suit our present markets is one difficult to solve, and too often results are anything but pleasing when the balance sheet is made out. It is possible that a discussion of the relative feeding values of a few of our more common and suitable feeding stuffs would be of some interest to feeders, and the following notes are accordingly submitted.

Most of the common feeding stuffs are rather high-priced at present, when we consider the price of the product in the shape of pork, and it is, therefore, the more imperative to select such feeds as will give the greatest weight of pork for the amount fed, as well as meat of the best quality. The wise feeder will always remember that there are two markets to be considered: the local and the foreign, or that catered to by the bacon manufacturer.

In feeding for the local market, the feeder can often pay much less attention to quality, and devote his energies to securing great daily gains. Great gains, as a rule, are economical gains when pigs are under 200 lbs., and small gains are expensive. The pig that increases at the rate of 2 lbs. per day does so at a much less relative cost than the one that does so at, say, 1 1/4 lbs. per day. The 2-lb. per-day pig, however, is likely to make soft bacon, and will not command as high a price as the 1 1/4-lb.-a-day hog. The difference in price will not offset the greater cost, but the market for the 2-lb.-a-day hog is limited, while the 1 1/4-lb.-a-day hog is, practically speaking, master of the situation, for his market is the best in the world.

The feeds which seem to be, generally speaking, certain of producing good bacon are rather few in number—oats, peas and barley being the only cereals which are at all certain, if fed alone, of producing a No. 1 article.

A limited supply of skim milk or whey along with these grains materially increases the gains from a given quantity fed. The value of skim milk and whey when fed with grains varies inversely with the proportion fed. When a fair amount of it is fed, say 4 lbs. per day, it apparently adds to the fattening power of the grain, as well as exerting its own proper nutritive function. Experiments conducted at the Central Experimental Farm, Ottawa, and elsewhere, indicate that care must be exercised in using this feed, as a large quantity seems to affect the quality of the meat indirectly by causing rather rapid fattening.

The most important principle to be observed in feeding for bacon seems to be the development of the animal naturally. Let his weight come as far as possible by growth rather than increase of fat. To this end, therefore, it is necessary to feed a ration containing a high proportion of flesh-forming food, and peas, oats and barley fill the bill. Any one of these grains fed alone will not, as a rule, give such good gains as a mixture of them. Variety is usually a very important consideration in feeding animals, and the pig is no exception.

In feeding for bacon, it is found that the early rations in the feeding period are not so marked in their influence upon the quality as the later, and advantage may be taken of this to use some cheaper ration during the building-up of, say, the first 125 lbs. of his pigship, care being taken to keep in a good growing condition rather than to fatten. Shorts, bran, corn and pasture or roots may, therefore, very properly go to make up his early rations, and will materially lessen the ultimate cost. With corn, it is necessary to supply a liberal quantity of foods containing protein for muscle-building and ash for the bones.

The ration which gives the greatest gain in pork for amount fed is corn meal and milk, and is in most sections the cheapest ration as well, but great care must be used in feeding it, as it is very liable to give soft pork, or at least too fat to suit the best markets. On the average, 3 lbs. of corn and as much milk will produce a pound of pork in summer,

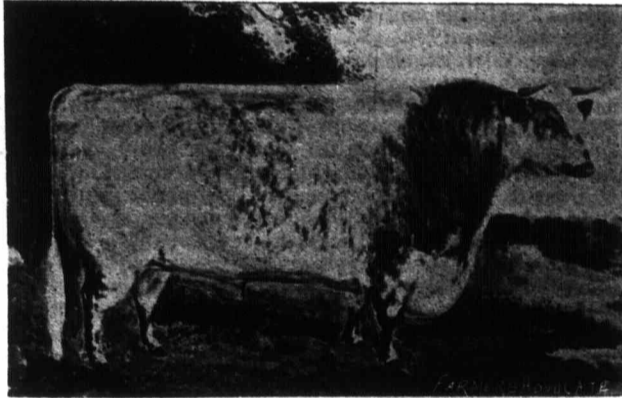
while the amount of every other grain required for a similar gain is considerably greater. Barley stands well up in rank as a rapid pork-producer, and a very high percentage of animals finished on this feeding may be expected to yield hard bacon. Peas and oats also give good results, and may be counted upon as economical and rather reliable finishing feeds.

With feed stuffs at present prices, and under usual winter conditions in Canada, a pound of gain in live weight may be estimated to cost, on the average: from corn, 2 1/2c.; from barley, 3c.; from oats, 3 1/2c.; from peas, 3 1/2c.; from a mixture of oats, peas and barley, almost 3c. The above estimate takes into consideration the cost of a due proportion of milk.

[NOTE.—The question of the cost of producing a pound of pork, live weight, is one about which many are, no doubt, in the dark, and when feeds are high and hogs low it is a vital one to the feeder. We would be glad to publish the results of any careful experiments carried on by feeders the details of which will shed light upon this point.—EDITOR.]

The Mare at Foaling.

As the period of parturition approaches, the mare should be carefully watched and when definite symptoms appear (with which all breeders are familiar and I need not enumerate) a careful and intelligent man should stop with the mare until delivery has taken place. In most cases the act will take place in a normal manner without extraneous interference, but in many cases this happy termination of this most important event does not occur and conditions present themselves that endanger the life of the offspring or the dam or both. In many cases of this kind the intelligent interference of an intelligent man (not in all cases necessarily an obstetrician) will bring to a successful termination the birth of the young, while without this interference there would certainly be the loss of the foal and sometimes also of the dam. Of course, the interference must be intelligent and opportune. Uncalled for or inopportune interfer-



COMMANDER-IN-CHIEF #1451.
BRED BY T. C. BOOTH. FIRST AT THE ROYAL, 1868.

ence is as much to be condemned as neglect to render the necessary aid when required.

The attendant should remain quiet and out of the sight of the mare if possible, especially if the mare be a primipara (a mare bringing forth her first young). When the labor pains become frequent and long continued, if he observes that all things are proceeding in a normal manner, and birth will take place without aid, he should not interfere, but, on the contrary, if parturition is not advancing in proportion to the pains, he should, as carefully and quietly as possible, ascertain what is hindering the act. It may be due to some slight malpresentation of the foetus, such as a deviation of the nose or a foot, which can easily and quickly be rectified, or the cause may be more serious. Having, if possible, ascertained the condition, he must decide whether or not he can remedy it; if so, he must do so as promptly and quietly as possible, and if not, he must as quickly as possible secure more skilled assistance. Even though delivery may take place in an easy manner, conditions that require attention frequently occur. For instance, the foal is frequently born enclosed in the fetal membranes, which have not become ruptured, and it will quickly suffocate unless liberated. Instinct teaches the mare to tear the membranes with her teeth and thereby allow access of air to the young, but in the majority of cases the mare is more or less exhausted and will lie still for a few minutes after the foal is born, while in the meantime the young animal perishes. The attendant should at once liberate the young when this condition is present; should also attend to the naval cord, which, in these cases and in many others, is still intact and attached to the membranes. He should tie a soft, strong cord tightly around the cord, about an inch from the belly, and cut it off with a dull knife about an inch below the string; he should remove all mucus from the mouth, nostrils and eyes of the foal, and unless the dam is giving the necessary attention he should, with a wisp of straw or a cloth, apply brisk friction to the body in order to dry it and encourage circulation.

If the foal is unable to rise, he should assist it to its feet in about half an hour, and endeavor to get it to suck, and repeat this every half hour until it is able to help itself. He should ascertain whether all natural openings in the body are pervious, such as the anus for the passage of the faeces and the urethra for the passage of the urine, and also the eyes. A very frequent cause of death in the foal at from one to four or five days old is retention of the meconium (the matter that is present in the intestines at birth); this exists in small balls or pellets of a dark brown or black color and about the consistence of putty. These balls are often of such size that the little creature has not sufficient strength to expel them, and the practice of giving purgatives, as oil, aloes, melted butter, lard, honey, etc., in such cases cannot be too highly condemned. Purgatives in such cases do not act upon the parts in which the trouble exists, viz., the large intestines, and especially the rectum, and while they cause an increase of the peristaltic action of the bowels and a fluidity of the contents of the small intestines, they do not remove the existing trouble and often cause death from exhaustion. The index finger should be well oiled, first cutting the nail to avoid irritation to the parts, and carefully inserted into the rectum and all of the lumps that can be reached removed, after which an injection of a little raw linseed oil or a little soap and water should be given. This operation should be repeated every few hours until the faeces become yellow, which tells us that the meconium has all passed and that the milk taken after birth (or the faeces formed therefrom) are passing, when, with rare exceptions, all danger of constipation will be passed. Retention of the meconium more frequently occurs in cases in which the milk has been escaping from the mare for some time before her delivery. The first milk (the colostrum) is of a viscid, thickish nature, a sort of an amber color, and has a laxative action. When this has run away before birth, constipation is more likely to occur in the offspring than in other cases in which the young animal receives it. In some cases it is necessary to give a laxative to the foal, but where injections, etc., will effect the desired result they should be avoided, as superpurgation or diarrhoea is very easily induced and frequently proves fatal in a short time. Where it occurs, probably the best remedy is laudanum—about one to two drams in a little of the mother's milk every two or three hours until the diarrhoea ceases.

The attention to the dam will depend upon the complications that have arisen during parturition. In normal cases nothing is needed except to keep her warm. Give a warm drink and bran mash an hour or so after delivery, and feed sloppy food for a few days. If the afterbirth has not been expelled in six to eight hours it should be removed by hand. More serious complications should be attended to by a professional man.

If the mare is to be bred again she should be taken to the stallion during the second period of heat after delivery. We know that the practice of breeding her at nine or ten days after delivery is commonly followed and generally with success. The success of this practice is the only point that can possibly recommend it. I consider it irrational, as it is almost impossible that the generative organs can have regained their normal condition in so short a time, and if there be any discharge from the uterus or vulva, there is a danger of causing disease in the stallion and also aggravating the diseased condition of the mare. It would certainly be safer and more rational, and, I think, just as successful, if we would wait until the next period of oestrus before breeding. HORSEMAN.

Teeth of Young Pigs.

Should the sow carry her pigs beyond the usual period of gestation, it frequently happens that the piglings' teeth will have made an abnormal growth, and in some instances the teeth will have become discolored to an extent which has led to the common saying that "pigs born with black teeth never do well." These little teeth are often very long and sharp, so that, when the little pigs attempt to suck, the teeth extend beyond the tongue of the pig and prick the inflamed and tender udder of the sow, giving her great pain, which frequently causes her to refuse to suckle the pigs, and sometimes she will attack the little ones with open mouth, when one grab from her powerful jaws seriously injures, if it does not at once kill the youngster. Unless immediate steps are taken to remove the cause of this trouble, the pigs soon die for want of food, and the sow's udder becomes distended with milk, and inflammation of it follows.

THE REMEDY.

This is simple, and easily applied by the attendant on the sow. He takes up each pig, tucks it under his left arm, opens its mouth with his left hand, and with his right hand and a small pair of pinners he breaks off the erring teeth, and places the pig to the sow then by a little of both coaxing and scratching, the sow will turn onto her side; the little pigs, being unable to bite the udder and each other, will quickly relieve the distended udder of the sow and prove a source of pleasure to her, instead of an irritant and a cause of pain. Sometimes the sow will become impatient on hearing the shrieks of her little pigs whilst the operation of dentistry is progressing; if this does affect her, it is best to take the little pigs into an adjoining place, out of hearing of the sow. S.

The Farmers' Parliament of New Brunswick.

[Specially reported for the FARMER'S ADVOCATE by J. J. Ferguson.]

The twenty-fourth annual convention of the N. B. Farmers' and Dairymen's Association held its sessions at Fredericton, March 28th-30th. There was a large and most encouraging attendance of interested farmers from all over the Province. As evidence of this, there were fees received from no less than one hundred and ninety-five members.

The President, Major Montgomery-Campbell, in the course of his opening remarks referred to the very satisfactory progress N. B. agriculture is making along many lines. Under the wise policy of assistance pursued by the Government, the dairy industry is being surely, if slowly, developed. During the present winter a large interest had been aroused, both among the farmers and the capitalists of the country, regarding the establishment of a pork-packing factory at some central point. If such were in operation, it would provide a cash market and outlet for many times the number of hogs raised in the country under the present unsatisfactory condition. If this country is going to secure a place in Britain's markets, she must be able to produce in quantity for export all her staple products. New Brunswick has been most bountifully supplied by Nature with most favorable climatic conditions and a soil of a character varying sufficiently to permit of the successful culture of all our ordinary crops. At present there is by far too much importing of coarse grains and feed stuffs from the western Provinces. These might easily be produced at home, resulting in the keeping of the money necessary to purchase them at home in the pockets of the farmers. The farmers themselves are not thoroughly alive to the great possibilities for successful work here in their own Province. Major Campbell endorsed most heartily the work being done by the Provincial Government, jointly with the Farmers' and Dairymen's Association, in the holding of so many Institute meetings over the Province. Ontario had already reaped a large reward from her work along that line, and without doubt great good would follow the wakening-up of the people of New Brunswick. At the conclusion of his address, the President introduced His Honor Lieut.-Governor McLelan, who briefly referred to some of the things which he thought should be done to advance the interests of the "noblest band of workers in the world." Something should be done in the way of introducing the teaching of practical agricultural knowledge in the schools. Ontario had recently taken a step in the right direction along this line. New Brunswick would surely be ready to follow her lead.

Hon. C. H. La Billois, Commissioner of Agriculture for New Brunswick, followed with an eminently practical talk, reviewing the situation as it is at present and referring to what he hoped to see done in the future. Last year, owing to the policy of encouragement pursued by the Government, there had been raised in the Province 100,000 bushels more of wheat than were grown the previous year. Last year the make of cheese totalled 825 tons, a very respectable amount indeed, considering that ten years ago there was practically no cheese made in the Province. The splendid Provincial Exhibition held at St. John in '08 showed that the country was making rapid progress. Ten years ago such a show would have been impossible. While most decided improvement had been made, N. B. is still far behind her sister Provinces to the west. The Government is willing and anxious to do everything in its power to foster the development of agriculture, but the farmers must do their part. The Government is resolved to carry out its present agricultural policy, and will as far as possible meet every reasonable request of the farmers, as expressed through their representatives in this Farmers' and Dairymen's Association.

Economic Maintenance of Soil Fertility.—This was the title under which Prof. Shutt, of the Dominion Experimental Farm staff, delivered a most able and practical address. In his opening remarks Mr. Shutt warmly complimented the members upon the success of the convention, which in previous years he had found to be one of the very best in the whole Dominion. He said: "In the first place, is farming a paying business? Answers to that question would differ widely. Is it a game of chance? Most decidedly not. To secure success, there must be found the right quality in four factors—the man, the soil, climatic conditions, markets."

The Soil.—How can we maintain and increase its store of available plant food? If we can expend five dollars on artificial fertilizers and get a crop in return worth ten dollars, we are economical in the best sense of the term. Our soils are composed of mineral and organic or vegetable constituents. These latter are highly essential, as is also water, since the food of plants is taken up in solution through the juices in circulation. Plants derive the greater part of their starch and sugar from the air, without cost to us, but it is our work to supply the essential constituents which are taken directly from the soil. Our work must be chiefly directed towards supplying nitrogen, phosphoric acid, and potash, not only in sufficient quantity, but in readily available form. Mr. Shutt dwelt on the fact that even with this condition right, successful crop-production was still largely dependent upon the mechanical condition of the soil, as well as its power to absorb and retain moisture. The great necessity for fine and deep cultivation to extend the area of root-feeding was clearly shown.

Clover as an Agent.—For the cheap maintenance of humus and its accompanying nitrogenous fertility clover stands pre-eminent. In our farm practice we should always remember that the clovers are nitrogen gatherers, while our cereal crops are nitrogen consumers. Nitrogen purchased through the medium of artificial fertilizers costs, on the average, three times as much as phosphoric acid or potash, viz., 15c. per lb. Prof. Shutt strongly advised the sowing of eight to ten pounds of clover per acre with all spring grain seeding, even if the land is to be plowed in the fall or next spring, as the clover would add much to the fertility of the soil.

Standards of Judging.—Dr. Twitchell handled this subject in an able manner. In his opinion, each of our breeds should be judged more upon the basis of conformity to a certain standard of performance or utility with a definite object in view, than upon the various class standards set up by partisan breeders. Mr. Robertson, of the Nappan Farm, contended otherwise, holding that the men who were handling a breed and developing it were best qualified to decide what was required in or from that breed. If people cannot find what they want in one breed, they will simply look for it elsewhere. Each breed, as we now have it, is the result of years of patient work on the part of men who were working towards an ideal type, from which was expected utility in the highest degree.

Experimental Work at Nappan Farm.—This was dealt with by Supt. Robertson, his sympathies being strongly with the dairy business; his address referred mainly to work along that line. To care for his cows cost six to eight cents per day. Profits ranged from +28 to -20 cents. The skim milk was credited 12½ cents, while the pigs which consumed it returned 18 cents per 100 lbs. Two objects had been sought—the marketing of the coarse fodders of the farm at a profit, and increasing the fertility of the farm. The cows are prisoners in the stables from fall until spring, the temperature being kept at about 65°. Mr. Robertson advised strongly against the use of a continuous system of troughs or connected buckets for watering in stable, owing to the liability of transmitting contagious disease. His cows drink from individual buckets, filled by hose from convenient hydrants.

Experiment with Steers.—Twenty head—four each of Herefords, Polled Angus, Durhams, N. S. grade Durhams and scrubs—were fed 105 days, commencing Dec. 1st. Varying rations, made up of turnips, corn silage, broad-leaf hay, bran, cottonseed meal, peas and oats and hay were used. Gains averaged 1½ pounds per day. Profits totalled \$297.90, or 1½ cents per lb. live weight, which came from the increased value of the original weight, not from profit on the making of flesh or fat. While the scrub steers made as good gains per pound of food fed as did the well-bred steers, they would not make anything like the same net profits; sold as they were, on their merits, they were worth about a cent, and a half less per pound live weight. Foods were valued—hay, four dollars, and meal (average) twenty-five dollars per ton.

Feeding Dairy Cows.—At Nappan they get but two feeds per day. They are feeding about eight hours and resting sixteen out of twenty-four. During June, the cows are out day and night; July and August they are in during the day and out at night. Peas, oats, vetches, corn and clover are all used for soiling crops in their season. Supt. Robertson believes that the high temperature at which his stables are kept in winter results in greatly increased production. (Is it not probable that such hothouse conditions might ultimately result in greatly weakened constitutions?)

Swine Raising.—Anentire afternoon and evening of the convention were devoted to this subject, which is at the present time attracting so much attention from the Maritime farmers. At present almost nothing is done in the business on what might be termed a commercial scale. The strongly endorsed expression of the convention was that the time had come when New Brunswick farmers must reach out for a larger market. This could only be done through the medium of one or more large packing-houses handling bacon and hams in sufficient quantity to cater to and hold a line of export trade. The small local houses in the Province do not appear to be doing this, although the quality of their products is high. Dairying is but well begun in the Province—825 tons being the total make of cheese last season. With its extension the farmers rightly believe they can proportionately increase their production of hogs. Your correspondent outlined the best methods of swine husbandry followed in Ontario, and tried to impress upon the farmers that if they hoped for profits in the business they had better depend less on coarse grains and mill-feeds brought down from the west. They were advised to try clover, which does remarkably well in many districts for supplementary summer feeding, and mangels and turnips as the staples for cheap winter feeding. The greater number of the hogs now marketed in the Province are unfit for an export bacon trade, being either too light or too heavy. On St. John market there is an active demand for hogs dressing 100 to 125 pounds. Premier Emerson and Commissioner LaBillois are resolved to do all in their power to encourage and develop the new industry, so that it is more than probable that within two years John Bull will be enjoying "choicest Canadian pea-fed bacon" made in New Brunswick.

The Cheese Trade.—Mr. G. J. Dillon explained the superiority of Island cheese by stating that it was due to great care on the part of the patrons

(who usually own the factories) in supplying first-class milk; to the better equipment of the factory buildings (many of them being supplied with insulated curing-rooms or sub-earth ducts), and to the fact that experienced men under Prof. Robertson had placed the work on a sound basis. To secure uniformity of size he advised the use of a 14½-inch hoop, turning out 30 or 70 pound cheese.

Professor Robertson, speaking on the lack of uniformity in the color of cheese, said it was due to the use of too much acid or curing the cheese at too high temperature; it should never go above 65 degrees. The average summer temperature of England was only 61½ degrees, hence the more constant uniformity in her cheese products. To be able to completely control temperature, he recommended the installation at the factories of the system of cold storage as planned by the Department of Agriculture.

Selection of Seed, Etc.—At a large public evening meeting, Prof. Robertson, in a lengthy and able address, outlined the work he proposed doing in connection with his "illustration station" scheme. That they are an assured thing was shown by the fact that a sum has been placed in the estimates this season sufficient to commence the work on a modest scale. Prof. Robertson explained that they were to be not so much local experiment stations as practical object lessons. At Guelph, splendid results had followed careful selection of seed; this is to be one of the features of the new stations. The "chicken fattening stations" experiments of last year had been so satisfactory that a number of new stations—several in the Maritime Provinces—would be located this season.

Agricultural Education was the sole topic discussed at the closing session Thursday night. Dr. Twitchell, in a resume of the whole question, made a good impression. Mr. W. W. Hubbard, Mr. Adams, of the Normal School, and President Harrison, of N. B. University, delivered short addresses, urging upon the farmers the great necessity of giving the boys a chance. The University Senate is working for the appointment of a professor of agricultural chemistry, who could give instruction to the future teachers of the country upon this subject, and so prepare them to pass it on to the boys and girls. Your correspondent was proud to hear that Ontario is looked upon as a model in all these matters.

Fredericton, N. B., March 30th.

Crossing Beef Breeds with the Buffalo.

Mr. Mossom Boyd, of Bobcaygeon, County of Victoria, Ont., is, we understand, conducting a series of interesting experiments in crossing Polled Angus cows with a pure buffalo bull, with the dual object of stamping these cattle with the robustness and vigor of the bison, also, and chiefly, of producing hides carrying heavy coats of hair from which a valuable class of sleigh robes may be made, which will combine size, strength and durability in a high degree. The produce of this course of breeding are said to be very large and thrifty and to have the fore parts of the buffalo strongly marked in their make-up. Experiments on a less extensive scale are being made in crossing the Hereford cows with the buffalo bull. The result of this innovation has not been sufficiently tested, we believe, to indicate with any considerable certainty whether it will be a successful venture or not, but another experiment in breeding which is being made at the same establishment, and which has proved eminently satisfactory, is that of crossing the two beef breeds, Herefords and Polled Angus, to produce good feeding cattle, the bulls of the latter being mated with cows of the former, with excellent results, a splendid class of polled Herefords being the outcome, and being uniformly thrifty, good feeders and early-maturing animals. If Mr. Boyd succeeds, as the probabilities indicate that he will, in establishing a superior breed of beef cattle without horns, he will have done much towards solving the problem of producing a class of cattle well suited for ranching purposes and the export trade. Of course, the crucial test of the experiment will come in the effort to continue the crossing judiciously so as to succeed in fixing a type that will reproduce with a reasonable degree of uniformity, and it is here that intelligent skill will be required. We shall watch with interest the results of this enterprise, and cordially wish Mr. Boyd success in his laudable undertaking.

Small, Thick-Fleshed Animals Now in Demand.

The partners in one of the leading firms of butchers in Llandudno, in Wales, have just published an interesting circular in which they give prominence to the announcement that the beast which is at present in most demand, and for which they are prepared to give the highest price, is the small, compactly-made animal, which carries a thick covering of flesh on the best parts, and yields nicely-marbled beef—that is, beef in which the lean and the fat are uniformly intermixed. The demand for over-fed cattle of all sizes has, they say, become a thing of the past; the big cattle will have to follow. The value of fat cattle will, they contend, be regulated in the future by their size and thickness. The best traders require the smallest cattle they can get, provided they possess the necessary thickness of nutritious, lean flesh, covered with a reasonable amount of fat. Cattle of this description, weighing in carcass 600 or 750 lbs., command the largest prices, while similar cattle, weighing 750 to 900 lbs., come second.—*Farmers' Gazette.*

English Notes.

INTERNATIONAL CONVENTION OF SHEEP BREEDERS.

The announcement made elsewhere in your columns of the proposal for an international conference of sheep breeders is one that is perhaps one of the most important notifications that have been made in respect to the sheep-breeding industry of the world. Personal interchange of opinion between the principal representatives of any breed in one country with those of another would be certainly advantageous to all parties concerned. The time has gone by when selfish motives or differences should be allowed to prevent a free interchange of opinion. Nowadays commerce knows no country, the market is the world at large, and the breeders of sheep, be they of Canada, the States, Argentina, Australasia, or England, have but one interest to promote, and that the prosperity of the breeders as a whole, for no matter what may be argued to the contrary, it is a fact beyond dispute that their interests are common to all, and the better or more successful any particular section of the composite whole is doing, the better, though it may be to less extent, is it for the remainder.

The idea is, of course, a novel one, and it marks in a pertinent manner the progress of ideas, as well as the great facilities of intercommunication between the different countries of the world. Novel, therefore, though the proposal is, there is no reason why its results should not be of great utility and value for all countries. Take, for instance, the want of uniformity of the export certificates issued by the English societies, and the consequent care that has to be taken to see that all the requirements of the laws governing the entry of the sheep into the Canadian or the American flock books, as but one point wherein there is great reason for increased simplicity, as well as greater uniformity. Surely if the matter were fully thought out by the societies on your side of the Herring Pond, there could be no great difficulty in making a mutual arrangement general to all societies that would be of value to all concerned.

That this is one of the principal hopes of the proposer of the conference we feel assured, for at the meeting of the National Sheep Breeders' Association, at which the aforementioned suggestion was adopted, there was agreed to, so far as concerns the English societies, an arrangement with the Flock Book Society of the Argentine breeders whereby full arrangements satisfactory to both parties were arrived at. The publication of the terms of this agreement are only awaiting its ratification by the Argentine Society.

This fact shows that there is every reason to presume that the ultimate result of a conference, such as is hoped will be gathered together at York in 1900, the last year of the nineteenth century, will be that once a sheep is recorded in its flock book in the country of its origin, there will exist not the slightest difficulty for its transference to the corresponding flock book in any country in the world.

Then, again, certainly no more appropriate time could have been chosen for an international conference, for not only will the representatives from your country be able to visit the Royal Show at York, where all the principal breeds of England will be represented by select specimens, but the opportunity will be afforded of becoming acquainted with the principal breeders of England and other countries, and also of taking a trip to Paris to see the great exhibition that we trust will be held in that capital next year. Quite a number of enquiries for sheep have recently been received from Canada and the States, many of which can be traced to the medium of the FARMER'S ADVOCATE, but most of them being for sheep to be shipped before the regular sale season in England, the values and prices quoted are for small lots, which makes the cost of them far greater than it need be.

The matter of purchasing sheep for breeding purposes is one that needs some explanation, and if the *modus operandi* were to be as follows: select your agent, inform him of your requirements, and entrust him to buy and select your desired number of animals to the best advantage, sending him a certain sum of money, beyond which he was not to give, this would enable your agent to visit, as they occur, the sales and fairs (not shows) whereat the specimens of the breed are generally disposed of, and to secure those you desire at public auctions, at prices far lower than it is ever possible to secure by private treaty. The essence of the whole matter is trust. You must trust your agent, and in order to secure yourself, your remittance could be made payable in London on presentation of the receipted bills, etc., for the sheep purchased. The agent would in these cases agree to do the work at either so much per head or on a certain commission, and, being entirely dependent upon the continuance of your patronage by the result of his selection on arrival at your home, would naturally take care to send only those animals which were first-class, and the best that could be bought at the price you gave him. In other words, the agent, untrammelled by any instructions from the purchaser, would have to act entirely upon his own responsibility, whereas, on the other hand, the general way that instructions to purchase come over is that certain points are to be given attention to, and certain of equal importance are unnoticed; and thus an agent is often compelled to leave cheaper and better sheep in the aggregate because certain specified points are absent. Trust all to your agent, and you may rest fully assured that, if he is a reliable man, you will be well pleased with the result that will follow the adoption of this advice. W. W. C.

Glanders.

[Extracts from the annual report of the Manitoba Provincial Veterinarian, S. J. Thompson, V. S.]

Among horses, glanders is the principal contagious disease with which I have to deal. Glanders is caused by a germ or bacillus called "batillus mallei," and is only spread by contagion, yet horses suffering from strangles, catarrh or other debilitating diseases are more liable to contagion than healthy horses. For this reason it is sometimes supposed to come from other diseases. In the horse, glanders is a disease that may lie dormant for months after infection and then develop very slowly into a sub-acute or chronic case of glanders, or it may develop into an acute case, causing the death of the animal in a few weeks. In chronic cases the animal may continue in good condition for months, and in exceptional cases for years. In the great majority of cases there is little or no cough. The animal may discharge from one or both nostrils, but oftener from one, and that the left. The temperature is but slightly affected. The discharge is generally of a dirty-brown color, adhering about the nostrils. Sometimes the discharge will sink in water, while in a short time afterwards the discharge from same horse will not sink. It is not a reliable test for the disease. A horse after discharging for a time may suddenly begin to bleed from the nose, after which the discharge will almost or entirely cease for a week or two, when it will gradually begin again and continue to get more profuse until it again bleeds. This may occur every two or three months for years, and is the most dangerous form of the disease, as almost all signs of the disease disappear for a short time after each bleeding spell, allowing the owner an opportunity of disposing of the animal to an unsuspecting party, thus giving fresh opportunities of spreading the disease. There is little or no smell from the discharge. There is almost invariably a lump between the jaws, from the size of a hickory nut to a hen's egg. These glands seldom, if ever, can be caused to break and discharge pus, and are mostly on the side from which the nostril is discharging. They are close to the jaw bone, but not attached to it. As the disease advances, ulcers may appear on the *septum nist*, or membrane separating the nostrils; these may first appear as whitish pimples or blisters, but they soon break away, leaving ragged, reddish ulcers, which continue to spread and deepen until they at times eat through the membrane; but in chronic cases they sometimes heal, leaving a scar. The horse often has a slight discharge from the eye, on the side of head most affected. This discharge does not run down, but appears like dirt collected in the corners of the eye. Again the disease may appear as farcey, or farcey may develop as the disease advances, when the disease breaks out in farcey buds (which mostly occur on the inside of the legs or along the belly, but may occur on any part of the body) which may be described as boils about the size of half a walnut. They break a short time after their appearance and discharge a bloody pus, after which they heal quickly.

There are symptoms somewhat similar to glanders, that are sometimes mistaken for it. In strangles, the discharge is of a lighter color than from glanders, and does not adhere around the nostrils to the same extent. The enlargements between the jaws are larger, situated higher up near the larynx, and usually break and discharge a light-colored pus.

An ulcerating tooth will sometimes cause the sub-maxillary gland to enlarge, and a discharge from one nostril, sometimes similar to glanders, and oftener mistaken for glanders than any other trouble. But, with the ulcerating tooth we invariably have a very disagreeable smell, quite different from glanders.

In all suspected cases of glanders, where the disease is not developed sufficiently to be positive as to the disease, I have the animal tested with mallein, which, when used with care, I find to be a positive diagnostic agent, and it has no harmful effects whatever on a healthy animal. Then follow instructions as to taking the test, destroying diseased animals and disinfecting the stables, etc.

For the past six years Dr. Thompson has inspected many hundreds of horses, and condemned the following: In 1893, 122; 1894, 94; 1895, 42; 1896, 80; 1897, 62; 1898, 120. As to the source of the disease the Doctor says: "I have no hesitation in saying this increase is entirely due to the great number of horses brought in from Montana and the N.-W. T." As the Chief Veterinary Inspector for the Dominion had stated through the press that there was no glanders in the Territories, considerable evidence is given to show that the disease does exist among the horses on the Western ranges, that the inspection is not thorough, and that horses brought into Manitoba from the ranges of the West are the chief source of infection, and that until a thorough system of inspection is established of all horses, either before they are allowed to be removed from the ranges or before they cross the Manitoba boundary line, it will simply be impossible to stamp out the disease.

CATTLE.

On the general health of the cattle of the Province, Provincial Veterinarian, Dr. S. J. Thompson, reports as follows: "I have to report a few cases of symptomatic anthrax, generally known as black leg. I have only been called to see a few cases of suspected tuberculosis, and from the reports of

tests made by veterinary surgeons in the different parts of the Province, the percentage of diseased animals is very small outside of the large dairy herds of Winnipeg and one or two herds in other parts of the Province.

A Big Abattoir to be Erected at Calgary.

The Calgary Herald of March 14th says: For some time past it has been rumored that Messrs. P. Burns & Company intended erecting a large cold storage and slaughter house at Calgary during the coming season. We are pleased to learn from Mr. Burns, who has just returned from Toronto and Montreal, that the report is a correct one. The building now occupied by this company is much too small to accommodate the business, and it is Mr. Burns' intention to erect buildings capable of holding a large stock of all kinds of dressed meats, which will be shipped in refrigerator cars to the cold storages now being erected at different points in the Kootenay and British Columbia.

When it is considered that this firm supplies the entire Kootenay country and also ships to coast cities it will be easily understood that the proposed plant will be quite extensive. The buildings will be of the latest and most approved plan. Both the cold storage and slaughter house will be equipped with up-to-date appliances. The pay roll will be quite considerable, which will benefit Calgary, and the buildings will be a benefit to our city. The industry will be one of the most important in the west. Work will be commenced as soon as the weather permits. Mr. Burns, while east, visited the larger packing houses and examined the different methods of operating them.

Experiments with Cross-breeds.

In the spring of 1895 the Marquis of Londonderry commenced an experiment in the breeding and rearing of cattle, with the view of ascertaining the most profitable class of cross-breeds. For this experiment four heifers of the Aberdeen-Angus, West Highland, and Galloway breeds were specially selected and mated with a first-class Shorthorn bull. The calves dropped by these heifers have all been treated exactly alike from birth. They suckled their dams till six months old and have been well fed ever since, so that they never lost their calf flesh, but they have never been forced in any way with concentrated feeding stuffs. The first and second years' calves of these crosses will be exposed to public competition at the Seaham Harbor sale, which is fixed to take place on 6th October. Respecting these cross-bred cattle Lord Londonderry's agent, Mr. Brydon, says:

"The two-and-a-half-year-old experimental cattle were weighed on Thursday, the 22nd inst. The Galloway crosses, which are all heifers, averaged 87 stones 4 pounds each. They were calved in April, 1896, so that by the time of the sale they will be two and a half years old. The Polled Angus crosses, which are all steers, averaged 99 stones 12 pounds each, or within 2 pounds of 100 stones. They were calved at the same time as the Galloway crosses. The Highland crosses are, on an average, one month younger than the others, and the three bullocks averaged 95 stones each, while the heifer scaled 82 stones."

The most notable feature in these results is the relative large weights of the West Highland crosses. It has been always said that the West Highlander is "a slow feeder," and that the West Highland cross shows the same characteristic, though in a lesser degree. But here it has been shown that the Shorthorn-Highland cross, when fed under the same conditions, shows a daily gain in live weight all but equal to that got from the Polled Angus cross, which has always had a high reputation for being "a quick feeder." In the same way the Galloway has been often accused of being "a slow feeder," though in a less degree than the West Highlander; but here, too, the Galloway cross has shown as large a daily gain of live weight as the polled Angus cross, when it is remembered that two-and-a-half-year-old steers will usually weigh from 12 stone to 13 stone more than heifers of the same age, other things being equal.—Farmers' Gazette.

Advantages of Wide Wagon Tires.

A few years ago a number of people in this district got their old narrow-tired wagons cut down and three-inch tires put on, making a very nice farm wagon, but now there is getting to be a lot of 2½-inch tires, and these make a track that the three-inch tire just wedges into, and in the spring and fall when the roads are freezing and thawing it makes the three-inch wagons go very badly. I wish you would point out the selfishness of getting the 2½-inch tires. I believe it is to a great extent nothing but selfishness and blind indifference, and in some cases mulish ignorance. I have proved by my own experience conclusively to my own satisfaction that a three-inch tire runs easier than a two-inch on our roads most of the time and very much better on the farm. We drew some stone to town last summer in June. My man who did the teaming was in favor of the narrow two-inch tire wagon, but we used the three-inch for a week and then he took a load on the two-inch wagon. We loaded about 4,000 to 5,000 lbs., and he said he could draw 5,000 lbs. on the three-inch tires as easily as 4,000 lbs. on the two-inch tire. I am in favor of four-inch tires on our gravel roads, and if we cannot get the wide tires any other way we will have to try to educate the people to it. Waterloo Co., Ont. OSCAR TRUSSLER.

FARM.

Improvements in Farm Machinery.

Reference is frequently made to the vast improvements that have been effected in agricultural implements and farm appliances during recent years. In this connection we recently requested manufacturers to name what in their judgment constituted the one most important feature or device from the point of serviceability to the farmer which they had incorporated in any farm machine which they were turning out. Among the replies received up to the time of going to press are the following:

STEEL FOR WOOD.

THE FROST & WOOD CO. (per H. Horseman, Manager Toronto Branch):—"In our opinion, among the many changes and improvements made in farming machines during the past few years, the almost complete substitution of steel for wood is the most practical benefit to the purchaser, as machines can be made not only less cumbersome, but lighter and stonger, and will last much longer."

THE WIND STACKER.

JOHN ABELL ENGINE AND MACHINE WORKS, Toronto:—"The Wind Stacker is probably the most important new feature in connection with threshing machines. The Band-cutter and Self-feeder which we are supplying is also very serviceable."

ROLLER AND BALL BEARINGS AND THE OPEN-END BINDER.

MASSEY-HARRIS CO., Toronto:—"While it is quite true that vast strides have been made in the way of improvement and development of agricultural implements of all kinds during the past year or two, it may be said that these improvements are largely in the way of perfecting principles already pretty well understood, rather than bringing out of startling and radical changes. In our own line large sums of money have been spent and a large number of patents taken out on various features of our machines and implements to make them more perfect. Perhaps the most marked advance has been the application of what is known as the Massey-Harris Perfected Roller and Ball Bearings to our various machines. These were not put in until they were thoroughly tested and proven practical and efficient in every sense of the word, and have met with appreciation and admiration at home and abroad. In this age of keen competition, with a business extending the world over, our abilities are taxed to their utmost to keep them to the front in the various lines in which we do business. Probably the average individual has but little conception of the time and money that we spend in thinking out and developing even the most minor detail of every implement and machine we manufacture. It is the careful attention to the "little things" which in these days makes for success, rather than radical changes in the mechanical principles of the machine. The mechanical principles of the machines we manufacture, and which we control and have protected by patents, are for the most part the principles we have advocated for some years and proven to be the best in every sense. The perfection of the Open-End Binder was accomplished by ourselves in the face of much opposition."

DEERING BALL AND ROLLER BEARINGS.

DEERING HARVESTER CO. (per H. H. Hannon, Gen. Agent, London, Ont.):—"We have made so many improvements in the past few years that it would take up considerable space to enumerate them, but the one leading feature which has revolutionized farm machinery has been the application of Deering Ball and Roller Bearings to binders and mowers."

ROLLER AND BALL BEARINGS ON WINDMILLS AND GRAIN GRINDERS—NEW GOVERNING POWER AND PUMPING MILLS—ANGLE STEEL FRAMES.

GOOLD, SHAPLEY & MUIR CO., Limited, Brantford, Ont.:—"We select three of the greatest improvements:—"First"—Roller and ball bearings on windmills and grain grinders. We were the first in Canada and elsewhere to use them, and hold a Canadian patent on them. The first design was not fully satisfactory, but the improved roller bearings now in use for three years are an absolute success and are used on 95% of our output. One strong point of our roller bearing patent is the use of a steel outer case in which the rollers run. Windmills fitted with proper roller bearings give greater power and are more durable."

"Second"—The new principle of governing both power and pumping windmills by which they are held into the wind by a governing device which allows relief to the wheel when struck by a heavy blast of wind, gives more equable speed, and also relieves the user from all anxiety about the safety of the mill. If the wire or other attachments break, the large spring on the mill pulls it out of the wind and applies a powerful brake, and stops it very quickly. All other windmills work on the opposite principle of letting the wheel loose into the wind and pulling it out to stop it. If the attachments give way the wheel will run wild until the wind slackens sufficiently to allow of its being stopped and the break repaired."

"Third"—The use of an angle steel frame for our 'Steel King' pumper, making it lighter and much stronger; also, the use of a malleable sprocket drive chain instead of cast iron gears. The mill runs twenty per cent. lighter and as noiseless as a bicycle, and is very durable."

THE NEW PATENT PEA BUNCHER.

TOLTON BROS., Guelph, Ont.:—"We think possibly the pea buncher is about the most important feature we have added of late. This device can be readily attached to any kind of harvester now in use and marks a revolution in the history of pea harvesting. It combines simplicity, lightness, durability, cheapness, strength, economy, and efficiency."

STEEL HEADS ON GANG PLOWS AND IN LAND ROLLERS—PNEUMATIC ENSILAGE CUTTERS.

THE WILKINSON PLOW CO. (Limited), Toronto:—"We have made three important improvements in farm implements in the past two years. Steel Heads on Gang Plows instead of cast ones—this obviates any fear of breakage—the most annoying thing that can happen to a farmer. Steel Heads in Land Rollers—these obviate the bolts and nuts of the spokes continually working loose, stones getting inside of roller, rattling and frightening horses, and the wet getting in and spoiling the steel. Our Pneumatic Ensilage Cutters are, of course, the greatest advance of all, and in this we are far ahead of our American cousins, as also in the Steel Head Roller."

"We do not think any other firm in Canada can show three such radical changes and improvements in so short a time. It might be well to add, that even with all these improvements, we have reduced the price to farmers instead of charging extra for the increased advantages, although they were of course a source of great expense to ourselves."

GAS AND GASOLINE ENGINES.

THE GOLDIE & McCULLOCH CO. (Limited), Galt, Ont.:—"Heretofore we have done nothing with farm machinery, but recently we have been manufacturing the 'Model' Gas and Gasoline Engine, which seems to be particularly adapted for farm use. We also make the 'Tiger' Grain Chopper, and enclose you circular of both of these machines herewith."

NEW MODEL SEED DRILL, ETC.

JOHN S. PEARCE & CO., London, Ont.:—"Among the many useful implements invented and placed on the market for the use of farmers, market gardeners, and others, we think there is none that has proved more generally useful than the 'New Model' seed drill which we have been manufacturing here in this city for some years. This has given every satisfaction.

We have sent them all over the Dominion, and have yet to hear of a single customer who is not more than well pleased with these.

"Other articles of very great use and service to farmers and market gardeners is the 'New Universal' double-wheel hoe, plow, drill, etc. These combined are the most unique and complete tool we have ever seen. We have been handling these for two years, and the company now contemplate manufacturing these here in this country for the Canadian trade."

FLEXIBLE AXLE SUPPORT.

THE MILNER-WALKER WAGON WORKS CO., Walkerville, Ont.:—"The greatest improvement we know of in the construction of farm or team wagons is the flexible axle support, which, like all others of the most important vehicles, trucks, lorries, railroad cars, etc., are supplied with a cushion bumper in such a manner that the suddenness of the blow is entirely relieved, enabling us to give a guarantee against breaking during the full life of the wagon. This is our Mr. Milner's invention and patent, and is used only upon our 'The Milner Wagon' as manufactured by us."

Growing Peas.

BY T. G. RAYNOR.

The prevalence of the pea weevil in many of the pea-growing districts of Ontario has caused many farmers to practically give up pea-growing. This is unfortunate, as everyone realizes the value of a good pea crop. Not only does the grain make very strong feed, but the straw, if cut early enough and handled properly, is splendid fodder. Living as I do in a pea-growing district, where thousands of bushels are grown for the export seed trade yearly, and where many are grown for canning purposes, besides what are produced for local wants, we would feel very keenly indeed the lack of this crop. Where fall wheat is grown largely, clean pea ground in many respects takes the place of a bare fallow as a seed-bed for wheat by merely working the surface soil well with disk harrow and cultivator after the crop is removed. The principal reasons for this are that peas are nitrogen-gatherers, and thus leave a rich seed-bed, as well as a good firm under-bottom for wheat-growing.

To insure a paying crop of peas, good seed is indispensable. The question at once arises, how am I to get good seed where the pea weevil puts in his nefarious work. Reference to Mr. C. A. Zavitz's valuable article on "Seed Selection" in the last Farmer's Institute report clearly shows the difference between good and poor seed, both by ocular demonstration and word description. The results of several experiments were given. I saw some of those experiments in question, and there was a marked difference in weevily seed as compared with sound seed, of small seed compared with plump seed, and of split seed compared with whole seed, every time in favor of the good, plump, sound seed. Mr. Zavitz says that in four carefully-conducted tests with weevily peas that only 50% of weevily Marrowfats grew, while only 87% of the Golden Vine germinated. The Kansas Experimental Station reports similar results—that out of 500 weevily peas, representing ten varieties, only 25% grew, when 95% of the sound seed germinated. In the case of split peas as compared with sound peas, Mr. Zavitz reports that the yield per acre was 29.3 bushels for sound, while only 9.8 bushels per acre was obtained from split pea seed.

Treatment of the Seed.—These experiments are pretty conclusive evidence on this point, but cannot this trouble be remedied, and if so, in what way? I may say that the carbon bisulphide plan is the one adopted by the large seed firms represented in Prince Edward County. As a result of this treatment, while our farmers were growing almost wholly the company peas, the pea weevils were becoming practically exterminated. Owing to tariff changes in the U. S., the price of peas was reduced 40%, and resulted in the sowing of less company peas by the farmers. They commenced to sow their own untreated seed, and as a consequence I am sorry to say that the pea weevil is becoming as prevalent as ever, excepting perhaps along the lake shore, where they never are so bad as a few miles back from the lake. This leads me to the conclusion that, as pea-growers, all peas should be treated to kill the bugs as soon after harvest as possible. It is of little use where a few in a neighborhood would treat their peas and the rest neglect it. We must co-operate in this matter if we are to hold this branch of grain-growing and make it profitable. Every farmer, at little expense, could provide himself with an air-tight box to treat a few bushels of peas in at a time. It is estimated that one ounce of the carbon bisulphide will treat 100 pounds of grain, or 1½ pounds of the liquid is sufficient to treat one ton of the peas in 48 hours, in which it is required to kill the bug. To my mind, a more feasible plan would be for a number of farmers to co-operate and put up a "bug house" at some central point (say an elevator or gristing mill) having a 500- or 1,000-bushel capacity. The peas could then be stored in bags in this house and treated on a large scale. A bug house with a 1,000-bushel capacity would cost about \$100, and a half gallon of the carbon bisulphide, poured in a shallow pan, placed on top of the pile of bags inside, and allowed to evaporate, will kill all the bugs in the 1,000 bushels of peas in 48 hours if the building is properly constructed. It will be properly constructed if it be practically air-tight. Great care must be taken that no fire of any kind shall come in contact with the fluid or vapor, as it is very inflammable. It is a heavy, suffocating gas which sinks in its downward movement to penetrate the skin of the pea, and kills the bug in any stage of its development. Many of the light, inferior, bug-eaten peas may be separated from sound peas by pouring the peas in a solution of brine, when the sound peas will sink and the unsound ones will

float, and may be skimmed off. In treating with the carbon bisulphide, the bad odor in coming from the bug house will disappear in a short time on exposure to the air, and will be harmless when fed to stock.

Kind of Soil.—The kind of soil best adapted for pea-growing we find is gravelly clay, where the gravel is limestone. However, peas do well on most soils if properly drained, but good drainage is essential to a paying crop of peas. The heavy and humus soils tend to produce too much straw, at the expense of the pea. This, to some extent, may be overcome by sowing the shorter-growing varieties on the stronger classes of soils.

Condition of the Soil.—I like the soil in a nice friable condition to get a suitable seed-bed. If the land be well worked, it need not be especially rich in nitrogen, but more or less humus in the soil is necessary to provide against lack of moisture by holding not only the water which comes from the clouds, but the soil water which too often escapes into the air by soil evaporation rather than plant evaporation. This soil condition is more required in pea-growing than in some of the other grain crops. At the blossoming time peas require plenty of moisture. The blossoms soon dry up if it should prove dry at that time. Again, they need moisture at the filling time, hence the necessity of such soil conditions as will prevent hard baking of the soil and will admit of a fine tilth on the surface, to act as a mulch.

Preparation of the Soil.—As a rule, I like fall-plowed land for a pea crop. If well ridged, Nature's pulverizer, frost, will put it in good form for a fairly deep seed-bed. Peas require to be sown more deeply than other grain. The seed-bed should be about four inches in depth to admit of sowing them from two and a half to four inches deep in the soil. Peas have been known to germinate a foot deep, even to the amount of 50 per cent. Four inches deep gave the best result in a test made at the Michigan Experimental Station.

A timothy sod plowed in the fall and well worked up in the spring makes a good preparation. Sometimes clover may kill in the spring of the year to such an extent that it is deemed advisable to plow it up. We often find late peas do exceptionally well on such a chance when sown broadcast and plowed under four or five inches with a gang or single plow. The land should be dry enough not to bake, and then pulverize with the harrow very fine, when the whole should be immediately rolled. On an over-dry, lumpy surface in the spring, a good heavy roller previous to seeding will do much to prepare the soil well for peas. The furrows should be plowed quite full in order to get a level surface over which to run the pea harvester.

Time to Sow.—The time to sow peas depends upon the variety a good deal. As soon as germination starts is none too early, in a warm soil, to seed with the early varieties, while often Golden Vines are sown quite late (June 1st) with splendid results. In our experience, taking one year with another, the last of April seeding gives the best results. I noticed in the report of the Experimentalist at the College that their experience is similar—seeding about the 22nd of April gave the best results. One of the great dangers in too late seeding is that just about the blooming time, or a little later, when the peas commence to fill, we often get rain and a damp, foggy time, lasting off and on for four or five days, which almost invariably means mildewed peas and only half a crop.

Method of Sowing.—In our experience, we get the best results by waiting until the ground is in a suitable condition to drill the peas in. They are better covered and germinate more uniformly. When we can, we sow north and south, to give the sun a better chance at them when starting to grow. We also find it a good practice, especially if the land becomes hard about the time the peas are pricking through, to go over the crop with a light, sharp iron harrow, or, better, a weeder, which breaks the crust, lets the peas through, and greatly stimulates their early growth. We like to roll our pea ground directly after seeding it.

Quantity of Seed per Acre.—The quantity of seed we use per acre of course depends upon the size of the pea. The larger the pea the more seed used, and vice versa. We sow as low as 1½ bushels of Golden Vines or small peas up to 3 bushels per acre of the larger varieties. Of course, if the seed be poor or the land not quite so good as we should desire, we sow enough more to make up for these drawbacks.

Varieties.—With regard to the varieties, I may say that there are very many used in the seed trade. For the general pea-grower there are a few varieties which will meet all his requirements. For years the Golden Vine, the Prussian Blue and the Runner pea have given our farmers great satisfaction. The Runner pea, a medium-sized sort, has been less affected by the pea bug than have other varieties, but it is not free from its ravages. There are other varieties which have been tested at the Guelph Experimental Station and which have been selected by Mr. Zavitz for co-operative experiments in the Province by the Experimental Union. These are the Early Britain, White Wonder, Mummy, and Chancellor. A reference to Mr. Zavitz's report in the College Report this year will show what he says about the 52 varieties he has had under experiment, some of them for quite a number of years. In that report he mentions the Oddfellow and Mummy as being comparatively free from the attacks of the pea weevil.

Harvesting.—Most of our harvesting of peas is now done with a pea-harvester with a table or buncher attachment, and has greatly modified the labor difficulty we formerly experienced in harvesting. By cutting the peas while the straw is a little green, the straw makes splendid fodder if it does not get too much rain in curing. With the aid of the harvester it is not much more difficult to take off a crop of peas than any other crop.

Threshing.—Most of the threshing is done with the separator. Splitting the peas is prevented by having larger spur wheels put on the cylinder, which runs it more slowly, and concaves with only a few teeth in them. Much of the threshing of late peas is done in the field, which saves a lot of labor and barn room for storing other grain. Three wagons where the distance to haul is short, or four where it is long, will keep a machine running quite nicely. The straw is stacked or burned as the case may be. I do not approve of the latter way in disposing of it.

Prince Edward Co., Ont.

The Pea Crop.

PREPARING THE SEED—THE SOIL—SEEDING—VARIETIES.

Before seeding time approaches the bug in the seed must be destroyed. A treatment of carbon bisulphide will do the work satisfactorily. Place the bags of peas in a small, perfectly tight room. On the peas set a shallow dish, into which you pour some carbon bisulphide, in proportion to the space—about one pint to 250 cubic feet will answer the purpose—and make your exit as quickly as possible, leaving the room closed for about two days.

The season has much to do with making the crop a good one. With regard to the soil, I would say that sandy land and light loam grows too much straw and invites the growth of too many weeds, consequently the result is a small yield and of poor quality—not what you desire. I prefer clay, loam, a mixture, or a slightly gravelly soil. Of course, much depends on the variety you wish to raise. Some of the finer sorts require much nourishing and would do much better on the aforesaid sandy land or light loam in a high state of cultivation, because on other lands there might not be sufficient straw to harvest them properly, thereby rendering a loss; but I am writing of a crop grown for feed, etc.

Peas generally grow well after almost any crop, should the season be at all favorable during the blooming and filling period. The short-strawed varieties require highly cultivated soil, free from weeds, but the ordinary sorts will pay on the average land; and, in fact, it is a cheap means of increasing the fertility of the soil, leaving it in good shape for the following crop.

The preparation for sowing depends upon the condition and kind of soil. Fall-plowed land should be cultivated deeply and made not too fine with the harrow. Land not fall-plowed, after being plowed prepare in usual way with cultivator and harrow, or should you wish, cover seed when plowing shallowly, which is a splendid plan.

Early sowing for some early varieties is best, but generally the best time to sow is when the land can be put in the best shape—not too early or not too late. Medium late seeding usually produces seed freer from bugs.

Now, as to sowing. I would use the drill and drill in deeply in a good seed-bed, or you can sow by hand and gang-plow under, but I would endorse the use of the drill. Avoid, if possible, harrowing any seed out upon surface and finish in all cases with the harrow. Be sure the seed is well covered. A suggestion: Just try one or two sacks of Alberts' Thomas-Phosphate fertilizer per acre and note the results.

We find it much better to use plenty of seed, and far better returns will be given by so doing. From two and a half bushels to three and a half bushels per acre will generally be sufficient, but particularly in the face of a dry season more seed should be used.

Good early varieties are Alaska, White Kent, and American Wonder, for marketing and seed. Those which we think good for a general crop are the Golden Vine and Runners. There are many others which give abundant yields, but we consider that the above mentioned will give very satisfactory results.

Hastings Co., Ont.

Killing Thistles in a Corn Crop.

To the Editor FARMER'S ADVOCATE:

SIR,—In a recent issue of FARMER'S ADVOCATE, J. A. G., of Norfolk County, wants to know if he can kill Canada thistles with corn. I will tell you how we killed them in a six-acre field that was so bad that it had grown no crop but thistles for five years, and they three feet high. We plowed it in the fall and again about the 10th of May, and planted it to corn on the 18th of May. When corn was about six inches high, we started to cultivate with a Planet Junior one-horse cultivator, with three thistle knives on it, which cut full width of row, corn four feet apart. When corn was about twelve inches high we hand-hoed the hills, and were careful to pull all the thistles out of the hills by hand. We kept cultivator going until middle of July. We had the greatest crop of corn we ever had. The thistles totally disappeared, and that field will grow wheat or anything now.

Bothwell Co., Ont.

J. M. LANGSTOFF.

Cement Concrete Walls.

MIXING THE CONCRETE—LAYING THE FOUNDATION—BUILDING THE WALL.

In making concrete, lay down some straight-edge boards on the ground, and drive stakes on each side to keep them from spreading. This platform should be 2 ft. square, with no sides to it. Now make a box without any bottom—just 2 ft. square, inside measure, and 8 inches deep which will hold just two paper sacks of cement. Fill this with gravel as often as you wish your concrete gauged for walls; it is usually 5 of gravel to 1 of cement. After the gravel is measured, spread the cement on top and shovel over twice dry. By letting every shovelful drop in the same spot the pile will form a cone shape, and the concrete will mix by rolling down the sides of the pile. After the concrete is mixed dry, level it off about shovel deep and make a hole in center, and pour in about two pails of water, and work the concrete to center, and to finish wetting it, if a rose sprinkler is used it will distribute the water more evenly. Shovel this over twice, the same as it was done when mixed dry, and it is ready for use. The concrete should not be wetter than to resemble moist earth. By taking it up in the hand it will pack, but not leave any moisture on the hand.

In building walls for barns, the trench should be below frost and 20 inches wide. Fill in with concrete two or three inches deep, and then put in all the stone that can be got in one layer deep, and ram concrete around them till trench is filled. The footing should extend four inches on each side of wall. After the footing is in, nail two planks together edgewise and stand them on end for outside corner, and another on inside, and wire them together at bottom to keep them from spreading; also, tack a strip at top for same purpose. Brace them from top to stake in ground to keep them plumb. Tack a beveled strip in corner of outside plank, so that when wall is completed it will leave a beveled corner on building. Stretch a line from corner to corner, one at top, the other at bottom, from these outside plank in line with wall. Then stand upright, every six or seven feet, and opposite each other, and if wall is to be one foot thick they should be 18 inches apart, and three inches from the lines to allow room for plank and wedges. Wire these uprights at bottom, and brace them at top the same as corner plank. These wires are built in wall, and may be cut off after building is completed. Now place in plank, stand them on edge, and put inch wedges between plank and upright, one at top, the other at bottom. The top wedge should have a nail tacked in it, so as to allow the wedge to hang on plank to keep it from dropping down. Take small sticks and saw them a foot long, and place them between plank to keep the wedges tight to uprights; these spread-sticks can be taken out as wall is being built. Now fill in with concrete about 4 inches thick; place in stone in center of wall, and about two inches from plank and from each other; ram these down well and fill in with concrete well rammed; repeat till plank is filled. In raising plank, loosen the wedges, raise the plank up and let them lap about 1 1/2 or 2 inches on wall already built; put in wedges and spread sticks as before, and fill again with concrete. These plank can be raised three times a day in warm weather. Never put in over four inches of concrete at a time before ramming.

NORVAL B. HAGAR, Travelling Instructor for John Battle Estate Cement Works. Welland Co., Ont.

A Criticism of Some of the Work of the Experimental Farms.

To the Editor FARMER'S ADVOCATE:

SIR,—I have received the last bulletin (No. 32) of the Experimental Farms reports. I was disappointed with the results obtained. In oats at the Central Farm, of the first twelve recommended only one was in the list last year. This year, of twelve from the Central, one is in the Nappan Farm recommendation, not one in the Brandon, one in the Indian Head, and one in the Agassiz Farm. Forty-one sorts are included in the sixty mentioned by the five farms, and to make confusion worse, the last on the Central Farm list (Danish Island) is the first at the British Columbia Farm. A few years ago everyone was wanting Banner oats. Where is Banner now? Last year it was not on the list; this year only three of the five farms have it listed on Nos. 8, 9, 10. Two-rowed barley—fifteen are on the list, and with two more last year only leaves one out. Six-rowed barley—eighteen on the list, with two more last year only two are left out. Spring wheat—twenty-nine are recommended, with eight more last year leaves only four not recommended. All the rest are nearly the same except white carrots, where the Intermediate White, under different names, is uniformly the best. Amidst all this confusion, what conclusion can the farmer draw to get the best sorts? He might as well chase a "will-o'-the-wisp." He should write Failure across it, and sow what is doing best in his own neighborhood.

One experiment the farms could make that would be of more benefit to farmers would be to find out whether a change of seed is beneficial or not. On page 44, Experimental Farm reports for

1898, we find experiments with fertilizers. This is either a very valuable report or very misleading. It is very discouraging anyway. Of wheat, for fifteen tons of manure, ten bushels. Of barley, the best twenty bushels, oats nineteen and three-quarters, above the unmanured plots. Mangolds, for twenty tons of manure, fourteen tons; and swede turnips, nearly seven tons; carrots, eleven tons, for fifteen tons of manure—the best in the roots. For 200 pounds of nitrate of soda, wheat gave five bushels, barley nine, and oats nineteen extra. Mangolds, for 300 pounds, six and a quarter tons; swede turnips, two tons; and for 200 pounds carrots, three tons extra above unmanured plots. This is a bad showing. On the average there is only from fifty to seventy-five (excepting barley in the manured plot) per cent. of the cost of the manure or fertilizer used, except salt. All the others are no better than these I have quoted.

Is the land at the C. E. F. third-class, or is the climate to blame? The returns from the Rothamstead Farm (England) gave for fourteen tons of manure (average of twenty-eight years), twenty and a half bushels of wheat and twenty-six bushels of barley (2,240 pounds to the ton, and sixty-three lbs. wheat and fifty-six pounds of barley to the bushel), which is better than the Central Experimental Farm. This is discouraging the use of fertilizers, and a blow at intensive farming. A system of experiments should be commenced that would be a better test and of more value to the general farmer than the C. E. F. tests. Let the Government select six fields—two in Western Ontario, one central, one eastern, and two in Quebec—about eight or ten acres each, fairly uniform land, that has grown a crop of grain, and not rich, the owner of which intends sowing with grain again. Give him half a ton of nitrate of soda, to be sown on half the field, nothing on the other half, a strip of a foot or two being left, so that the binder can cut it separate. It should be carefully kept separate in the threshing, so that the returns could be sworn to—fertilized and unfertilized. The farmer should be one anxious to make the test a success, and some of the neighbors should look over it at harvest and threshing, so that they could certify it had been fairly carried out. I do not look upon the C. E. F. tests as in the interest of the farmer, but more of a scientific test. For the benefit of the farmer, tests should be made on a hungry field that has not been sown with the same crop or manured with the same fertilizer for several years, something after that style, and we should soon see if \$1.50 could be realized from every dollar expended. One year's test would show the probabilities of it, and three years would prove it either a success or a failure. I have no faith in Prof. Robertson's Illustrated Farms unless he gives items of expenditure, amount realized, and finishes with balance to profit.

BRITISH COLUMBIAN.

Form of Silo.

To the Editor FARMER'S ADVOCATE:

SIR,—Your paper should be of practical benefit to farmers throughout Canada as imparting to them in a clear manner the means by which greater results can be obtained from the soil by a little book knowledge. I am interested in No. 472 of your paper on silos. Every farmer who keeps stock, horses, cattle (beef or milk) should have one on his place. For a cheap, concise, no-waste feed, ensilage has no equal. The silo (now in the third year) at Valley Farm is 16x21x25, rounded corners, lower six feet concreted, balance matched wood. This style can be improved upon, and it is with the object of giving your readers my experience this letter is written. The silo having its sides perpendicular allows the ensilage to fall away from the sides, thereby permitting the air to get in. This causes the ensilage to rot, and accordingly there is waste.

I would suggest a silo should be built with the bottom at least 1 foot in 10 feet smaller every way than the top; i. e., silo 15 feet deep should be 14 feet smaller at bottom than at top. This would force the ensilage to jam tight against the sides as it gradually sinks, thereby keeping the whole mass tight and solid. Yours truly—

Wentworth Co., Ont.

WM. HENDRIE, JR.

[NOTE.—It is the general practice in building concrete silos to leave the bottom a few inches wider than the top. This allows the silage to swell while settling without bursting the walls. This sort of silo gives satisfaction.—Ed.]

Concrete vs. Stone Silo.

To the Editor FARMER'S ADVOCATE:

SIR,—In your issue of April 1st, I noticed an enquiry from Mr. H. G. Thomson about how to build a silo. My experience is that it would be impossible to build a silo 30 feet high and 15 feet in diameter, out of stone, and the walls only one foot thick. I have had an experience of 23 years in stone and mason work, and never saw or built a wall 30 feet high and only one foot thick, out of stone. For the last three years I have devoted my time entirely to concrete work for all kinds of farm buildings, and I have never yet met a farmer who had used concrete for a silo but who acknowledged that it gave the best satisfaction, and was much preferable to stone or brick. In your issue of February 15th there appears a letter from me on concrete silos. Of course silos can be built in any shape—round, octagonal or square—to suit one's fancy.

Welland Co., Ont.

NORVAL B. HAGAR.

Forerunners of Modern Farm Implements and Machinery.

In tracing the progress of farm implements and machinery towards their present state of perfection, we find that in all ages and countries improvements have taken place as agriculture has advanced. Up to the middle of the present century, and even later than that period, we find that in Spain, Portugal, Russia, and Palestine and other eastern countries little, if any, improvement had been made for perhaps two thousand years. Thus we find even a few decades ago that the Israelites, instead of employing in their warm climate a threshing machine, or even a flail, to thresh out their grain, were accustomed to turn their oxen onto the farm floor to slowly tread out the seed. Their modes of cultivation were quite as rudimentary, as we find the first improvement upon treading land with hogs was scratching it with something similar to these animals' feet, and this was the road to the Egyptian sarcle or plow. (Fig. I.) In the alluvial soil of Greece, where an instrument more favorable to the covering of seed was necessary, the hand rake had its origin, and from the Egyptian sarcle we trace our plow.



FIG. I.—EGYPTIAN PLOW.

It was not till about 1845 that anything like a rapidly improving condition of farming implements commenced in England, where we find there was a keen interest taken in draining, subsoiling, different methods of cultivating, sowing, harvesting, and threshing. In the *Farmers' Magazine* of the early forties we find considerable controversy as to the comparative advantages of sowing wheat broadcast or dibbling it in by hand, as potatoes are now usually planted. One of the greatest objections to the dibbling of wheat was considered to be the difficulty of getting the seed dropped into the holes with regularity, children being generally employed, and independent of time being required to teach them, the carelessness attendant upon youth was claimed to stand in the way. To overcome this difficulty by those who chose this method of sowing, because of the saving of seed and making it possible to hand hoe the crop, a hand dibble was invented which dropped the grain

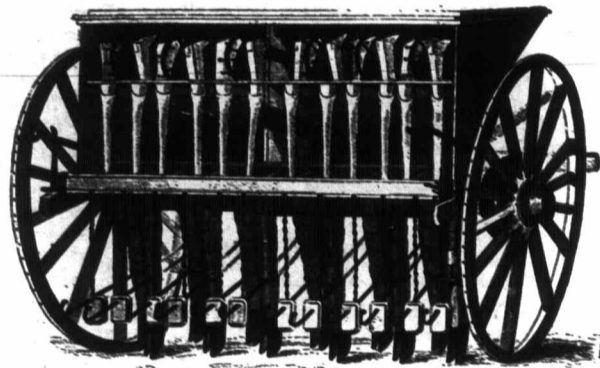


FIG. II.—GENERAL PURPOSE DRILL, 1841.

with certainty and regularity—two, three or four grains, as required. It closely resembled the hand corn planter, but was double, taking two rows at a time. There were grain drills in those days, and we find that tests between dibbling and drilling wheat proved that four pecks per acre, dibbled, yielded as much as ten pecks drilled. The drills used were to some extent in principle similar to our own of the present day. In 1841 we find that a prize of twenty-five pounds was awarded to Mr. Hornsby, at the Royal Agricultural Society Show of England, for the general purpose drill herewith illustrated. (Fig. II.) It was used to sow manure and corn at one operation. While much of the broadcasted grain was sown by hand, broadcast seeders on

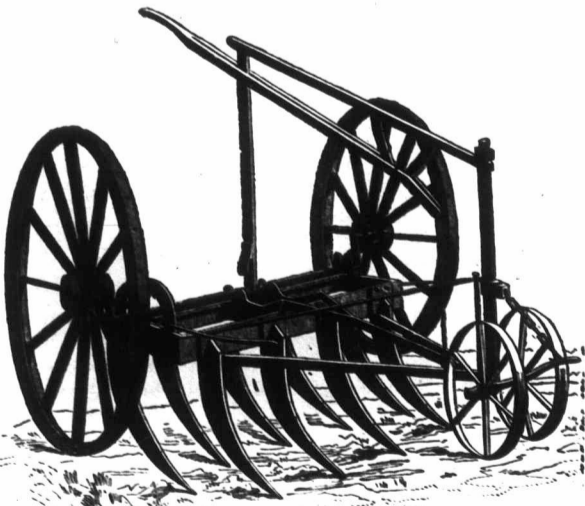


FIG. III.—BIDDELL'S SCARIFIER OR CULTIVATOR, 1839.

wheels were used, and consisted in a long seed-box suspended between two wheels. The box hung in front of the axle, and distributed the grain from the front, while the driver sat in a seat behind the axle, to some extent relieving the weight of the seed-box from the horse.

The matter of cultivating the land has, since the early part of this century, undergone many changes. Some fifty years ago, in England, the plow and the spading fork competed for supremacy, with a final victory for the plow, due only to the increasing expense of human labor. Tests between plowing and forking are recorded as having taken place in the forties, with the result that land prepared for carrots by forking gave three tons greater yield per acre than land that had been plowed and harrowed, while mangels on forked ground produced nearly five tons greater yield per acre than land prepared by horse cultivation. At that time the plow of the present day had not been perfected, and almost yearly new styles were being brought out. Cultivators and harrows were also being improved year by year, as they have also up to the present day. Fig. III. represents a cultivator known as "Biddell's Scarifier," for which the English Society's gold medal was awarded in 1839. It was very highly thought of in making summer-fallows and in preparing ground for grain seeding or for roots.

For harvesting grain the reaphook or sickle held sway through many ages, and we find that even as late as 1845 they were very generally used in England. In 1841 scythes commenced to displace reaphooks, and it was about this time that the grain cradle (Figure IV.) was invented in the United States. Reaping machines were suggested by the ancient Romans, but the first machines that attained to much efficacy were made in the United States between 1830 and 1850. In 1833 Obed Hussey, of Ohio, patented a machine to which he applied saw-toothed cutters and guards. Fig. V. represents the machine as it appeared about 1840. Some years before this Bell's machine was invented, and by 1850 it had been perfected to the condition shown in Fig. VI. The grain after passing the knife fell upon the travelling canvas and was deposited as from a good cradle, as shown in the illustration. In 1834 McCormick, of Virginia, patented a reaper which had been so far improved by the year 1851 that it was awarded a medal at the World's Fair in London, England. It had a sickle-edge sectional knife, reciprocating by crank movement with the bearing and drive wheels. It also had a reel and two dividers, one on each end of the platform. The grain was elevated into a platform and raked off by hand. The self-rakers and self-binders marked the general changes from then to the present day. It is little more than two decades ago since the binder was turned out a successful machine—a huge, cumbersome affair, constructed largely of wood. It bound the sheaves with wire, and cost about \$300. It required three stout horses to haul it, but did a fairly creditable job in a standing crop. The improvements upon this machine came in quick succession from many sources along the lines of lightness, strength, and efficiency, until we now have the many makes of light steel cord binders—easy to run and to operate



FIG. IV.—GRAIN CRADLE, 1841.

even in a tangled crop, and purchasable at little more than one-third of the price of the binder of twenty years ago. Threshing grain by treading it out by oxen on a hard clay floor was the system followed by the Egyptians and Greeks. The flail seems to have been the next step in advance, and until quite recently it was largely used in Britain and can still be found in Canada. Michael Menzies, of Scotland, is supposed to have been the first inventor of a threshing machine, which was merely an adaptation of suitable mechanism to drive a large number of flails by water power. In 1758 a rotary machine

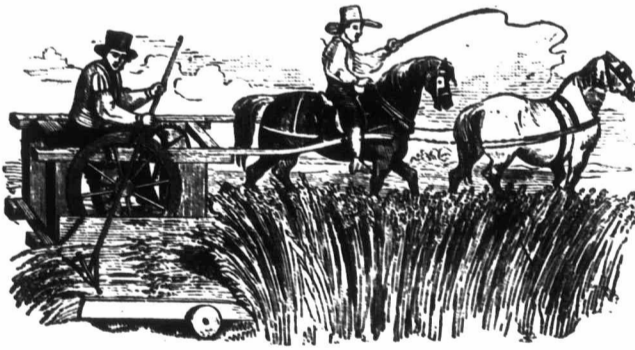


FIG. V.—HUSSEY'S REAPING MACHINE, 1840.

was invented, which gave rise to the revolving cylinder machines. Fig. VII. represents the threshing machine meriting highest honors at the

Royal Agricultural Society Show of England in 1840. This machine is reported to have had no spikes in the drum or cylinder, which were soon introduced in America. To this was added the separating machinery and other improvements, until the

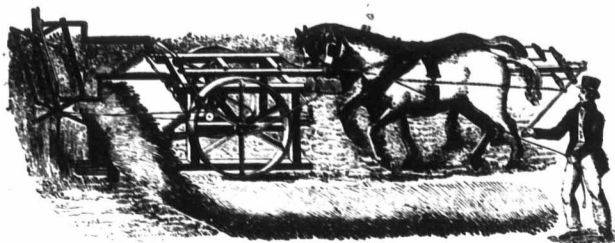


FIG. VI.—BELL'S REAPING MACHINE, 1851.

present complete machines were arrived at. What the coming few decades will produce no man knows, as the march of mechanical advancement seems to hasten with the progress of time.

Royal Agricultural Society Show of England in 1840. This machine is reported to have had no spikes in the drum or cylinder, which were soon introduced in America. To this was added the separating machinery and other improvements, until the

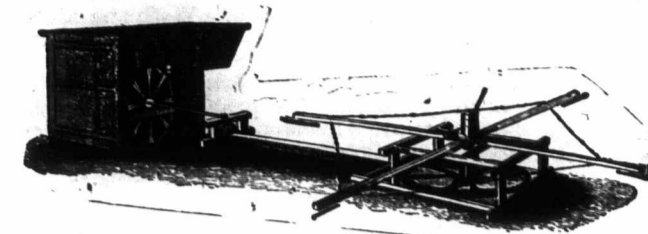


FIG. VII.—THRESHING MACHINE WINNING HIGHEST HONORS AT THE ROYAL SHOW, ENGLAND, 1840.

present complete machines were arrived at. What the coming few decades will produce no man knows, as the march of mechanical advancement seems to hasten with the progress of time.

Potato Growing.

To the Editor FARMER'S ADVOCATE:

SIR,—The soil on which I grew the potatoes that I was awarded the prize for at the Toronto Industrial was black loam, plowed in the fall and cultivated in the spring. I plant as early as I can work the ground, in drills 30 inches apart, and about 18 inches apart in the drill, and I put the manure in the drill. I prefer large potatoes, cut to the single eye. I do not get so much top. I make a scratch with plow about 3 inches deep and drop my sets, and then scatter the manure on, and cover with the plow, and then in a few days harrow them down. I use the scuffler often to keep the ground loose and the weeds down, and when I mould them up I do not cover very deeply. I dig with the fork as soon as the tops are dead. My early potatoes were all ripe at the time of the Exhibition, and the late ones that I planted early were very nearly ripe. I have about 40 different varieties, and for early ones I like the Early Harvest, Early Thoroughbred, Early Wisconsin, Good News, and Early Northern; and for late, Carman No. 3, Empire State, Barnaby, Mammoth, Great Divide, and Adirondack. I have one variety imported from the Old Country two years ago that I think will be a good potato, I call it Spark's Beauty. A. W. THOMSON, York Co., Ont.

Canadian Poultry in England.

Mr. Joseph Yuill sends us the following letter from the gentleman who disposed of the experimental chickens fed by Mr. Yuill's family, and which proved such a signal success.

Messrs. Yuill & Sons, Carleton Place, Ont.:

I find that you fed and packed the chickens that I received and sold on behalf of the Department of Agriculture, of which J. W. Robertson, Esq., is the worthy commissioner.

The whole transaction was so completely successful and satisfactory in every particular that I am loth to let time pass without venturing to enquire as to your intentions in regard to the export to England of your fattened poultry. Being the first to handle your stock, I would hope to continue to do so, being sure that no one in England could offer you the same facilities, service and interest that I can command.

Anticipating, therefore, that you will be inclined to favor me with your consignments, I take this early opportunity of encouraging you to extensive operations in poultry for the coming season. You need have no fear as to the ultimate results. Only turn your poultry out in the same order and condition as you did the experimental lot and I will see that profits will accrue.

I am confident that I can create a large trade for Canadian poultry if I am able to secure responsible and reliable feeders and packers like yourselves. The business will need co-operation of a willing and intelligent order. The trade will then be readily established, and it will only be the packer's fault if he does not maintain his position and hold the business.

I might say that the English market receives poultry from every country in Europe as well as from Australia and New Zealand. I can state, however, without the slightest fear of contradiction, that the Canadian poultry has no compeer, and therefore no competitor on equal terms. For not only is the Canadian poultry superior as to quality and suitability, but its condition is always assured through the services of the refrigerator. Liverpool, March 2, 1890. JAMES RUDDIN.

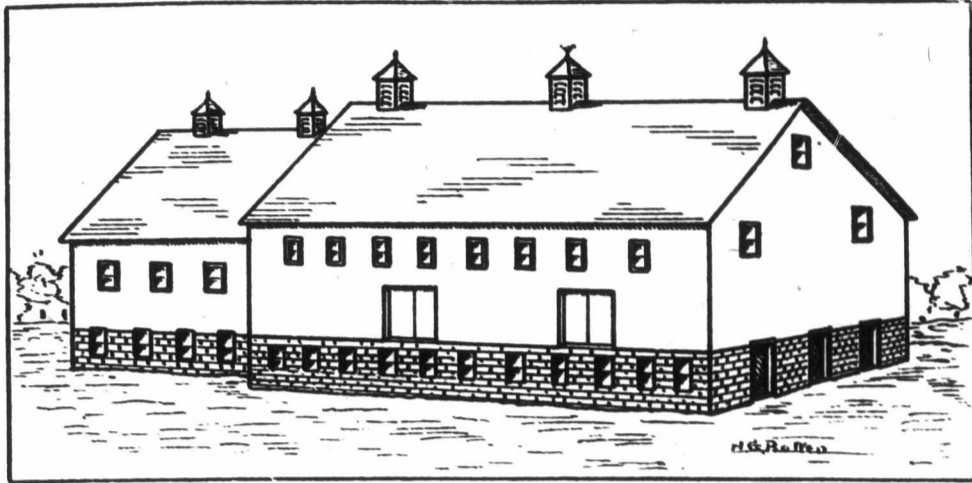
Successful and Profitable Pea Growing.

To the Editor FARMER'S ADVOCATE:

SIR,—In reply to your enquiry as to the pea bug, I am pleased to inform you that we have not had it in this township (St. Vincent). The pea is becoming our main crop, as we can get from 25 to 40 bushels per acre, and during this winter there was a firm in Montreal sending men amongst the farmers, and giving them 70c. per bushel at their barns for any of the larger kinds of peas, such as the Mummy, Marrowfat, Black Eye, Canadian Beauty, Potter, or any of the large sizes, which all do well here. J. W. HARTMAN & SONS, Grey Co., Ont.

A Highly Satisfactory Stock Barn.

The following is a plan and description of one of Messrs. H. Cargill & Son's stables at Cargill, Ont., importers and breeders of Shorthorn cattle. The size of this barn is 72 x 100 feet. The silo, mixing room, and the manure room are separated from the stable proper by a wall, having doors in convenient places, as shown by plan. They feed their stock feed from feed room, it being passed down through chutes from floor above, and the ensilage is conveyed from silo in car or truck built with two wide-tire wheels behind and one swivel wheel in front, so that it can be moved or turned easily in any direction.



BARN OF MESSRS. H. CARGILL & SON.

Regarding further details, Messrs. Cargill write: "Distance from floor to floor is 12 feet, ventilated with 6-inch tile through top of wall between the joists, about six feet apart. Water is supplied by a windmill and pumped into a large round tank, 8 x 8, which sets in implement house just over the wall between manure shed and root house; is piped from this tank to small supply tanks, marked S, which maintain water at proper level in water basins. The pipes from these small tanks for box stalls run along the floor, buried sufficiently in the cement to make surface level. Pipes to supply stall basins run along top of plank, which is the front of mangers, and where it crosses passage in center of stable is dropped low enough to cover with cement same as pipes in boxes. The cement used was from Battle's Cement Works at Thorold, Ont., and is very satisfactory. Manure is removed with wheelbarrow. Mangers are 16 in. wide, with bottom raised 2 in. higher than floor with cement. They are not wide enough for cattle with a little extra horn. Partition between stalls is 4 ft. at back and is 4 ft. 6 in. at head, and in front of cattle is 4 ft. 10 in. high. Partitions in front of boxes are 6 ft., and between 5 ft., except for bulls, which run nearly 6 ft. also. Mangers in boxes are 8 ft. deep and 14 in. wide and about 18 in. up from floor. Motor sets on a platform suspended from joists, driving a main shaft from which we run pulper, straw cutter, etc. Pulper can be moved from one end of root house to the other, keeping close to the roots, as pulley on main shaft is easily moved. Pipes from large tank to smaller ones are kept up at ceiling and run straight down into small tanks. Where water is taken off for supply to horse stable, etc., we have a Globe valve and connection to which we attach hose to supply thresher engine when threshing."

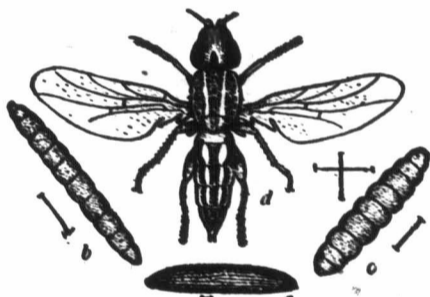
Injurious Insects -- "Dead Heads" in Manitoba Wheat.

BY DR. J. FLETCHER, DOMINION ENTOMOLOGIST, OTTAWA.

A subject which has attracted a good deal of attention and given rise to much discussion among farmers in Manitoba during the last two or three years is the cause of the so-called "dead heads" in wheat. While it is possible, I believe, that these may be due to two or three different causes, I feel convinced that much of it at any rate is due to the attacks of the maggot of the fly which in Ontario and other parts of Canada injures wheat and barley in a precisely similar way to that which in Manitoban wheat is known as "dead heads." The wheat-stem maggot, which, owing to its attack at the roots of wheat plants, is also called wheat-bulb worm, occurs all through Eastern Canada, and, although the adult flies are enormously abundant in meadows and prairies all the way from Northern Quebec, through the Lake Superior region, Manitoba, and the Northwest Territories, its attacks in grain fields have not been complained of under its own name until last season, when it was discovered by Mr. Geo. Greig, the Manitoba editor of the FARMER'S ADVOCATE, to be the cause of, at any rate, some of the injury. In company with Mr. Greig I was able to confirm his observation at several points in the Province of Manitoba during the past summer. The wheat-stem maggot, however, cannot be claimed to be the only cause of this characteristic effect, for we found near Deloraine, in Southern Manitoba, that many "dead heads" in the corner of one field were due to bruises by hailstones which had struck the stems after the ears had speared. It is probable also that "dead heads" are produced in wheat in the same way that they are in various grasses, by having

the juices of the stems sucked out by various plant bugs. Prof. Otto Luggler, the State Entomologist of Minnesota, has also found that "dead heads" are caused by the attacks of the maggots of another small fly, a frit fly (*Oscinis soror*, Macq.), the maggot of which he described as boring inside the lower portion of the culm. It has been supposed by some Manitoban farmers that "dead heads" were due to the attacks of the larvæ of the wheat-stem sawfly (*Cephus pygmaeus*). This, however, I feel sure is a mistake. Although the stems are sometimes seriously injured by the burrowing inside them of the larvæ of the sawfly, it is seldom or ever that the whole stems are destroyed and the ear turns white. Another cause to which this loss has been attributed very generally is an obscure fungous disease. With regard to this last suggestion, all I can say is that having searched for it I have failed to find any trace of such a disease.

The presence of the wheat-stem maggot in a crop of wheat is very easily detected in the summer time when ears of injured stems turn white before the rest of the crop ripens. If the stems be examined carefully it will be found that the base of the topmost joint has been gnawed away by a slender, glassy, green maggot, a quarter of an inch long. It is this injury to the growing part of the stem that causes the death of the heads before the grain ripens. The injury is known in various parts of Canada under the different names of "white heads," "bald heads," and "silver top." There is another attack on the wheat crop by the same insect which is harder to detect. This occurs in the root shoots close to the ground, not only in wheat and barley, but also, and perhaps much more generally, in various kinds of grasses. The severity of the summer attack in the top joints seems to vary very much in different years accord-



THE WHEAT-STEM MAGGOT (*Meromyza Americana*, Fitch).

ing to the season. Occasionally the injured stems will constitute as much as 25 per cent. of the whole crop. This was the case three years ago near Rounthwaite, in Manitoba, and in Ontario is recorded as having been as much as five per cent. When full-grown, the maggot of the brood which causes the "dead heads" works its way up to the upper portion of the sheath and turns to a slightly-flattened and very transparent green puparium, from which the fly emerges at the end of July and during August. There are three distinct broods of the perfect insect. These appear during June, at the end of July, and at the end of September. They are active, elongated, greenish-yellow flies, one fifth of an inch in length, with shining green eyes, and three dark stripes down the back. The legs are short, the hind thighs thickened, and when the fly is at rest the fore part of the body is raised. Very soon after emerging the sexes pair, and the eggs for the next brood are laid on the upper surface of the leaves of grasses and wheat. These are snow-white, spindle-shaped, as shown at A, and beautifully marked in narrow lines.

Remedies.—Should the attack of the wheat-stem maggot increase seriously, which from past experience it may be confidently hoped will not be the case, as soon as its presence is shown by "dead heads" much may be done in reducing the numbers of the next brood by sowing a drill or two of wheat or barley in close proximity to infested fields. This

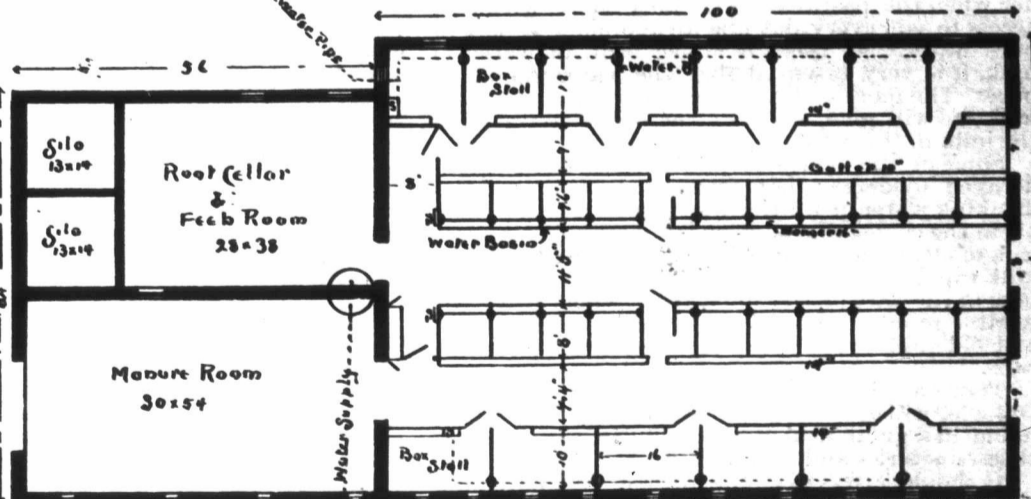
should be sown as soon as the injury is detected, so that the young plants may be got above the ground in time to attract the females for egg laying. After the middle of August these strips should be fed off by sheep or plowed down. All stubbles should be harrowed as soon as the crop is carried, so as to start a volunteer crop which can be plowed down early in September, when all of the eggs laid upon it will be destroyed. The late sowing of fall wheat where this crop is grown could not profitably be delayed long enough to escape the egg-laying period of the last brood.

(2.) The application of special fertilizers as a top dressing when young wheat is known to be attacked will help injured plants to throw out new stools and overcome to some measure the effects of the attack. I am hopeful that the wheat-stem maggot may not be a constant source of loss to the wheat-growers of the West. The insect feeds naturally in the grasses of the prairie, to which, under ordinary circumstances, it will chiefly resort, and I believe that its attacks upon wheat, occurring so occasionally, are due to climatic conditions, which are not likely to occur every year. Another hopeful feature is the invariable abundance of a special parasitic fly (*Coelinus meromyzae*, Forbes) which destroys large numbers of this enemy. Wheat-growers, however, will be wise to learn as soon as possible to recognize this enemy and detect its presence, for Prof. Luggler, who has studied it in Minnesota, says that in 1895, 1896, and 1897 it was common from the Red River Valley to the central part of East Minnesota. In some parts of the States, late sown fall rye, which had made but little growth during the autumn, and which grew slowly in spring, was greatly damaged, in some cases to the extent of one-tenth of the crop. Wheat did not entirely escape, and infested plants showed the presence of the insect by their small size and weakly appearance.

A Strong Argument for Sowing Mixed Grains -- How to Still Grow Peas.

To the Editor FARMER'S ADVOCATE:

SIR,—About six years ago, having noticed in the report of the Guelph experimentalist that crops of mixed grains yielded more per acre than the same grains grown separately, I began to sow for a grain crop oats and peas mixed. I have been so pleased with the returns that I have had a crop of such mixed grain every year since. I sow with a drill on spring-plowed sod, well harrowed, as peas do best on sod and sown rather deeply. While it is well known that early-sown peas are worse with bugs, yet I sow as early as possible, because if they are more buggy than if sown later the yield is generally greater, and certainly early-sown oats yield the best. On the whole, there would be more lost than gained by late sowing of such a mixed crop. I prefer the large-grained varieties of peas because there is a smaller percentage of loss in each bug-infested pea. The hole that a bug eats is regulated by his own size, not the size of the pea. The Mummy variety is the one I have generally grown, and it is hard to beat. Last year, however, I had some Canadian Beauty, which is a fine large pea, yielding well, and which seemed to stand dry weather at the ripening season exceedingly well. I aim to sow, mixed together, 1 1/2 bushels of oats and 1 1/2 bushels of peas per acre. I would rather sow less than more. The advantages of this mixed crop over either sown alone: 1st. Greater yield. 2nd. Surer crop. One year, owing to a wet spring, peas were a complete failure; where sown mixed with oats a fair crop of oats was harvested. Another season, in a part of the field where cutworms destroyed nearly all the oats but left the peas un-



GROUND PLAN OF BARN OF MESSRS. H. CARGILL & SON.

touched, peas were a full crop. 3rd. The crop can be cut with an ordinary mower. I seldom, if ever, get less than 34 bushels of mixed grain (weighing 45 pounds to the bushel) per acre, and I sometimes reach 46 bushels of almost as heavy grain. I have noticed that periodically the bugs almost disappear, so that we need not fear a complete and permanent failure of the pea crop. Where farmers have become discouraged in trying to grow peas alone, I would strongly recommend a trial of growing them mixed with oats, as I have already outlined.

Middlesex Co., Ont.

T. BATY.

DAIRY.

Care of Milk.

BY T. B. MILLAR, MANAGER THAMES DAIRY CO.

The care of milk should begin before milking by seeing that the cow or cows are clean, the stable or surroundings and utensils clean, and last, but not least, that the milker is clean.

Before commencing to milk, the cow's udder and flanks should be dampened with a damp cloth or brush. By doing this, loose hairs, fine particles of dust and filth, will be prevented from dropping into the milk-pail, and thus much cleaner milk secured. The milking should be done with dry hands, and to get the best results should be done gently yet quickly. Immediately after milking, the milk should be removed to some place where the surrounding atmosphere is pure, and then strained at once, for no matter how carefully it may have been milked there will be some dirt in it, which should be strained out of it at once.

Air the milk frequently by dipping or pouring or by the use of an aerator. With regard to an aerator, I may say if they are used properly and kept perfectly clean they are a good thing, but if kept only half clean they are a curse to the business, for a dirty aerator will spoil all the milk that goes through it.

In the very hot weather it may be necessary to cool the milk by the use of ice or water, but be sure the milk is thoroughly aired before doing so; and never cool the milk below 65° or 70°, as it will keep quite sweet over night at this temperature, and will arrive at the factory in much better condition for cheesemaking than if it had been cooled to 55° or 60°.

Always remember that the milk requires airing just as much in the cool weather as it does in hot or warm weather, for these gases and animal odors are there and should be allowed to escape by airing immediately after milking.

Keep the milk in small quantities over night, and when it can be avoided never mix the hot and the cold milk. Send the night and the morning milk to the factory in separate cans if possible.

When the whey is returned in the milk-cans, empty at once, wash with warm water, then scald and place them where they will get plenty of sunlight and pure air. Never use soap on milk-cans, pails or pans. Scour with salt occasionally. See that the place where the milk is left over night is clean and far enough away from anything that will produce a bad odor, for milk is very susceptible to flavors.

Occasionally (and the oftener the better) during the evening the milk should be aired by dipping or pouring, thus preventing the cream from forming a leathery scum, which hinders the taints in escaping. If the cream is allowed to rise and become exposed to the air it will become tough and leathery and will not mix with the milk, consequently a greater amount of the fat is lost in the whey. The cheesemaker may get the blame, when in reality it is the careless patron who is to be blamed. I have heard of some people who were so very particular with the milk that they never sent that nasty yellow stuff to the factory, but I have never heard a cheesemaker say that he got too much of it. Do not leave the milk-cans flat on the ground or against the side of a building over night, but raise them on scantlings or something similar in an open space, so that the air will circulate freely under as well as around the can.

A very good plan is to rinse the cans with a pail of cold water before putting the milk in them. See that your cows have plenty of good succulent fodder when the pastures are getting short, with free access to salt every day and an abundant supply of pure water. As there is 87 per cent. of water in milk, it is very essential that the water should be pure. The more water the cow will drink the more milk she will give, and we never object to watering the milk in this way.

Some of the causes of tainted milk are: Poor, decayed fodders; dirty water, whether used for drinking water or for the washing of utensils; foul air in the cow-stable or cows lying in their manure; lack of cleanliness in milking; neglecting to air the milk rapidly directly after milking; lack of cleanliness in the care of the milk, from which cause the greater number of milk taints arise; mixing fresh and old milk in the same can; rusty tin pails and cans.

There are hundreds of rusty milk-cans in use in Ontario, which may be to blame for the bad flavors found in a great deal of the milk delivered at our cheese-factories and creameries.

It should always be remembered that pure milk can only be had through healthy cows, pure feed, pure water, pure air, and cleanly handling. Every patron is affected in the cash outcome by the way his brother patrons produce and handle their milk. Hence the necessity of each adhering to sound rules, based on sound dairy sense. There is not a first-class factory in the land where good prices are obtained for cheese but what the patrons practice thorough cleanliness in the care of milk. Remember it is a matter of profit to each to do this.

As you all know, Canadian cheese has gained a very high reputation in the markets of Great Britain, but our reputation will be of little use to us unless we keep the quality of our goods up to the mark. For what do we find? Other competitors

are crowding us hard for the first place, and according to reports the quality of their goods is almost, if not quite, equal to ours. So if we are to maintain the proud position that we now hold, we must, as patrons, study and practice the best methods of production and of caring for the milk until such time as it is delivered at the factories, endeavoring to have the milk delivered in the very best possible condition.

Then as makers of cheese and butter we must keep the factories and ourselves clean and tidy. Make up this milk in the best and after the most improved methods, and have our dairy products put on the markets of the world in the very best condition possible. If we all do our duty faithfully, Canadian cheese and butter will command the highest prices against all competitors.

Cheesemaking.

BY T. B. MILLAR.

For cheesemaking only milk that is clean, sweet and free from bad flavors should be used. To the cheesemaker I would say inspect closely all milk delivered at your factory, and reject anything that will not make good cheese. Having carefully selected the milk, heat gradually to 90° or 85°, stirring frequently and gently to keep the cream from rising and the milk from scalding on the sides of the vat. After the heat is up to the desired temperature, make a rennet test immediately to ascertain the degree of ripeness. If the milk is working slowly, a small quantity of nice flavored starter would be an advantage. Set the milk so that it will dip in from 2½ to 3 hours with from ¼ to ½ in. acid. Use enough rennet to cause perfect coagulation in from 30 to 35 minutes (I am now speaking of summer cheese), allowing the curd to become fairly firm and to break clean over the finger before cutting.

Commence cutting with the horizontal knife, cutting slowly, then follow at once with a perpendicular knife, but with this knife, to make a good job, it is necessary to draw it quickly through the curd and thus secure a clean cut, instead of driving the curd before the knife. Generally speaking, cutting three times is quite sufficient, but if the knives are coarse or if agitations are to be used, I would recommend giving an extra cut. Stir gently for 10 or 15 minutes, and see that the curd is free from the side of the pan before turning on any steam. Then heat slowly for the first 15 or 20 minutes, taking from 35 to 45 minutes to raise the temperature to 98°. After turning off the steam stir continually for 15 or 20 minutes, and occasionally after until the curd is ready for dipping. In most cases it is advisable to run off part of the whey soon after the heating is completed, and see that the curd is well cooked before sufficient acid for dipping has been developed.

Dip the curd with from ¼ to ½ in. acid, and by the hot-iron test, and have the curd in such condition that it will not require much stirring in the sink. Have the curd from 4 to 6 inches in the sink, and leave until matted sufficiently to turn without breaking, then cut in strips about 6 inches wide and turn often enough to keep the whey from gathering in pools on the curd. When turning the second time it may be doubled, always turning the cold ends or sides in and thus secure uniform maturing.

Mill the curd when it becomes flaky and will show from 1¼ to 1½ in. acid by the hot-iron test. I would not be guided altogether by the amount of acid, but by the acid and the condition of the curd. I would use a mill that would leave the curd of a uniform size and not too large. After milling, air well by stirring, and if the curd were maturing slowly, I would pile deep and stir out frequently. Air and mature well before salting; salt according to the amount of moisture in the curd and the length of time you expect to hold the cheese in the curing-room, for the curing-room must also be taken into consideration. Usually from 2¼ to 2½ lbs. of salt to 1,000 lbs. of milk is about right quantity. As soon as the salt is dissolved, put to press and see that the temperature is not over 85° or under 78°. Apply the pressure slowly at first, and leave the cheese in the hoops for 45 minutes before bandaging. Pull up the bandage neatly and trim off the shoulders that are almost sure to be on them. Put back to press, turn in the hoops in the morning, and see that they are finished in first-class shape before being taken to the curing-room.

Milk Fever.

To the Editor FARMER'S ADVOCATE:

SIR,—In your April 1st issue I noticed a new system of treating a cow affected by the almost fatal malady of milk fever. We had a cow a year ago which had been moderately fed before calving, after which she gave a fairly heavy flow of milk. At the fourth milking we could hardly keep her on her feet to be milked. When through milking she dropped, never to get up again. We managed to keep her alive for almost four weeks, by the end of which time her bones started to mortify. We then shot her to rid her of terrible pain. We had milked her once before calving, but do not blame this for the trouble, but a chill by draft through stable shortly after parturition was pronounced the cause. Through this we have experienced that one cannot exercise too much care with cows at this period in regard to chills, and veterinary science tells us not to feed too much grain or roots of any kind to cows previous to time of parturition. W. J. B. Perth Co., Ont.

St. Mary's Co-operative Creamery Expanding.

NEW COOLING SYSTEM—ALKALINE TEST FOR CREAM. To the Editor FARMER'S ADVOCATE:

SIR,—Received your favor of the 5th inst., and hasten to reply as far as possible in regard to our expansion. As to new territory, we have bought out three cheese factories, and built two new skimming stations where there has been neither stations or factories. We are placing pasteurizers in each of the stations, and have one in operation at the central now. We have put in an ice machine of 16-horse power. A new boiler-room was built and a new 60-horse boiler put in. Two large cold coils of pipe are placed in the cream room, where the cream is pumped over and cooled to any temperature desired. The storage rooms have been all remodeled, pipes being placed according to the temperature which we wish to hold the rooms. Coils of pipe are fastened to the ceiling in each room, these being connected with two pipes from the compressor, one a delivery and the other a discharge pipe, working under the same principle as the ammonia machines, this one using carbonic anhydride gas instead.

In all our work we strive for uniformity as well as excellence of product, and to assist us in this we test the acidity of our cream with the alkaline test. A uniform solution of alkali is used with a sufficient amount phenol phtalein indicator. When this is added to a given quantity of cream and gives a pinkish color, you count the number of cubic centimeters of alkaline solution added to clear up the pink color of the cream, which takes place when all the acid has become neutralized. Multiply by .09, which will give you the amount of acid in the cream. It is always accurate, and since I have become accustomed to it I never rely upon my own judgment, but always test the acidity after cream is all in from stations, and before I start to cool down and before I churn next morning. It always gives a better idea of acid and of old milk flavor which is often on the cream.

Perth Co., Ont. F. DEAN, Buttermaker.

Ontario Agricultural College Dairy School Closing.

The seventh session of the dairy school at the Ontario Agricultural College, Guelph, closed on March 25th. The number in attendance was 115—16 of whom were ladies. The majority remained for the full term of three months, and 44 wrote for certificates, with the results that 34 passed in all subjects, headed by C. W. McDougal, Guelph, Ont. In cheesemaking, 34 passed in practical work and 34 in written examination. In buttermaking, 28 passed in practical work and 29 in written examination. In milk testing, 32 passed in practical work and 27 in written examination. In cream separators, 21 passed in practical work and 19 in written examination. In dairy lectures, 22 passed, and in outside lectures six escaped being plucked.

Where the Briton at Home Gets His Butter.

Almost half the butter imported into the United Kingdom from abroad comes from Denmark. Of the total of 100,000 tons of butter imported into Great Britain last year no fewer than 70,000 tons came from that country. The Danish imports thus amounted to over 45 per cent. of the whole of the butter imported; France comes second on the list with 13 per cent.; while Sweden sent 9 per cent.; Holland, 8 per cent.; Australia, 7 per cent.; Canada, 5 per cent.; United States, 2 per cent.; Germany, 1 per cent.; and all other countries a little over 8 per cent.—Farmers' Gazette.

Found the Light.

To the Editor FARMER'S ADVOCATE:

SIR,—My brother, in a fit of economy some time ago, thought of dropping the FARMER'S ADVOCATE. He had been spending about an hour and a half at each churning all winter, and when disgusted with the job, picked up the FARMER'S ADVOCATE to entertain himself while he was resting before finishing his ordeal. His eye caught an article headed, "Difficulties in Churning." He made the ideas expressed practical, overcame his tri-weekly trouble, and now he goes about a happy man, with sunshine in his face, and a good agent for the FARMER'S ADVOCATE. BROTHER.

Pasteurizing-Sterilizing Milk.

A great deal is written these days about sterilizing and pasteurizing milk. Many have been led to believe these two terms synonymous, meaning the same thing. Not so. In the case of pasteurizing, the milk is heated to a temperature of 155° to 160° Fahrenheit. In the other case the heat reaches 212° or more. Pasteurized milk will not keep sweet so long as sterilized milk, because the heat has not been sufficient to kill all the bacteria or germs in the milk. Sterilized milk is said to keep sweet so long as tightly corked and the air excluded. Butter made from both pasteurized and sterilized milk is said to keep longer, but in the heating process the quality of the butter is more or less injured.—Southern Dairyman.

POULTRY.

Turkeys.

SETTING THE EGGS—EARLY TREATMENT OF THE POULTS.

One should not be discouraged if a great number of turkeys are not raised, for even the average number, ten young ones from each old bird, gives a very high percentage—over two hundred per cent.—on the capital invested and the outlay for food. So that even less than the average increase is profitable, and most thoughtful farmers will agree with me that the insects, grasshoppers, etc., destroyed by turkeys in their wanderings, to say nothing of their fertilizing powers, will repay the cost of their keep.

At the present date (April 15th) very few turkeys have begun to lay. They should not be too highly fed, and if a successful season is expected the old turkeys should be large, strong and healthy, and should not be closely related to the male bird. At the present time plenty of range is essential, and roomy nest boxes provided in sheds, or perhaps a little straw in unused coops in the orchard or under evergreen trees will soon be taken possession of to furnish nests for the first lot of eggs. At this season they seldom show any desire to go a long distance to conceal the nests. The eggs should be gathered as soon as possible after being laid, so they will not get chilled, and should be kept in a cool, not cold, place. Those who have studied the construction and constituents of eggs, tell us that eggs should not be turned every day, nor turned at all, nor handled any more than is necessary, but be kept in a box or basket where the air is pure, and covered with a cloth; also that they should not be kept longer than three weeks before setting, though they may hatch if kept even longer. However, I should expect stronger and more lively turks if they were not kept any longer than two weeks, and I set just as soon as I get sufficient of them and sufficient hens to cover them, as I always want at least fifteen to twenty turkeys to go with one old turkey. I usually set about three Plymouth Rock hens on seven to eleven eggs each. These hens should be persistent sitters, and have nests in a room where other hens will not disturb them. My ideal nests for sitters would be a row of nest boxes about two to four feet from the ground, and having a door to swing downward to form a shelf in front when open. Through the front of this door I should like a strip of wire cloth to give plenty of air and a little light to the sitters. When this door is closed the rats will be excluded, as they will steal the newly-hatched birds if possible to get at them. The nests should be made of clean straw, and the day before setting the eggs the hen should be sprinkled with insect powder. To do this effectually, one can hang her to a nail, feet upwards, the feathers then open, and powder can be dusted all through them. A dust bath in the room also should be provided. By the time the eggs are set the strong odor of the powder will have escaped and will not effect the germ. Once a day during the hatch I open the nest doors and feed corn, and also give a supply of fresh water. A room where there is not much hammering or pounding may be best, as we are told one year an entire hatch at the O. A. C. was destroyed owing to nailing of sheeting in the incubating room. If the hens at first are not inclined to leave their nests for food, I place one hand beneath them and carefully lift them from the eggs so that none of the eggs may be broken or disturbed more than necessary. I usually leave them to feed, dust, etc., for about an hour, and return to see that two have not taken one nest, or to replace any that have not gone back, and to close the door until another day. As a rule, hens are not so good as turkeys to mother the young poults. While I depend on Rocks to do the hatching of the early chicken, I also depend on having a broody turkey in four weeks after the eggs are set to act as a mother for them. Last year the eggs did not hatch very well, and I had not nearly the required fifteen to put with an old turkey, so I let the first lot remain with a Rock hen and succeeded in raising them all, but they cast in their lot with a later flock of turkeys when it was time to wander through the fields. I find they are better as foragers and less exposed to parasites when raised with the old turkeys.

A few days is all that is necessary for the old turkey to be broody, though, of course, one cannot quite regulate such matters. I like Rocks best as sitters, and we thus keep the turkeys laying three or four weeks longer. She should be treated with insect powder a day or two before the turks are expected, and when the hatch is completed, all should be put in a roomy coop which is enclosed by a ten-foot square pen. The bottom of the coop should be covered lightly with sand or gravel to form the first meal of the young turkeys. A small heap should be placed in the pen, also one of dust and a fountain of skim milk or water. If the nests have been rat proof, the young ones should be left there until twenty-four hours old, otherwise it is safer to remove them before night to the coop. I have never had a turkey refuse to adopt the young ones, and my most successful lot was twenty-nine hatched by three hens and put in this manner with one old turkey. She succeeded in raising twenty-six to maturity. One died from unknown causes, and two were stolen by hawks. This year I intend to try hatching in incubators and raising some in brooders. GYRA.

Middlesex Co., Ont.

The 15c. Hen.

BY H. T. OLDFIELD, B. C.

I heard, not long ago, a person speak of his fowls as 15c. hens, and on asking him what was his meaning, his reply was, "Well, they only lay when eggs are down to 15c." If I had not been afraid of insulting the person, I should have told him that he must be a 15c. feeder, which surely must have been the fact of the matter. It's the same with fowls as with anything else. No man can make a profit in any branch of stock-raising without he gives it suitable care.

So many people are afraid of overfeeding their fowls and getting them too fat to lay. I think I am safe in saying that the majority of fowls kept to-day are not sufficiently fed to keep them in proper laying order. I claim that fowls with a free range will not get too fat for laying, however much they are fed. I speak from experience. I once kept a flock of fowls alongside some grain stacks which the wind had blown over. We cleared up the grain as clean as possible, but there was sacks of it lying on the ground which we could not gather up. The fowls were simply running over the grain for weeks. I kept them supplied with water and roots, and they kept me more than supplied with eggs. I never before knew fowls to lay so well.

Many people feed their fowls only twice a day, and claim it to be best. Well, that's a matter of opinion. I feed three times a day. Some poultry-keepers say, to keep a hen in good condition for laying she should never have a full crop during the day. I do not agree with it. When I feed my fowls half a breakfast they will mope around as if waiting for more, and, on the other hand, if I feed a good breakfast it gives them vigor to get out and get a move on and hunt for grubs and grit, which is all we can expect them to get, unless they are running over a grain field in the fall.

The Incubator.—Somebody said, "The Incubator chick is free from vermin, therefore is stronger, and if placed in a first-class brooder it will continue to thrive, and a hundred can be raised with less trouble than a dozen under an old hen," but it does not sound feasible in my ears. It seems to me that when a man has fertile eggs sufficient to fill up an incubator he must have a good many sitting hens. I have no incubator, but am not going to run it down, for I have had no experience with one. I hatch all my chickens under hens, have a flock of about 250 laying hens, and can always find sitting hens when required. I set them on tobacco leaf on the ground, and am never troubled with vermin on the chickens. I set from 10 to 20 hens at a time, giving them 15 eggs each. When they hatch I select the best mothers and give 25 chickens to a hen. Each hen has a separate coop. That way, you see, four hens and four coops will take one hundred chickens, and give a very little trouble. The coops I made myself out of half-inch stuff, lumber being cheap here. My coops cost me about ten cents each.

The worst part of the business is, we have no market in Victoria, and a man has to run around and get private customers for his produce or be sat on by the middleman, but I am thankful to say, after three years' hard work, I have a nice lot of private customers. I stamp my name and address on the eggs with a rubber stamp, and guarantee them. I believe there is more money in poultry than in any other stock according to money invested, yet I think few farmers make as much provision for poultry-raising as they do for other stock. An estimate of \$2 as a clear profit for each hen is no uncommon limit if they are properly cared for, but 15c. attention won't do. It just depends on the care and attention. Give 15c. attention and you will get 15c. hens, and scarcely deserve it; but give \$2 attention and you will get your \$2 hen, and well deserve it. H. T. O.

Cross-bred Poultry.

To the Editor FARMER'S ADVOCATE:

In your valuable paper I have noticed several times articles on cross-breeding of pure-bred poultry. In January 2nd number there is given the results of different crosses made at the Central Experimental Farm. Perhaps a few words from a farmer's experience in crossing pure-bred fowls will not be out of place. My first experience was a cross between a pure-bred Plymouth Rock cockerel and pure Wyandotte hens. The results were very satisfactory. The cross took the color markings of the Plymouth Rock, the rose comb of the Wyandotte and the full breast of the Wyandotte. The cockerels looked to be as large as a fair-sized turkey, and the hens were at least one-third larger than either of the pure-bred stocks; the hens were just as good layers as either of the original stock, and were very much admired by the neighbors, so much so that I sold all I had, parties taking the cockerels in preference to the pure-bred, although I tried to persuade them to take the pure-bred, and even offered the pure-bred cockerels at only 25 cents each more than I asked for the cross-breds. The birds gave every satisfaction to those who purchased them. The same year I crossed a Wyandotte cock on a White Leghorn. The result was a bird not quite as large as the Wyandotte, but larger than the Leghorn, a fine rose comb and a full breast, and such layers! I crossed on these crosses, using a Wyandotte cock, and the result, a larger bird than the cross, but not quite as large as my pure-bred Wyandottes. I have one of the cross yet, the rest I sold. The hen I have is the first to start laying in fall, and the last to leave off. As she is easily coaxed to sit in spring, I consider her a valuable bird. I have always had trouble to get my Wyandottes to sit in

spring, as they prefer to lay all winter and on till last of June before they think of sitting, and some have laid all summer without offering to sit; but our cross-bred can be coaxed to sit in spring, so I look upon her as a very convenient bird. Eastern Assiniboia J. B. POWELL.

Care and Management of Sitting Hens.

Owing to the lateness of the spring we cannot look for a large percentage of our eggs to hatch, so that it is not likely that any of us will be able to get as many real early chickens as we would like. After the weather grows milder, we must give our breeding birds all the liberty possible, and begin setting eggs as fast as we can. The eggs will soon become more fertile, and the two remaining requisites to successful chicken hatching are, the kind of hen we use for setting, and the way we set her.

First, then, the kind of hen: We are firm believers in gentle treatment of all live stock, and our poultry as well as our cattle, sheep, and horses should become accustomed to being handled somewhat. The lighter breeds of fowls are too nervous to become trustworthy sitters even under gentle treatment; but the heavier varieties when treated in this way will make, with very few exceptions, good hatchers. Never set a fat, clumsy hen, as she will be certain to break eggs and trample chickens to death. Now, as to her treatment:

Have a comfortable place set apart in which to set your hen. It must not be connected with the poultry house at all, because sitting hens in the poultry house are certain to bring vermin. Then again, no laying hens should be allowed to disturb the sitters. In this hatching room provide a good dust bath and food and water. Close it so that the hatchers cannot get out of it. We have set a dozen hens at once in a place 20' x 30', and had little or no difficulty, although you must try to avoid quarrelsome hens. For nests use shallow boxes well filled with earth slightly hollowed and nicely shaped on top and covered with chaff or cut straw to the depth of an inch or two. We use earth, not for any special virtue there is in it, but because it is solid and will keep its shape. The box should be filled to within a couple of inches of the top so that the hen does not have to step down any distance to get on the nest. Place the nest in such a position that it is partly hidden. Put refuse tobacco or insect powder in the nest before setting the hen.

When a hen becomes broody, allow her to remain on her own nest for a day or two, then take her at night, dust her thoroughly with insect powder, and place her where you wish her to sit. Have her nest filled with china eggs. If she keeps the nest for a day or two you may remove the china eggs and place those selected under her. Keep fresh, clean water and grain where they can get it at all times. Dust all sitting hens with insect powder several times during the three weeks, giving a careful dusting on 19th day of incubation, putting some in the nest at the same time. Every possible precaution should be taken to see that there are no lice to trouble the young chicks. Lice destroy more chickens every year than all other diseases combined. It will be best to set several hens at a time, so that on testing out all clear eggs at end of a week, you can set some on fresh eggs again, thus saving time. J. E. MEYER.

Waterloo Co., Ont.

The Influence of the Male in Poultry Breeding.

There is a considerable difference of opinion, even among acknowledged authorities, as to the length of time during which the influence exercised by a male bird while running with a flock of hens affects their fertility. Dr. H. B. Greene writes upon the subject:—"The answer to this question must be somewhat conjectural. A male turkey by one act fertilizes all the eggs (or, rather, the greater portion) that the hen lays during the season. But with the fowl, pheasant, grouse, and partridge, my personal opinion is that one successful coitus will fertilize a batch of eggs numbering as many as the hen would lay to form a nest and hatch. In the case of the fowl there is no reason to suppose that as many as twenty could not thus be fertilized. Certainly, twenty ova are frequently attached to the ovary at the same time, of different sizes and stages of development.—Exchange.

Fowls in Confinement.

If poultry confined in yards could be well managed, they would pay better than when given a range; but to give a small flock proper attention would cost too much labor. When one keeps a flock for pleasure, the labor is bestowed without regard to cost, but on the farm the case is different. When birds are confined they learn vices. They begin to eat their eggs, and pull feathers from the breasts and bodies of one another. This is due to idleness. If idleness can be avoided, the fowls will not learn vices. Fowls in yards become pets, and they are fed by every member of the family. As the hens soon learn to recognize their friends, they run to the attendant upon the first sound of approaching footsteps, and the result is that they are given food frequently, because they are supposed to be hungry. Their crops are always full, they become lazy and fat, having nothing to do; then, like all other idle creatures, learn vices. There is no point more essential to learn in keeping fowls in yards than that of when not to feed. All know when to feed, but to have the courage to withhold food is the most important requisite in the management.

APIARY.

Union Beekeepers' Convention.

(Continued from page 122.)

Is stimulative feeding of bees desirable?

A member upon introducing this question to the convention said that two years ago, during a cold spell which lasted late in the spring, the beekeepers who fed their bees got profitable results. In favorable seasons it might not pay to feed. A member said one year the frost came and destroyed the blossoms, and he believed he saved a good deal by feeding a little in dishes in the open yard. A member found it paid him one year in particular to feed by uncapping all the comb in the hives. It encouraged early and strong swarms. It was generally conceded that it is wise to tide over a dearth in late spring by feeding. A setback at that season will lose a lot of time. Mr. Holtermann claimed acquaintance with a man near Ottawa who two years ago stimulated his bees and got half a crop of honey, while men alongside him did not stimulate and their bees ran down so that they killed their drones, and these men did not get a particle of honey. A good plan is to change the position of combs in the hives, and from one hive to another. One has to be very certain he has no foul brood in his bee-yard before he practices this plan or it would be a means of spreading the disease.

Is spreading of brood in spring desirable? If so, with what strength of colony? When and how should it be done?

It was recommended that beginners should not attempt to spread brood, as it required an experienced beekeeper to decide when it would be of advantage and how to do it. The chairman dealt with this question as follows: "I have never done much spreading; have been very cautious for the simple reason that the weather may be favorable—nice and warm—just when you do it by changing the position of the brood combs in the hive, and soon after it may become much colder, and then there is danger of chilling the brood. If the conditions are right it seems to me that bees spread their brood just as fast as they can gather, providing there is anything coming in, or if they have plenty of stores to look to. You find in the spring, brood in the center and eggs in the outer edge of the brood chamber. If it should turn colder, and the swarm contracts, there is less harm done by drawing away from the eggs. The matter of spreading the brood is a matter of judgment, born only of experience."

Is it advisable to equalize colonies before the honey flow? What about doubling up weak colonies?

It was generally conceded that strong colonies are not too strong, but should it appear necessary in order to help a weak colony, a frame of hatching brood might with advantage be taken from the strong and given to the weak colony. Some of the members claimed to practice doubling up weak colonies just before clover bloom. It was advised to put a newspaper between the two colonies at the time of uniting.

Bees in Manitoba.

To the Editor FARMER'S ADVOCATE:

To bee or not to bee? That is a question that should be decided about this time of the year. Doubtless some will decide in the affirmative this spring, to whom these notes may prove helpful; perhaps they will influence others to decide in the same way, for whatever is said here is intended for the man who would like to start an apiary, but does not know how. A good idea would be to get, *at once*, some good book, such as "A. B. C. of Bee Culture," or "Cook's Manual," and read up something on the subject in advance. Such a book is always useful and will continue to be consulted by the beekeeper even after years of experience.

The best time to purchase bees is in the spring, say about the middle of May. Those who have stock to sell should know it by that time and be advertising. It is possible, too, by that time to tell the colony that is worth having from the one that is not. Having secured a hive of bees, place it in a position where it will be sheltered from the winds, especially from west and north winds, but where it will get the morning sun. It might even be made to face the east, for bees like to be out early; and should be raised two or three inches from the ground. Have a board or shingle sloping up to the alighting-board at the door of the hive for the convenience of too heavy laden bees, who often miss the door and drop in the grass. Low trees or shrubbery make the most desirable shelter, as, if there are very tall trees about, the bees, when swarming, are apt to cluster in them and cannot be secured. If no such shelter is at hand a close board fence may serve the object, but an apiary on the open prairie, without any shelter, would scarcely prove a success.

A correspondent asks "How to make a bee-hive suitable for Manitoba?" With a hammer and nails is a good way, and, of course, a saw to cut the boards. Any of the hives in general use in Canada are suitable for Manitoba, and as one purchasing a colony of bees gets the hive and combs with it, this will serve as a model by which any man or boy handy with tools may make his own. For the beginner, who should work for extracted honey, the

"Jones" hive is good enough. This is a box 15 inches deep, 12 inches wide and 18 inches long, inside measurements; holding, when full, twelve combs, which are placed crosswise. Above this is placed, to serve as an air chamber in summer, a super or second story, 4 or 4½ inches deep, the same size as the hive. The cover is water-tight and made to fit over the hive. If comb honey is wanted such a hive as the "Langstroth" would be preferred. The body is much smaller than that of the Jones, and is intended to serve only as a brood chamber. When this is full a super is put on, in which the sections are placed. The Jones hive is not so suitable for comb honey production, as the body of it is so large—that having to be filled before the bees will work on the sections in the super. These hives are made of inch lumber, dressed on both sides, and may be had "in the flat," ready to nail together, from any dealer in beekeepers' supplies.

When purchasing a hive of bees, four or five pounds of comb foundation, of a size suitable for the hive, should also be procured; also a couple of dozen comb frames, unless it is preferred to make them. Then a veil and gloves will be necessary, and a smoker may also be found to be useful. Of course empty hives must be provided and kept ready to receive swarms. The hive, when first obtained, will probably not contain more than eight or nine combs with a division board behind them. These should be well covered with bees, and more or less filled with brood. If the bees cover all the combs and the brood is hatching, put in frames fitted with comb foundation till the hive is full, moving the division board further back each time to admit them, and finally removing it. These remarks apply to Jones hives. About this time a number of queen cells will be found on the combs. As these thimble-like structures reach the sealing-up stage prepare for a swarm. Have a hive ready with three or four frames with comb foundation in them. By this time, too, every neighbor who used to keep bees twenty or thirty years ago will be on hand with some device for making the swarm alight or come back to the hive—tin pans, spray pumps, and even shotguns will be recommended. But about as good a thing to do as any is to sit quietly down and watch them till they cluster, which they will do after a few minutes, most likely on the branch of some tree near by. The branch should then be cut as quickly and quietly as possible and taken to the hive. Care must be taken not to shake the bees off, and if that can't be avoided the branch must be held in its place till they cluster again, when it may be carried down. The swarm may be shaken into the hive and the cover put quickly on, but the better way is to lay it on a board at the front of the hive. The bees will very soon find the door and run in. As one gets acquainted with the work he may prefer swarming his bees artificially, which can be done by following the directions contained in the books mentioned above. The next thing to look out for is after-swarms. One, two, or even three may be thrown off, till it begins to look as if the old stock had gone crazy. Even one of these is not desirable unless swarming has begun very early. They seldom attain a good wintering strength, but usually have to be doubled up and fed in the fall. At the same time they are a ruinous drain on the strength of the parent hive. So a good way to treat them is to capture the swarm and lay it at the front of an empty hive; then lay yourself alongside and keep your eyes open for the queen. When you get a sight of her capture her and end her reign right there. In a short while the swarm will discover that it is not so well equipped for housekeeping as it thought, and promptly return to the parent hive. Let the bees increase as rapidly as they can, but keep down the number of hives. A well-filled hive, in the honey season, is profitable, but two half-filled hives are a dead loss. Let no beginner forget that, and they are all apt to do so. J. J. GUNN, Red River Valley.

GARDEN AND ORCHARD.

Destroying the Tent Caterpillar.

To the Editor FARMER'S ADVOCATE:

DEAR SIR,—In your ADVOCATE of 15th March, I noticed the article, "Fighting the Tent Caterpillar." My plan is simple and effectively and quickly done. We had them very bad for two years past. I get a long pole, say twelve feet in length. I bore a hole in the ends and twist any kind of rag—cotton the best—round the end a number of times, till I have a ball about two inches in thickness. The hole in end is to stick the cotton through several times with a darning needle to prevent it coming off pole. I then have a tin with a pint of coal oil. I dip the end of the pole in the oil and set fire to it, and hold the flame under the web and burn them. It does not injure the twig or branch, and you can reach the webs as high as the pole's length. I employed three boys, who, in one hour, burnt up some three hundred webs all along my neighbor's line fence, which was grown up in wild cherry and other brush. The boys enjoyed the fun. Each had a pole and a tin of oil. The whole cost was six cents. In my orchard I did the same, and last year I only had to burn fifteen webs. I repeated the burning along the hedge again and only found some forty webs. I burn them when the insect is as large as a pin and web as big as man's fist, and smaller. I repeat it twice in the summer, as they breed twice, but in less numbers.

Montreal, March 25, '90.

CHAS. HUGHES.

Pruning Trees at Planting Time.

BY JOHN B. PETTIT.

There are few subjects in connection with the fruit-growing industry that should be given more careful consideration than should the preparation of trees for planting after they have been received from the hands of the nurseryman. It is a well-known fact that a young tree makes its start either on the upward or downward grade during the first two or three years after its being planted, and if it makes a good growth and produces a nice, healthy top during those seasons, one may be satisfied that by proper management he will in time have a fine specimen. On the contrary, however, if the growth during those first two or three years is not a good one, the chances are the tree will never make a presentable appearance, or pay for the labor necessary to keep it living.

The matter of how to prune at this extremely important period of the life of a tree is a problem that has proved a stumbling-block to many who have not had considerable experience in this branch of horticulture, and the fear of cutting away too much has more often been the cause of error than has the too free use of the pruning instrument. In many instances the tree undergoes no trimming at all, but is planted just as it comes from the nursery. This method is, of course, worthy of nothing excepting severe condemnation.

We all understand that the act of transplanting must of necessity be a severe shock to a tree, when we consider that probably one-half or more of the fine, fibrous roots of a tree are left in the ground when it is dug from the nursery row. To counteract this, we must exercise intelligent pruning at the other end of the tree, and the top should be cut back a corresponding amount. It should be cut back more, for the roots, as well as being reduced to such an extent, are also loosened from the soil, and before they can again perform their regular, proper functions, they must make a new union therewith. It is always noted that when trees are not sufficiently pruned the growth made, if any, is a very weak one, and the trees are stunted and the effects are never overcome.

But if the tree should overcome the shock of transplanting, there are other reasons why quite severe pruning should be resorted to at this stage. It is natural for the sap to flow toward the extremities of the branches and cause a new growth to be produced from that point. The result in a few years would be long, slender whips, which, when the bearing time came, would, on account of their slender form, be unable to bear the load in an upright position, and consequently would be bent over and broken off, and the tree be greatly damaged, if not lost. By trimming back the first and each successive year, the flow of sap is kept back and side shoots are sent out, and this causes strong growth in the remaining part of the branch, and also greatly increased strength. It is very patent from these reasons, and others that could be given, that pruning at planting time should be resorted to.

How shall we go about it? We must be very careful in the outset, for we know that this trimming is a means to an end, and upon these early operations the form of our future tree greatly, if not altogether, depends.

As a general rule, 3½ ft. to 4 ft. from root to point on trunk where top shall start is sufficient. Take your young tree and begin trimming off the branches, cutting away those of weaker growth first, and trim off all branches but three (or four at most). Be sure and have these remaining branches come from the trunk in such a manner as to be the foundation of a nicely-shaped head. Once in a while we meet with a tree where this is impossible the first year, but it is not often the case. Having selected the branches to be the foundation of the head, cut all back to three or four buds on each branch. As is the case with all other work, there is a right and a wrong way of doing this. The *right* way is to cut it so the bud nearest the end will be on the outside of the branch, so as to lead outward and leave the center open, and therefore prevent close and crossing limbs; while the *wrong* way is to leave the end bud on the inside of the branch, and a crowded, tangled growth is sure to be the result.

In some trees it is quite a difficult task, and often a problem for a professional grower, to lay the foundation and form a good head. This is the case in such plums as the Burbank and Abundance, and, in fact, in all the Japanese varieties.

At planting time all broken and split roots should be trimmed also, and should be cut in such a manner that the sloping wound faces downward, as such a method does not render it so easy for any water to enter the root and cause the beginning of decay.

An orchard of trees with well-shaped heads is as easily obtained as any other if a little care is exercised in the outset, and the pruning of trees at planting time demands careful consideration and intelligent action, for "as the twig is bent, so is the tree inclined."

Wentworth Co., Ont.

P. E. Island Fruit Growers' Association Annual Meeting.

A very large, interesting, and important meeting of the above named Society was held in Charlottetown on the 21st of March. This Society is yet in its infancy—only about two years old—still it has accomplished great things already for the fruit-growers of the Island. It has already convinced many of our people that the fruit industry here is capable of great development, and that we have a soil and climate on the Island second to none for the production of the choicest flavor and best keeping qualities. The information disseminated by means of it has convinced very many of our farmers that apple-growing is not the uncertain business it was formerly thought to be, but that with care and attention in the matter of pruning and spraying, and by selecting the varieties for planting that come nearest to perfection here, success is sure. One advantage we have here is that we can ship our apples of the same varieties much later than Ontario or Nova Scotia can, as they mature later and will go to market after the bulk of the crop from earlier sections has been disposed of.

A trial shipment was made to the English market by the Association last fall, and though it was the first attempt to place P. E. Island apples on the English market and the shippers had everything to learn about packing and varieties suitable for that market, still the venture was a grand success financially, and it was also the means of introducing and establishing the good quality of our fruit in the English cities.

Senator Ferguson, an enthusiastic and successful fruit-grower, was chairman of the packing committee for the Association, and much of the success of the venture is due to the manner in which he selected and packed the shipment. The Senator thinks our next great departure here will be in the direction of fruit-growing, as the last departure was in adopting dairying, and we venture to think that the two will work along well together and both be successful.

The freight on apples shipped here direct to London was 4s. 10d. The shipment was made up of nine varieties, as follows: 1st. Spys, which netted here \$2.52 per bbl.; Ben Davis, netted the same; Talman's Sweet, netted \$1.83; Baldwins, \$1.57; Ribstons, \$3.44; Golden Russets, \$3.44; Peawaukie, \$2.18; Swar, \$1.57; Kings, \$2.76. Another shipment of the same kind of apples, but marked with the Association brand instead of the brand of the packer, and handled by a different firm, realized about one dollar a barrel less, which would seem to indicate that it is well to have the name of the packer or shipper branded on the barrel. Part of the trial shipment, 73 barrels, was marketed in Liverpool, and Alexanders netted \$3.05; Wealthys, \$2.07; Ribstons, \$2.07; Fameuse, Nonpareil, Wolf River, Bethel, and St. Lawrence, \$1.72. Many of the above varieties were sent just to ascertain their suitability for the market, and consequently their suitability for cultivation here.

The report of the President, E. Bayfield, Esq., was brimful of practical suggestions and hints of how we ought to engage in apple-growing, and showed that through the efforts of the Association the fruit industry of the Island was already established on a solid foundation. He strongly advised top-grafting with varieties that are valuable for commercial purposes as the quickest way to get quantities of the best kinds. He said that "we should try to induce everybody to join the Association and help us to push on the work till Prince Edward Island would not only be known as the garden, but also the orchard of Canada." Besides the reports of the officers, very interesting papers on apple culture were read by H. A. Stewart and F. G. Boyer, each of whom have had considerable experience as orchardists, and an address by John Robertson, of Inkerman Farm, who has the most extensive orchard on the Island. A resolution was passed calling on the Department of Agriculture to remedy certain grievances that exist in shipping fruit, such as improper ventilation in the holds of steamers, and asking for an inspector to see that proper facilities are provided on all steamers offering to carry fruit across the Atlantic, and also for a system of registration of temperature in the holds which will meet the necessities of the case. A committee of three of the best fruit growers was appointed to select a list of apples that the Association would recommend for planting reported as follows: For home market—Gravensteins and Duchess, Wealthy, Baldwin, and Ben Davis; for export—Alexanders, Ben Davis, Wealthy, King, Golden Russet, Ribston Pippin, Nonpareil, Mann, in the order named as to merit. The Association voted to expend the surplus funds on hand in sending experts through the different parts of the Island to graft with suitable scions and teaching the farmers to do the work themselves.

Mr. C. R. Dickie, our only extensive cranberry grower, gave a very instructive address on cranberry culture, in which business he has been very successful. His cranberries bring a much higher price in England than the Cape Cod berries. This is also an industry that might be largely and profitably developed here, as we have a lot of swampy country west on the Island that is suitable for that business. As this was the annual meeting, the following were elected officers for the ensuing year: Patron—Governor Howlan; President—

Hon. D. Ferguson; Vice-President—H. A. Stewart; Secretary—Peter McCourt, Charlottetown; Treasurer—Joseph Wise, M. L. A. A great deal of the success of the Association is due to the efforts in its behalf of Governor Howlan, who has been an enthusiast in the business for many years and has never lost an opportunity of trying to impress on farmers the wisdom of engaging in growing apples as one of the best and surest means of adding to their revenue. Your correspondent, after hearing the practical and interesting papers and discussions by the members of the Association, could not but be convinced that in the near future fruit-growing will be one of the paying branches of the business of P. E. Island farmers.

Luxuries Within the Reach of All.

"Luxuries within the reach of all," do we say? The caption is wrong, or ought to be. The "luxuries" we are to mention are really considered "luxuries" by far too many of our agricultural brothers, when they ought to be looked upon as necessities. It is a deplorable fact that far too many of us do not try to brighten our surroundings and indulge our appetites a little more than we do. Why can not every farmer have a good bed of strawberries? Now is the time to think about it. It is one of the most easily grown fruits; most quickly grown and matured; comes before anything else in the fruit line, when it is most appreciated by the good housewife; and for over 60 meals the farmer and his family can feast on those beautiful, delicious strawberries, with sugar and cream. There is nothing more difficult to grow if they are not attended to in a proper manner. You must keep them right under control or you may as well quit; no half-work will do in this case. It is a mistake, we believe, for the ordinary farmer to grow his strawberries in a bed (so-called) in the garden. We find it a decided advantage to grow them right out in the field. We plant across the end of a field. Of course, one must plan ahead and know beforehand how the rotation of the field is going to come in.

The ground chosen should be comparatively clean of weeds, chickweed, etc. Have it well manured and plowed the previous fall; then, under most circumstances, we would manure again and plow in the spring. Cultivate and work up what would be a very fine, deep seed-bed. After having secured a good rich seed-bed, get your plants. As to varieties, we are not going to recommend any kind specially, but get good young plants of some of the good standard varieties. Never on any consideration set plants that have borne fruit the previous season, but get young, healthy plants—shoots from plants set out the previous spring. Plant any time after the ground is sufficiently dry before 24th of May—the sooner the better. We plant in rows, five feet apart and about twenty inches in the row. Set the plants on a cloudy day or in the afternoon towards evening. They will then not be so apt to wilt. When planting it is a good plan to have someone go ahead with a spade and dig out a spadeful of earth where each plant is to be set; then the other follow and set with a trowel. Be careful to set the plants the same depth they were when dug up. Now, after they are planted keep them well cultivated; run through them after with the horse and scuffler. Don't let any berries grow the first season; clip off all blossoms that appear; also, it is a good plan to keep all the runners cut off that may grow for six weeks or two months, as you will then help to develop a stronger parent plant. Be sure to keep very clean of weeds the first season, as just here determines success or failure. Keep an eye to anything growing and seeding near by. The writer got caught one year. We had an excellent stand of plants; kept them perfectly clean all summer, but took no notice to a little orchard grass that was growing along the fence, consequently it ripened and almost "seeded down" part of our strawberry patch.

Everyone is familiar with the method of winter protection, viz., cover with straw in the fall after the ground freezes up. Now, just here we may observe a point. Don't rake off all the straw at once; rake it off into the path between the rows, but leave as much as possible near the plants; it will form an excellent mulch and keep the berries clean. By not taking any of the straw off part of the plot till as late as possible you can lengthen considerably your berry season. We start and rake off a little early and keep taking off a little more every few days. At the latter end of the plot the frost is kept in the ground and the berries kept back by the straw. About the most important point we wish to impress is: plow up your berries after you have got one crop of fruit. It is by far the better plan to plant a plot every year. Many get discouraged trying to grow berries year after year on the same patch. It is almost impossible to keep them clean of grass and weeds. It is far less work to plant out a new bed every year. You can thereby work your strawberry patch into the rotation of the field much better. Now, our patch this season is across the end of a wheat field. The field of wheat is to be seeded down. As soon as the berry season is over we will cultivate them up and sow clover on the patch, so that next season the whole field will be in grass. I am not advising every farmer to grow strawberries for the market, but why cannot more of us enjoy that wholesome, delicious luxury?

Waterloo Co., Ont.

JOHN TAYLOR, JR.

Preparations for the Paris Exhibition.

In the division of the work recently made by the Canadian Commission for the Paris Exhibition, in connection with the Government exhibits to be made on that occasion, the following was assigned to the charge of Prof. Wm. Saunders, Director of the Experimental Farms and member of the Canadian Commission:

Group 8, class 39, vegetable food products, including cereals of all sorts in grain and in sheaf, leguminous plants, tubers and roots, forage plants, flax, hops, etc.

Group 8, class 45, fruits, including all species and varieties of apples, pears, cherries, plums, grapes, and other fruits and nuts.

Since agriculture is the most important industry in Canada, a very prominent place has been assigned in the Colonial Building to the exhibit of cereals. In this part of the Canadian display it is proposed to show specimens of all the more important farm crops, special prominence being given to the leading cereals of the country.

The space allotted to class 45, where Canadian fruits will be displayed, will be in the Imperial Main Building, where the productions of the Dominion will be shown alongside of the fruit products of all other countries, 1,557 square feet of space having been secured for this purpose. It is proposed that a grand exhibit be made here, consisting, during the early months of the exhibition, of the fruits of 1890, put up in handsome glass jars and preserved in antiseptic fluids, decorated with a number of fine specimens in pots of ornamental trees and shrubs of Canadian growth. During the summer of 1900 ample supplies of fresh fruits will be sent of the choicest character of that season's growth, so that abundant evidence may be forthcoming as to the true character of the Canadian climate and the wonderful capabilities of this country in regard to fruit production.

Dr. Saunders will be glad to receive the co-operation of all agricultural and horticultural societies and associations in the different provinces and territories of the Dominion who may desire to aid in this good work. All those wishing to assist in making these sections of the Canadian exhibits truly national and fully representative of the great resources of this country will oblige by communicating with him. Letters may be addressed to the care of the Secretary of the Canadian Commission, Department of Agriculture, Ottawa, or to the Central Experimental Farm.

Ottawa, April 4th, 1890.

Selecting a Spraying Outfit.

To the Editor FARMER'S ADVOCATE:

SIR,—One who is accustomed to reading horticultural papers often sees such a question as, "What do you consider the best spray pump?" and I notice that in the FARMER'S ADVOCATE (March 15th, 1890), "J. G.," of Bruce Co., is seeking information along that line. It is a subject worthy considerable thought, for there is nothing more annoying to a farmer or fruit-grower than a spray pump that is always "acting up." And this is most certainly a disease that "runs in the family," and unless one has been very careful in making a selection, and has purchased a pump that comes up to the necessary requirements, it will be well to bear in mind that all conversation should be "yea, yea, and nay, nay," or there might be something worse said, as there is sure to be trouble, sooner or later.

Having had considerable experience in the use of spray pumps of different manufacture on our own plantations, and having carried on the experimental spraying in the "Eastern division" for the Ontario Government, which work necessitates about three months of continuous daily spraying, I may be able to give a little information that would be appreciated by "J. G." and other readers of this valuable journal.

In selecting a spraying outfit, there are several points which should be taken into consideration. The first, of course, is the pump itself: (a) It is necessary in the outset, that all metal parts of the pump that come in contact with the solutions used should be made of brass. This is absolutely necessary, for no other metal will withstand the corrosive influence of the copper sulphate, but would in a very short period become ruined. (b) The sucker should also be made of brass. No pump with a sucker of leather, rubber, wood, or any other material excepting brass, will give satisfaction for any length of time. It must be remembered that such suckers when attached to a pump in a well of pure water, will not give satisfaction a great length of time without being renewed. If such be the case with pure water, where they are continually wet, what would be the result when attached to a pump designed purposely for the use of poisonous drugs which act chemically upon these materials, besides the fact of being repeatedly wet and dry? (c) The pump should be as low down and as compact as possible. It should be mounted on the side instead of the end of the barrel. This, besides making it lower, and therefore in a position to make operation more easy, causes upsets from crossing deep furrows less liable and promotes a motion of the liquid which aids in keeping it agitated. A high pump gives a great amount of trouble in some orchards where the trees are kept trimmed low. (d) There should be a good agitator, one that will keep thoroughly agitated the contents of a barrel full of liquid. (e) The pump should be easy to operate, for it must be remembered that the work is to be done by hand.

(f) That the mixture may be broken up into as fine a spray as is necessary, the pump must have great force or power. (g) Lastly, the pump should be purchased already fitted to a barrel in readiness for use, for the majority of farmers and fruit-growers have not the necessary tools to mount a pump properly.

Having the pump, it is necessary that we should exercise the same care in procuring the remainder of the outfit. The barrel should be clean and strong, and should hold 40 gallons. All openings therein should be furnished with tight-fitting covers, for it is no pleasure to be doused with a solution such as Bordeaux mixture or any other insecticide. Every pump should be supplied with 8 or 10 feet of first-class hose. In addition to this, and in order that large, high trees may be thoroughly sprayed, an extension rod is necessary. This may be of small gas pipe, or what is better still, because it is much lighter, a piece of bamboo, in which is fitted a brass tube, and from 8 to 12 feet long. At the base of this extension should be a stop-cock which can be worked by hand. By this the stream may be cut off while passing from one tree to another, and it is also useful in cleaning out the nozzles. To the end of the extension rod the nozzle or nozzles are attached. A nozzle which throws a very fine spray should be used. Although there are numberless nozzles, there are none that will give the satisfaction that will the improved Vermorel. Excepting the pump itself, the nozzle is the next most important article in a spraying outfit, for without a good nozzle thorough work is impossible.

The majority of pumps on the market to-day are worthless. Never buy a pump because the agent produces evidence to show it is "the cheapest pump on earth." In the end it may turn out to be the dearest. But they are good pumps, and pumps comparing favorably with the description given above, and although they may appear a little expensive at first, they are the kind to purchase, for then one has a satisfactory article, and one that will last for years.

JOHN B. PETTIT.

Wentworth Co., Ont.

Remedies for Smut in Oats.

BY DR. WM. SAUNDERS, OF OTTAWA, DIRECTOR OF EXPERIMENTAL FARMS.

The disease known as "loose smut" in oats is very generally distributed throughout Canada and the United States and seems to be more or less prevalent in almost every country where oats are grown, and is the cause of a large annual loss to farmers. In some parts of the Dominion this disease has of late years become very troublesome, especially in those districts in Manitoba and the North-west Territories where oats are largely cultivated, and in some instances the loss from this cause has reached serious proportions. The manner of growth and propagation of this form of smut has been fully explained in Bulletin No. 4 of the Experimental Farm series, prepared by Dr. James Fletcher, Botanist of the Dominion Experimental Farms. Copies of this publication may still be had on application to the Director.

COPPER SULPHATE AS A REMEDY.

Experiments as to the best remedies for this disease have been conducted for some years past at the several Experimental Farms. The copper sulphate (bluestone) which is so successfully used for the "bunt" or "stinking smut" in wheat—by thoroughly wetting the grain before sowing, with a solution of one pound of the bluestone dissolved in three gallons of water, and sprinkling this quantity on ten bushels of wheat—has not given very satisfactory results when used for the "loose" smut of oats.

HOT WATER TREATMENT.

Soaking the oats in water heated to 132 to 133 degrees Fahr. for five minutes has been found to give good results, but the maintaining of the exact temperature during the time of treatment, which should not be allowed to rise above 135 or fall below 130, is a very difficult matter for the ordinary farmer to manage.

POTASSIUM SULPHIDE.

Potassium sulphide, known also as sulphuret of potash or liver of sulphur, has proved an effectual remedy. (See Report of the Experimental Farms for 1896.) This is used in the proportion of 1½ lbs. of potassium sulphide, dissolved in twenty-five gallons of water, and the oats steeped in this solution for twenty-four hours. From the results of experiments made in 1897 (see Exp. Farm Report for 1897) it is shown that this remedy is not so successful when the grain is soaked for the shorter periods of four, eight or twelve hours in place of twenty-four hours. The soaking for twenty-four hours is inconvenient, and swells the grain to such an extent as to make it difficult to sow.

BORDEAUX MIXTURE.

Bordeaux mixture made with 4 lbs. of copper sulphate and 4 lbs. of lime in 40 gallons of water, and soaking the oats in this fluid for four hours, gave fairly satisfactory results in 1897. (See Report of Exp. Farm for 1897, page 9.) Experiments were repeated with this material in 1898, which have shown that while this treatment materially reduces the proportion of smut, it has not proved a complete remedy.

FORMALIN A SATISFACTORY REMEDY.

Formalin, or Formaldehyde (which are but two names for the same thing), has been recently tried

for "loose smut" in oats, and has given the most satisfactory results. This liquid is a 40 per cent. solution of a chemical known as Formaldehyde, a fluid made from Methyl alcohol. Experiments were conducted in 1898 at each of the Dominion Experimental Farms with this material. The Formalin was mixed with water in two different proportions—one of 3 ounces to ten imperial gallons (equal to about 2 parts in 1,000), and the other 4½ ounces to 10 gallons (equal to 3 parts in 1,000). Three varieties of very smutty oats were selected for this test, and samples of the same lot sent to each Experimental Farm, so that the results might be fairly comparative. The oats were soaked in the liquid for two hours, and a plot of the grain untreated was sown alongside of the treated grain for comparison.

The results obtained show that Formalin may be regarded as a most satisfactory remedy for this disease, acting in most of the experiments as a complete preventive. The Superintendent of the Brandon Experimental Farm, Mr. S. A. Bedford, tried some further experiments in steeping the grain in the solution of Formalin for shorter periods, reducing the time to thirty minutes, ten minutes, and five minutes, and obtained results equally good with those had from the soaking for two hours. Further tests will be made along this line at all the Dominion Experimental Farms during the coming season. From the results obtained from these tests at the Experimental Farms and similar trials which have been made with this remedy in the United States, there seems no reason to doubt that Formalin may be regarded as a safe and successful remedy for this disease, and it is probable that soaking the grain for ten or fifteen minutes will be quite sufficient.

COST OF TREATMENT WITH FORMALIN.

The Formalin (or Formaldehyde) of commerce is sold at wholesale for about fifty cents per pound, and may usually be bought at retail for about seventy-five cents. Supposing it to cost eighty cents (equal to five cents per ounce), the ten imperial gallons of solution, of the strength of two parts to the 1,000, would cost fifteen cents, and that of three parts to the 1,000, twenty-two and a half cents. As the same solution may be used for successive samples of the grain, the cost of treatment would be small. It would, I think, be wise in all cases to use the stronger solution, and soak the oats in it for not less than fifteen minutes.

When steeping the grain in the Formalin solution, a good plan is to enclose it in bags made of cheese cloth or some other open fabric which will allow of the free passage of the liquid through it.

Vexatious Government Regulations.

As we go to press, angry complaints reach us from nurserymen and their agents regarding the regulations recently issued by the Ontario Dept. of Agriculture, requiring the fumigation by hydrocyanic gas of all nursery stock sent out after the 1st of April, as a precaution against the possible spread of San Jose scale and other insect life. It is not that nurserymen are unwilling to comply with the provisions of the law, to which they are, as a class, loyal and true, when reasonable and timely notice is given of its requirements, but they complain, and so far as we understand the situation, justly, that just at the time when the season's business is opening, when many of them have their early orders packed, and when every day of delay tells upon the quality of their stock, they are notified of new regulations, compliance with which involves not only loss of time but the labor and expense of building and making other preparations for carrying out a process to which they are more or less strangers, and which must of necessity seriously interfere with the regular course of business and result in vexation and loss to a large number of worthy people. It does seem inexcusable, after the annoyance to which many were subjected a year ago by the lateness of issuance of the regulations prohibiting the importation of nursery stock from the United States, that a similar but more serious disability, since it affects only our own loyal people, should be imposed at the same critical season this year, to the disturbance of business and the inconvenience of all concerned in the handling of nursery stock. We make no complaint of the provisions of the new regulations, and we are not aware that the nurserymen, as a rule, do, but we have been informed that one in this vicinity received, on March 17th, a certificate from the district inspector that his stock was free from the San Jose scale, and had made his arrangements for an early delivery of stock, when on the 11th of April he received from the Department of Agriculture, at Toronto, a circular notifying him that by the provisions of the law no stock must be shipped until fumigated. The protest of the nurserymen is made on the ground that reasonable notice has not been given, and if the facts are as stated and as appears, there is certainly cause for complaint at least, if not for strong remonstrance.

QUESTIONS AND ANSWERS.

[In order to make this department as useful as possible, parties enclosing stamped envelopes will receive answers by mail, in cases where early replies appear to us advisable; all enquiries, when of general interest, will be published in next succeeding issue, if received at this office in sufficient time. Enquirers must in all cases attach their name and address in full, though not necessarily for publication.]

Legal.

BREACH OF CONTRACT.

R. J. B., Victoria Co., Ont.:—"I purchased a Shropshire ram in the early part of October last, and the seller agreed to register pedigree and crate sheep for \$10. Shortly after receiving ram I wrote seller about the pedigree, which he assured me would be along in a few days. Four months have elapsed, and he has neither answered my correspondence or sent the pedigree. What legal proceedings can I take against him?"

[The seller clearly has failed to perform his contract with you, and you have a perfectly good action at law to recover from him the full amount of damages which you have sustained. Put your case in the hands of a lawyer.]

DOGS WORRYING SHEEP.

W. J. W., Peterboro Co., Ont.:—"Would you please give me some information in your next issue in regard to dogs running over a man's place? I live near the village and keep sheep. They are a regular nuisance, chasing the sheep at times."

[The statute provides that "any person may kill any dog which he sees pursuing or worrying any sheep or lamb," but you are not justified in killing a dog trespassing on your farm merely because you fear the dog may injure your sheep. Of course, it would be a gross outrage if the owner of a farm should kill valuable dogs even if trespassing occasionally merely because of fear of damage, and, of course, if damage occurs the owner of the sheep dog is liable; but the writer knows this is very poor consolation to you, because of the difficulty generally of proving what dog actually caused the damage, and then the probability that the owner of it is worthless, or, at least, execution proof. The owner of any dog to whom notice is given of injury done by his dog to sheep is by statute compelled to cause the dog to be killed. The writer realizes the nuisance and injury which you complain of, and although he must as a lawyer tell you it is illegal to kill even ill-bred, worthless curs when trespassing, except as above stated, yet, if the nuisance was very great, he thinks he would find a means of removing some of them (for the benefit of the community and himself in particular) and take his chances.]

LANDLORD AND TENANT.

Waterloo Co., Ont.:—"A tenant in my house is in arrears in payment of rent. How long a notice must I give him before I can sell his goods for rent, and can I sell all he has in the house, and how should I proceed?"

[If a tenant does not pay on the day the rent becomes due, you have the right on the very next day to distrain and seize his goods for the amount due you, and you can distrain and seize for the whole amount then past due, whether it be one payment or more than one payment that is overdue. You can ordinarily seize and sell everything except his legal exemptions, which are defined by statute, and include his necessary household effects and food, tools of trade, etc. Your best way to proceed is to go to a bailiff or agent or constable in your neighborhood who does this kind of work and empower him to act for you as your bailiff in the matter.]

UNBOUND MARE.

SUBSCRIBER, Oxford Co.:—"Last fall I bought a three-year-old filly, paying seventy-five dollars for her. After having her home about an hour I discovered she was very lame. The next morning I took her to a vet., who said she had a bone spavin coming. That day I returned the colt to the former owner and told him of the circumstances. He claimed not to know she was lame when sold, but said she was lame a short time before. They did not warrant her, but told me she was all right. Could I have made them take her back?"

[For the seller to claim that the filly was all right when sold was to warrant her sound. The proper course to have taken was to have offered the mare back to the former owner, and if he refused to take her and return the price paid, she should then be advertised for a certain length of time, which a lawyer can advise, and then sold by a licensed auctioneer. If she failed to bring as much money as was paid for her previously, by an action at law the seller could be compelled to make up the difference.]

PROPERTY OF INFANTS.

SUBSCRIBER:—"Does the Government employ a lawyer to look after the rights of children who become entitled to property, and if so, will you kindly let me know his name and address?"

[John Hoskin, Q. C., Toronto, is the "Official Guardian" for infants in Ontario, and in matters which come before the courts where an infant is concerned, if not properly represented by a trustee, before any order is made affecting the property or rights of the infant, the court will insist upon the "Official Guardian" being notified and that he be present or represented on the hearing on the infant's behalf, and in this way the courts are very alert to protect the rights of infants. There are, of course, many cases where infants are

interested, who act through trustees or executors appointed under a will or deed to manage the estate, and in such cases the trustee is the proper person to represent the infant and is liable to the infant unless due diligence is exercised by him to protect the trust estate, and in such cases usually there is no occasion for interference by the "Official Guardian." The policy of our law, both as to the making of the laws themselves and in the administration of them, is that great precaution is taken to protect the property and estates of infants. It will, of course, be understood that any person under the age of twenty-one years is an infant.]

Veterinary.

DISEASED TOOTH.

S. W. B., Sintaluta:—"Mare six years old, about eight days ago started to run at left nostril very offensive smelling pus. Took her to vet., who said it was from decaying tooth. One of her upper teeth was quite a bit lower than the rest; the vet. with his forceps broke off this tooth, and gave me condition powder to give her. I am feeding her three gallons of oats a day, either boiled or chopped, and hay. She eats very poorly, seems very weak, staggers when she walks, lies down often, and generally paws a little before she lies down. Has got very thin. What can be done for her so I can get her in condition to work?"

[The diseased tooth prevents the animal from properly masticating the food, which, in consequence, is swallowed in an unprepared state, producing indigestion, which is, no doubt, the cause of the symptoms of pain, weakness and general unthrifty condition you have described. The faulty tooth being, very probably, the primary cause of the trouble, should be entirely removed, and, as its crown has already been broken off, this can only be done by the operation of trephining. I would advise you to give the case in charge of a skilful veterinarian, who, from personal examination and observation, will be in a much better position to apply satisfactory treatment than any one who has not had the opportunity of seeing the animal can possibly be in. W. A. DUNBAR, V.S., Winnipeg.]

LYMPHANGITIS.

YOUNG FARMER, York Co., Ont.:—"I have had several cases of lymphangitis in my horses lately. The last case was a young mare in foal. She was fed on cut straw, oat chop, whole straw, roots, etc., and was in nice, thriving condition. She was let run in barnyard part of every day. Please give cause, best preventive, and best treatment for this disease. If after treatment the leg remains swollen, is there any treatment that will reduce it to its normal condition?"

[From the fact that you have had several cases of lymphangitis it is evident that you are over-feeding them, considering the work they have to do. Thick-legged gross feeders are more predisposed to this condition than others. The cause of the disease is more chyle (digested material ready to enter the circulation through the lymphatics) than the lymphatic glands and vessels can take care of, causing congestion, swelling, and inflammation. Lymphangitis can be avoided by feeding lightly those horses which are not working, and by occasional bran washes (every other night) in which is dissolved light doses of diuretic medicine (those drugs which act on the kidneys to increase their secretion), such as saltpeter, teaspoonful doses once a week, or resin in slightly larger amounts, and by giving light work or regular exercise. The treatment for other than in-foal mares is to give a brisk purge of 8 to 10 drams aloes. Remove all food except bran washes, and after the purge operates give a course of diuretics for ten or fifteen days. Locally apply hot water constantly for four to six hours at a time in which is dissolved a strong infusion of hops, wormwood, etc., and rub in a good stimulating liniment, such as: ½ oz. each of sugar of lead, saltpeter, spts. turpentine, and strong ammonia; 4 ounces spts. camphor; all dissolved in one quart soft water, well shaken, and apply every four to six hours. Regarding the after treatment for the thickness remaining there is little we can recommend other than regular work, careful feeding, etc. The parts become normal, or nearly so, as the lymphatic system becomes stronger. Each succeeding attack leaves the leg larger, and in no case should a horse be exercised during the acute stage except under the supervision of a competent and experienced veterinarian, as each time the swelling is removed by exercise, and returns, the leg is left larger. For in-foal mares all except the purgative is the proper treatment. When the fever is high at the very start a few light doses of tr. aconite is highly beneficial, about 8 to 10 drops every four to six hours in drinking water.]

STERILITY IN MARE.

SUBSCRIBER, Quebec:—"I have a Thoroughbred mare, 18 years old, which I desire to breed from, but she has always refused the stallion. Could you suggest some mode of conviction which would not be harmful?"

[Sterility in mares may depend upon many causes, and prolonged continence, especially old age, is a common one. Infecundity is frequently seen in mares which have worked for many years in towns and then transferred for breeding purposes. In many cases it is due to a closing of the os uteri, a circumstance more common than is generally supposed. The oestrus rutting, or heat season, marks the period of maturation in the ovarian ova, which desire continuing only a brief period, until the

faculty of reproduction ceases. With regard to the period when procreation ceases in animals, it is difficult to arrive at a trustworthy conclusion. There are many cases on record of mares breeding up to the age of 25 years, but, of course, these are exceptional. We are inclined to the opinion that your mare lacks sexual desire, as we have often met with this condition in a number of breeding establishments, especially amongst Thoroughbreds. Excitable, vicious mares are less liable to procreate than those which are of a gentle disposition. It has also been observed that mares accustomed to work—active exertion, even to produce fatigue, before being put to the horse—is favorable to conception. We would first recommend that you get a competent veterinary surgeon to examine the os uteri and find out if the passage is quite clear and free from any fibrous deposit. In many cases the closure of the os may be remedied in this safe and simple operation. Then have the mare ridden or driven until free perspiration is induced; this will act as a purgative or the abstraction of blood before service. If these means fail, try full doses of camphor, say the following, which has been successful: Nitrate of potash, 1 ounce; powdered cummin, 3 ounces; powdered camphor, 1 ounce; powdered capsicum, 1 dram; salicylic acid, 2 drams; molasses sufficient to form six bolus. Give one every day before service. DR. MOLE.]

UNTHRIFTY BULL—INDIGESTION.

G. B., Oxford Co.:—"Could you or some reader of your valuable paper give me any information what ails my bull, and what treatment to use? Last spring I bought a valuable young bull with pedigree. He will be two years next May. He did very well until last November, then he began not feeding well, and has continued so ever since, gradually getting thinner and lighter all the time, refuses to eat good hay and grain, or roots either whole or cut, and when I turn him out to water he will try and get some old dirty straw around the manure pile and eat that. He looks dry in the hair and coughs a little."

[Your bull is suffering from indigestion. Give him a purge of Epsom salts, 1½ pounds; ginger, ½ ounce; dissolved in a quart of hot water, and drench carefully when cold. After the purge operates, give him a heaping teaspoonful of the following mixture in a cup of whisky and one pint water three times a day: Ginger, gentian, bicarbonate of soda, and aniseed, of each 1 ounce; powdered capsicum, 3 drams; and powdered nux vomica, 6 drams; all thoroughly mixed. Repeat the purge in three weeks if he does not start to improve.]

SEPTIC POISONING.

FARMER, Huron Co., Ont.:—"I have a sow ten months old. I took her to the hog about four months ago; she received no abuse. A week later she took sick and went off her feed for eight or ten days. Her skin seemed to turn bluish; later on, the skin on her back over the shoulders and over the rump, for ten or twelve inches round, about three-fourths of an inch deep, came off, each piece weighing about two pounds. It seemed like rotten flesh, and smelt bad. I washed it with lukewarm water and a few drops of carbolic acid; after drying, I applied raw linseed oil. Treated in this way several times during the winter. She is healing nicely, but slowly. She had a litter of six pigs ten days ago, but was cross and bit them till they died. Would you advise keeping her for a brood sow? What was cause of ailment, and what treatment would you advise?"

[Your sow has evidently suffered from septic poisoning, and the wonderful part is that she did not die. Unless you place extraordinary value upon her, on account of superior breeding, we would not think she would yield satisfactory returns for the attention she will require, as it is hardly likely she will be a successful brood sow for some time to come. Equal parts turpentine and cottonseed oil makes an excellent dressing for such wounds.]

AILING PIGS.

J. E. G., Middlesex, Ont.:—"I have eight pigs about six months old. They did very well for the first three months, and then they began to slack back, and of late have stiffened up in their legs—both hind and front. I was feeding oats and peas, mixed—chopped together—and some bran mixed in. I have given them charcoal, sulphur, salt, salts, and linseed meal, and gave them some earth, and some fresh meat from the slaughter-house, but they are no better, but rather worse. They don't eat much now, and lie stupid the most of the time. Will you please tell me what is wrong, and what to do with them? The pen is dry and warm."

[A good many feeders have had this same experience the past winter, some who have been generally very successful in feeding fall pigs through the first winter. It is difficult to account for. It is generally considered that the best preventives of this trouble is exercise, and a sufficiency of grit, such as charcoal, gravel, etc. Our correspondent has evidently used these latter, and we could suggest no better treatment, but it does not appear clearly whether they were adopted before the trouble began. Prevention is much better than cure, and it is possible if these things had been provided earlier the trouble might have been avoided. Probably the best thing to do now is to give sun baths by letting the pigs out on fine days on the sheltered side of a building, and encourage them to pick at the first green grass; this, with exercise, will do more for them than anything else.]

PURPURA EFFECT OF INFLUENZA.

SUBSCRIBER, Ontario Co., Ont.:—"I have a horse that had the influenza. He did not gather and run at the throat like a good many around here, but he ran at the nose for nearly a week, then he seemed to be getting better. All at once he commenced to swell up on all four legs up to the body nearly. I gave him a good cleaning out with aloes, then I went to a veterinary and he gave me some powders to give him, but the swelling does not seem to get much better, and I am now feeding him some condition powders. He started to swell at the sheath a few days ago. I am washing that out nearly every day with warm water and soap. The weather is rather unfavorable for exercising him, but I let him out a little while when not too cold. I keep him well blanketed. Am I pursuing the right course, or is there anything better which could be done? Do you think he will get all right?"

[Your horse has contracted purpura as a result of the influenza. Remove him to a roomy, clean, well-ventilated and lighted, dry box stall, and keep him comfortable in every way possible. Give no exercise other than what he takes in the stall. Feed good hay, oats and bran liberally, and give him 1 ounce of spirits turpentine in 8 ounces raw linseed oil once a day; also a teaspoonful tincture iron three times daily in a drench, with a little water in which is dissolved a heaping teaspoonful chlorate of potash. If that amount of oil relaxes the bowels too much, reduce the quantity.]

INFECTIOUS DIARRHEA.

SUBSCRIBER, Addington Co., Ont.:—"My cows are beginning to take the scours. The third one has it to-day. I have seen other years when it would go over a whole herd. It takes them down in flesh very fast. They have been fed on hay, cornstalks and straw. Last week I took in a stack of grain that was frozen in July, and have been feeding some of it. Is there anything I can do to keep it from going over all of them?"

[From the tone of your letter, we are afraid you have infectious diarrhea in your herd, due, perhaps, to bad drainage; at any rate, there is some poison operating in the system. Give each cow affected a pint of raw linseed oil in which is mixed one ounce spirits turpentine, and follow this with dram doses each of quinine and carbolic acid in a little water, and drench twice daily. Disinfect your stables thoroughly, and see that the ventilation is good, and if there is not plenty of good sunlight make larger windows, and above all, attend to the drainage.]

HEAVES.

J. G., Algoma, Ont.:—"I have a good mare nine years old which got the heaves about six months ago. (1) Are they usually curable?—if so, give remedy. (2) To about what extent will it affect her for breeding purposes?"

[We are sorry to say that heaves is incurable, but much can be done to relieve distressing symptoms by careful feeding. Never allow her to fill herself with water, hay or straw; water before feeding; feed sparingly with good clean hay and rather more liberally on bran and oats, all of which should be dampened with water. A cup of raw linseed oil and a teaspoonful oil of tar mixed in the feed once a day is sometimes beneficial, when they will take it, and you will sometimes find the following very good: Powd. wild turnip root (Arum Tripholium), powd. lobelia and nitrate of potash, of each one ounce; powd. stramonium leaves and nux vomica, of each six drams; arsenous acid, 36 grains; all well mixed and divided into 12 doses. Give one, daily, in feed. Mares afflicted with heaves frequently breed all right, but being in foal intensifies the symptoms and the trouble.]

RETENTION OF PLACENTA—LEUCORRHEA.

J. E. C., Hullcar, B. C.:—"I am a new subscriber to the FARMER'S ADVOCATE, and would be glad if you would give me a remedy for cows that have not cleaned properly after calving. I will esteem it a great favor if you will tell me if anything can be done for them; also what to do to prevent it? 2. We have a pure-bred Jersey cow that calved about eighteen months ago, but never cleaned after it. She is in good health and condition, but does not come in heat, and there is a thick, matery discharge from the womb. She is still milking. Can anything be done for her?"

[The foetal membranes, placenta—"afterbirth"—"cleanings"—are naturally expelled immediately, or very soon, after the birth of the foetus. Among the domesticated animals this favorable termination to the act of parturition usually attends the mare, sow, bitch, and cat; but among ruminants, represented by the cow, ewe, and goat, particularly in the cow, retention of the placenta for a prolonged period is of frequent occurrence. This condition may, to some extent, be accounted for by the anatomical peculiarities of the mucous surface of the uterus of the cow and other ruminating animals. The surface mentioned is studded over in some parts very thickly with various sized tubercles called cotyledons, and to these, during the period of gestation, the placenta is very firmly attached. At the termination of gestation the union between the maternal cotyledons and those of the placenta should, however, become dissolved; but for certain reasons more or less obscure this much-to-be-desired segregation does not always take place. Some of the specially supposed causes of retention of the placenta are: Premature parturition, protracted and laborious parturition, abnormal adhesions between the womb and foetal membranes, rapid clos-

ure of the os uterus (mouth of the womb) after delivery. Old or poorly-fed cows are said to be subject to the accident, giving cold water to drink too soon after calving, etc. Some one or more of these causes may occasionally operate, but during a practice extending over twenty-four years I have noticed the abnormality in question in cows of every age and condition and under every system of management—good, bad, and indifferent. There are grounds for believing that the chief cause which produces retention of the placenta is not yet discovered. It may eventually be found to be, to a great extent, due to some peculiar nervous influence, in certain cases, brought to bear upon the cow during the last stage of pregnancy, or during, or soon after, parturition.

The treatment is medicinal or mechanical, or a combination of both. The former consists in the administration of so-called "cleansing draughts," which are supposed to hasten the expulsion of the placenta. These are, or should be, composed of a laxative, diuretic, ecbolic, carminative, and a stimulant, and should be given within three days after parturition. If this treatment is not effectual in expelling the "afterbirth," its removal must be accomplished by mechanical means, which embraces an intelligent use of the hands and arms of the operator. The time when manual interference is necessary will depend very much upon the temperature of the atmosphere and the physical condition of the animal. If the weather is cool or temperate, and the cow has a good appetite, gives a natural flow of milk, is lively, and apparently in no respect suffering any inconvenience from the prolonged retention of the placenta, in such cases a too hasty interference is not indicated. Patience should especially be exercised when a large portion of the placenta has already been expelled and is hanging from the vulva, because there is evidence that the whole mass will shortly become detached in the natural way. When, however, the weather is warm and the cow exhibits symptoms of constitutional disturbance, manifested by uneasy movements of the hind legs; straining, with frequent attempts to micturate; appetite and flow of milk more or less impaired; and the exposed portion of the placenta giving evidence, by its change of color and smell, that decomposition has commenced, its removal should then no longer be delayed. In removing the placenta the operator should make bare both his arms to the shoulder, wash his hands and arms in a solution of creolin (one part to fifty parts of water), and afterwards smear them with a lubricant made by mixing one part of creolin with fifteen parts of vaseline or lard. The washing and smearing of the hands and arms should be frequently done during the operation. This antiseptic measure should be strictly observed, especially when decomposition has made considerable advancement. When all is ready an assistant will grasp the tail and hold it to one side, and if the cow is nervous or restless another assistant will take her by the nose until the operator inserts his hand into the vagina, after which the animal will usually stand sufficiently quiet. The hand is then advanced to the mouth of the womb, which is sometimes so much contracted that the hand cannot enter. When such is the case the opening must be carefully dilated, with the fingers in the shape of a cone, until it is wide enough for the hand to pass through. When one hand has entered the womb the part of the placenta exterior to the vulva should be grasped by the other hand, and steady, firm, but not violent, tension applied to it, which will serve to guide the hand within the womb to the adhering parts. The membranes have now to be carefully separated from the cotyledons before mentioned. This is done by persistent and skilful manipulation with the two first fingers and thumb. The operation in performing it properly (which is the manner in which it should always be done) is often a very tiresome and tedious one, and requires the exercise of a good deal of patience and perseverance on the part of the operator. I may say that in performing the work there is much advantage in relieving one hand with the other. On the removal of the placenta, if it is decomposed, and a sanious, fetid discharge is being ejected, the womb should be thoroughly washed out with warm soft water, using an enema pump or large syringe for the purpose, after which it should be plentifully injected with a two-per-cent. solution of creolin—creolin, one ounce; water, fifty ounces.

2. Your Jersey cow's ailment is leucorrhœa (whites), caused, no doubt, by the non-expulsion of the fetal membranes. The case being one of long standing, the successful treatment will necessarily be somewhat difficult. The womb and vagina should be thoroughly washed out once a day with warm soft water. This should be done with a large syringe, and the injections should be continued each time until the water flows out quite clear. After each washing the parts should be injected with a four-per-cent. solution of permanganate of potass.—permanganate of potass., two ounces; water, fifty ounces. Give internally in mash twice daily for two weeks, iodide of iron, one dram. As the discharge disappears the local treatment should be gradually discontinued. W. A. DUNBAR, V. S.]

SPRAINED HOCK.

SUBSCRIBER, Prescott Co., Ont.:—"A Clyde mare coming seven this spring, after an upset eight days ago, ran about three-quarters of a mile and around the barn, where she smashed the sleigh and broke loose from it. This was seen next morning by the tracks, as no one saw her for at least an hour after she reached home, it being at night.

Next afternoon we drove her easily for about ten miles. She perspired a great deal, but showed no other sign of weakness. Next morning she held one hind foot from the floor. It was slightly swollen below and around the hock, and she refused to eat. It was discovered after the accident that the spur from this leg had been knocked off, but without any cut. Swelling has increased. Yesterday kept hot bran poultice with turpentine to it all day, with no apparent effect. The mare has worked hard, and was well fed on oats and timothy. Since the accident have tried bran or anything else to tempt her. She seems to eat better at night, but drinks very little. She was expected to foal about end of June."

[From your description of the mare we are of the opinion that she has sprained her hock joint, which is rather a serious accident, as this is probably the most complicated joint in the body. Continue the hot poultices, and three times a day give the entire joint a good rubbing with the following liniment: Sugar of lead, saltpeter, spirits turpentine, and strong ammonia, of each half an ounce; spirits camphor, 4 ounces; water, 1½ pints. Shake well before applying. And give the mare a small teaspoonful of saltpeter in her bran mash twice a day for a week. Keep her perfectly still, and if necessary put a sling under her for support. As soon as you get the inflammation reduced in the hock, it may be necessary to apply a blister to remove any lameness that might be remaining, but before you apply any treatment be sure of the exact location, and have the foot very thoroughly examined by a competent blacksmith, as she may have picked up a nail in her foot.]

LAME SHOULDER.

SUBSCRIBER, Ottawa Co., Ont.:—"I have a valuable Clydesdale mare, nine years old, carrying first foal; due to foal last week of May. She has been very lame in right front leg since 1st February last—too lame to go out to water. She gets no better. Mare worked in a team in the city until she got lame. When she walks she drags or scrapes the toe along the ground. She steps off sideways from the sore leg; keeps the elbow out from the body as much as possible. No heat nor swelling now. When standing, she keeps the foot flat on the floor, but a little ahead of the other. When she took lame, first she often stood with sore foot a little behind the other foot, with toe turned in. At first there was swelling around and above the fetlock joint, and sometimes a little swelling inside the arm of leg up near body, and sometimes swelling on the outside of the arm. Those swellings were painful to the touch. Was also swollen half way along the ridge of the neck from the point of shoulder to the throat. I never felt any heat. What is the trouble, and what should I do for her? Some people say her lameness is due to being with foal, and that she will be all right. Is this so? Can all medicines usually given to a horse be given to a mare with foal without injury to the foal?"

[The mare's trouble is high up—probably in the deep-seated muscles of the shoulder. It would not be wise to pursue any heroic treatment until she foals, and in the meantime give the entire shoulder a good rubbing, twice daily, with the following liniment: Nitrate of potash, acetate of lead, oil turpentine, liq. ammonia fort., of each six drams; tr. cantharides, 2 ounces; oil origanum, 1 ounce, and spirits camphor, 4 ounces; all dissolved in a quart soft water. After she foals we would insert a seton as near the seat of lameness as possible. In foal mares should have very little drugs, and in no case should they be purged, especially with aloes.]

INVERSION OF THE WOMB.

J. H. B., Megantic Co., Que.:—"What is to be done in the case of a cow prematurely calving and forcing out the "calf-bed" or womb with the afterbirth? Within this week there have been two such cases in my immediate neighborhood. In one instance the cow was at night, when fed and watered, apparently all right; but in the morning the calf-bed was hanging with the afterbirth, and the cow dying from loss of blood. Being too far gone for recovery, nothing was done for her, and she died. In the case of the second one, she threw her calf at eight months, the calf-bed immediately following with the afterbirth. An attempt was made to replace the womb, but it was an impossibility. The cord was therefore tied and severed, the cow dying immediately afterwards. In this case, the womb seemed to be decayed and spongy. What should have been done in these cases? Is this common amongst cows, or of rare occurrence? Can a cow live after removal of womb in any manner?"

[The cases described are not at all uncommon during calving season, although in the second case the abortion signifies a matter of more importance, as we believe contagious abortion is becoming alarmingly prevalent in some sections in Quebec, and all means should be adopted to prevent its spread, by thorough disinfection of the cow stables and keeping things clean generally.

Regarding the treatment for inversion of the womb, first place a clean sheet beneath and around it (to protect it from straw, dirt, etc.), then carefully remove the adhered afterbirth and cleanse the organ thoroughly in clean warm water in which is dissolved a little carbolic acid (four drams to a gallon of water), after which it must be returned to its proper location by steady, persistent yet careful pressure when the cow is on her feet. This requires a strong, careful man. Place the fist

as near the center of the organ as possible, and with firm and steady pressure return it, then make the following solution and inject: Powdered alum, ½ oz.; tannic acid, 1 dram; fluid extract belladonna, 2 drams; carbolic acid, 1 dram; clean soft water, at 98 degrees or as near the animal temperature as possible, 1 quart; and inject the entire amount, remaining with the cow for some time, to prevent straining and throwing it out again. Repeat injection two following days.

Both the cases referred to died from shock. We have heard it recommended to insert a beer bottle into the vagina, bottom first, and secure there by tying a strong string to the neck and fastening the ends to a surcingle placed around the cow just before the udder. Leave the bottle in this position for a day or so, or until the cow has ceased to strain.]

LAME MARE.

C. D., St. Pierre, Man.:—"I have a heavy mare, lame in front feet. She is naturally flat-footed. She has been lame for three months. I put some oil around the coronet and some electric oil on corn inside of shoe. The horn looks burned and is very dry. Could you tell me any remedy?"

[Poultice the feet for three or four days with equal parts of bran and linseed meal mixed with hot water, changing the poultice morning and evening. After this, take the mare to a good shoeing smith and have her shod with properly-fitting bar shoes, applying at the same time leather soles with tar and tow stopping.

W. A. DUNBAR, V. S., Winnipeg.]

ACTINOMYCOSIS.

SUBSCRIBER, Simcoe Co., Ont.:—"I have a steer that I have been feeding. He took something in his mouth and tongue about two months ago. There are spots on his tongue, the glands are swollen on both sides. He seems short of breath, and quite frequently coughs. I should be glad if you are able to give any information in regard to treatment."

[It is difficult to give any reason why animals put up for feeding should contract this disease. The membrane may become inflamed from eating some irritating substance, or it may be the result of the disease known as actinomycosis. The first symptoms are saliva dribbling from the mouth. On examination, small red elevations will be observed on the tongue. These spots are succeeded by ulcerated patches, which are exposed by the shedding of the mucous membrane. Treatment, if from actinomycosis: Give repeated dram doses of iodide of potassium twice daily in bran mash. If from stomatitis, a disease which shows itself in pimples about the mouth, give a dose of purgative medicine and apply the following: Molasses, 4 ozs.; boracic acid, 2 ozs.; nitrate of potash, 1 oz. Give a tablespoonful by rubbing on the back teeth with a piece of stick covered with cotton rag. This the animal will chew and so obtain a dose. Apply twice a day. DR. W. MOLE, M. R. C. V. S.]

COW FAILING TO BREED.

M. B., B. C.:—"We would like your advice on a young cow. She was due to calve on Sept. 23rd, 1898; lost her calf on June 27th; we bred her on Nov. 29th, Dec. 21st, 1898, and on Jan. 15th; she came in season to-day, 9th Feb.; did not breed her this time. Two days before breeding, Nov. 29th, gave her a dose of Epsom salts; washed her well with West's disinfectant fluid, also washed bull. What do you think we should do with her? We intend to let her rest for a few months."

[We cannot recommend any better course than the one you have followed, and can only counsel patience. From observation, we are satisfied it is not wise to breed a cow within three months after abortion. As a rule, cows having had this mishap will breed again, but there are a considerable number of exceptions. It is well to give her the rest you propose.]

HEIFER STRAINING.

SUBSCRIBER, Simcoe Co., Ont.:—"I have a valuable heifer rising three years old. In June she jumped out of the pasture field and was away for two days. I suppose she was in heat, but do not know whether she was with a bull or not. After returning she started to strain as if in pain, and kept this up till fall, failing greatly in flesh. She gradually got better, mended in flesh, and came in season. I have had her served twice, and after service she discharges a little blood and after an hour strains some. What is the trouble, is she likely to breed, and what treatment should I adopt? (2) My yearling heifers which have been in heat several times I notice a day or two afterwards discharge some blood. Do you think there is anything wrong in this case, and should I give any treatment? (3) Can you give any remedy for large tapeworms, about eight inches long, in pigs? Pigs are five months old and have been fed turnips and mangels, with oat chop."

[(1) The cause was probably excessive service by a strong and vigorous animal, causing inflammation of the womb. Time may bring about a healthy condition of the parts, and we would advise the use of a young bull and one service only. Heifers are liable to be injured by strong bulls. It is doubtful if any treatment would be helpful, but if the heifer gets into a healthy, natural condition she may breed. (2) This is not uncommon, and is no indication of anything wrong. (3) Give a handful of hardwood ashes for each pig in the food twice a week; also give a teaspoonful of sulphur for each pig twice a day in their food, which generally kills the worms.]

NASAL OR THROAT OBSTRUCTION—BONE SPAVINS.

SUBSCRIBER, Haldimand Co., Ont.:—"I have a heifer calf three months old, strong and thrifty, and apparently healthy, except that she makes a noise when breathing, snuffing a good deal and breathing heavy. There is no discharge nor cough. I have noticed this about a month. Is this a symptom of tuberculosis? Cows are all in good, healthy condition. Would you advise treatment; if so, what? 2. I have a mare three years old; over a year ago there appeared jacks (bone spavins) on each of her hind legs. I got blister from veterinary last fall and applied. It reduced them somewhat, but they are still quite noticeable. It is scarcely possible to detect any lameness. Some say to blister again. Would you advise doing so, and if so, what with?"

[While it is impossible to pronounce with confidence upon the cause of the calf's obstructed breathing, we feel safe in giving the youngster a clean bill so far as tuberculosis is concerned. The trouble may be due to a polypus in the nostril or to a growth on the windpipe. If the former, and it can be seen in the nostril in the form of a tumor having a narrow neck, it should be seized with forceps or loop of wire and twisted off. It would be well to have the calf examined by a qualified veterinary surgeon.

2. Jacks, or bone spavins, are bony growths which cannot be removed by blistering or in any other way, but they may be reduced to the extent of lessening the swelling that may be caused by inflammation. If the mare is not lame, blistering would be of no advantage; but should she show tenderness, an application of the same blister as was used before should act beneficially. A good counter-irritant blister is made as follows: Biniodide of mercury, 1½ drams; vaseline or lard, 1 ounce.]

INDIGESTION IN BOAR.

D. B., Hastings Co., Ont.:—"Please state, through the columns of the FARMER'S ADVOCATE, what is the matter and cure for Berkshire boar? Six weeks ago he became useless, and did not eat anything for a week or ten days, and what came from his bowels was thick and as black as tar, with a very offensive smell. He was running in the yard most of the winter."

[It is very important to be careful in estimating to what extent disease appears amongst swine. Although in this case we do not anticipate that you have the contagious disease known as hog cholera, still we look with a great amount of suspicion to the fact that your animal refused food for ten days and then voided excrement of a very black, tarry color, with a very offensive smell. This case is evidently due to some bowel trouble, and should you have any other of your herd taken sick you must report instantly to the authorities at Ottawa. This is only by way of a caution. You do not say what food your animal was taking or any symptoms other than those given, so that we are of opinion that it is due to some dietetic cause or bad feeding on offal, etc. Give a brisk purge—say two or three ounces of castor oil in feed, or one dram of powdered jalap mixed with a feed of swill. As we feel interested in your case, will you report progress for the benefit of the readers of the ADVOCATE? After the purgative, give the following powders: Sulphur, 1 oz.; black antimony, ½ oz.; nitrate of potash, ½ oz.; charcoal, 2 ozs. A tablespoonful in the animal's food every day. DR. MOLE, M. R. C. V. S.]

PROBABLY TUBERCULOSIS.

S. E. H., Northumberland Co., Ont.:—"I have a Jersey cow which failed suddenly in her milk. About a month later a lump appeared between her jaws. Her coat is rough, mangy-looking, and she is in very poor condition, although she has been well fed and tended as usual. Is this lump jaw? What should be done with the cow, and should the stable be disinfected? I am also anxious to know if the cow's milk is unfit for use."

[From your description I am inclined to the opinion that your cow is suffering from tuberculosis. The lumps in the sub-maxillary space, the rough condition of coat and poor condition are indications of ill health. I would recommend that you apply to the Agricultural Department at Ottawa and ask for a test of your cow, when I have no doubt that your application will meet with consideration. Will you please report results for the benefit of our readers? WM. MOLE, M. R. C. V. S.]

KNEE-SPRUNG.

W. J. K., York Co., Ont.:—"I have a Standard-bred mare rising three year old, a little weak in the knees. Would you kindly advise me what I had better do for her, and oblige?"

[Do not give her long or fast work until her legs become stronger. Shoe with a reasonably light shoe, raised about ¼ of an inch in the heels, and if she has a thin foot, or thin at the heels, see that no undue pressure rests about the back part of her feet, as sometimes apparent weakness of the fore legs is due to tender heels, and the horse simply relieves the pressure by throwing the weight on the toe. After driving, apply the following liniment to the tendons, and bandage lightly with derby bandages for two hours after work: Nitrate of potash, acetate of lead, ol. turpentine, liquor ammonia, of each ¼ ounce; spts. camphor, 4 ounces; soft water, 1½ quarts. Shake well, and rub in with the hand from the knee down.]

OPACITY OF THE CORNEA.

OSCAR SHIRLEY, Maine, U. S.:—"I have a four-year-old colt. One of his eyes was injured two years ago, and there is a light scum over the pupil. The sight can be seen through the scum. Can it be removed, or can you give me a remedy?"

[Opacity of the cornea of the eye is caused by an injury, and often remains as a permanent blemish, being due to the presence of the reparative material or deposition of lymph within the layers of the cornea. It is first of a bluish tinge, and is then called a nebula; as it becomes older it turns to a pearly-whitish color. With age it becomes firmer in its structure, but never entirely disappearing. From this it will appear that hope of a permanent cure or removal is not possible. Try the following, which, in some few cases when not of a long standing, has been successful in our hands: Take a piece of nitrate of silver, touch the spot light and delicately, firmly securing the horse during the operation. After two applications apply the following lotion: Goulard's extract, 1 ounce; tint. opium, 20 drops; distilled water, 4 ounces. Bathe the eye, with warm water, and apply the lotion every day. DR. MOLE, M. R. C. V. S.]

PECULIAR CASE.

SUBSCRIBER, Neepawa:—"I have a mare seven years old that had influenza last summer. While sick she seemed to have difficulty in getting her food back to the molar teeth. When eating hay a few straws will hang from her mouth. On two occasions she went off her feed much more than usual. She can masticate her feed perfectly when she manages to get it back into her mouth. Two months ago she took a bad turn, the trouble seemed to be in her head. She would walk around the loose box, and come against the corners with her head. She would even climb up into the manger. This continued for two days, since which she has been much better, but still has some difficulty in getting food into her mouth."

[There are features of the case which, without a personal examination, are difficult to understand. It is possible that the seat of the trouble is in the brain, but as there are two veterinary surgeons in your town I would advise you to call in the services of one of them, or if deemed necessary, both of them. W. A. DUNBAR, V. S.]

CAPPED HOCK.

J. H. B., York Co., Ont.:—"I have a driver, rising four years old, with a swelling on the hock. It came on about six months ago, and I think is the result of kicking the stall while kicking at another horse in the stable. I treated by bathing with hot water and a light blister, but without effect. What treatment would you advise?"

[If we understand your enquiry, your horse has a capped hock, of which there are two kinds—serous and synovial. If the former, it should be opened; if the latter, an absorbent blister is indicated; and as we do not know which form it is we are at a loss to know exactly what treatment to prescribe, and would advise you to have a competent veterinarian at least diagnose the true condition.]

GOITRE.

SUBSCRIBER, Huron Co., Ont.:—"Please inform me what is best to do with my sheep? It has two large, hard lumps on its neck just below the head, one on each side, as large as a hen's egg. They are quite loose, but seem to press on the windpipe when he is eating. I would like to get a cure."

[The sheep is affected with goitre or enlarged thyroid glands. Clip wool off parts very closely and rub in a little of the following once daily over seat of the enlargements: Iodide of potassium, ½ oz.; iodine crystals, ¼ oz.; alcohol, 4 ozs.; strong ammonia, 3 drams; water, 4 ounces. All well mixed and exposed to bright light until the liquid becomes clear, when it is ready for use.]

GASTRIC IRRITATION.

O. S. S., Man.:—"Last fall my collie dog took sick; he would vomit up everything that he eat—sometimes in a minute and sometimes in ten minutes. He died about six weeks ago, and now my fox terrier is sick and acting the same as the collie did, coughing and trying to vomit up everything she eats."

[Your dogs evidently suffered from gastric irritation. Did they have access to the putrid carcass of any animal, especially one that had died from an infectious or contagious disease? The symptoms are also indicative of worms, and I would advise you to give, on an empty stomach, from 1 to 6 grains of santonin, made into a ball with butter or dough, and in four hours afterwards give from 2 to 4 tablespoonfuls of castor oil, according to size of dog. Repeat in four days. Following this, give for one week, twice a day, extract of quassia, from 2 to 8 grains, and extract of taraxacum, from 5 to 10 grains, made into a ball.]

Miscellaneous.

SHREDDING CORN.

W. D. M., York Co., Ont.:—"Can you give, through the ADVOCATE, any information about shredding corn? No doubt some subscriber has had experience with it."

[Shredding corn is commonly practiced in the U. S., but we do not know of any one who has tried it in Canada. If any of our readers have had experience with it we shall be pleased to publish their testimony.]

CHAFFING AND THRESHING STRAW AT ONE OPERATION.

WALTER S. SCHELL, Oxford Co., Ont.:—"In a recent issue you mentioned that in a certain section it was quite a common practice to put the grain through a cutting box before going through the separator, one engine driving both machines at the same time. Could you give a full description of the way it is done, the comparative cost between that method and the ordinary way of threshing a season's crop of grain, the difference in time taken (if there is any), and any other information bearing on the subject? I think such information would be valuable and interesting to your subscribers."

To the Editor FARMER'S ADVOCATE:

SIR,—Yours of the 27th ult. to hand, asking for information as to the method in vogue here of cutting and threshing grains in one operation. This system was introduced here about four years ago. It is a system quite popular here, especially among cattle feeders. As the sheaves are fed the machine whole the straw and chaff are mixed and well cut, and in fine condition for mixing with ensilage, etc. Although this double operation takes fully one-half more time to clean out a barn than to only thresh it out, yet much time is saved when the straw is to be cut anyway. Fewer hands are needed than for threshing alone; in fact, only one man is needed more than for cutting alone, and that is for carrying away the grain.

The cutting box (ensilage cutter), which must be of good capacity, is set on the floor directly in front of thresher, and not too far off, so as to get all the machinery into an ordinary barn. When the system was first introduced the box was driven from the cylinder, but it now receives its power directly from the engine by another belt—an extra pulley being fastened on engine shaft. It requires more power for the two operations, but a 14-horse power engine can drive it. If the box is driven at a high speed it may clip the grain somewhat, especially if the knives are sharp, but no serious objections have been made by grain buyers as yet. It is well to sharpen the knives every hour. To save time one should have two sets of knives, to be sharpened and changed as often as is necessary. If the thresher has good screening and fanning capacity the grain will be quite free of cut feed, but it requires extra attention, as the screens are apt to get loaded with cut feed, and grains will go over, but we have had no trouble so far. The straw decks could be taken out, and the fanning-mill part increased in capacity. The threshers here charge at the rate of \$12 per day. JOHN B. SHIPLEY, Middlesex Co., Ont.

RIB GRASS IN CLOVER.

A. D., Perth Co., Ont.:—"Will you please inform me through FARMER'S ADVOCATE the nature of rib grass? It is rather difficult to purchase red clover seed free from it. Some seedsmen say it is not injurious if field is pastured or mowed, and not kept for seed, and others say it is a very dangerous seed, and that seed that contains rib grass on any account should not be sown. What form does it take when growing?"

[The rib grass referred to is the English plantain (*Plantago lanceolata*). It resembles the common plantain that grows about dooryards, but has larger, narrower leaves, which are ribbed and slightly hairy on the surface. Both leaves and seed stems come up directly from the root like a dandelion. The stems grow about a foot high. As it is a perennial, it does not give much trouble in cultivated fields, but is quite objectionable in pastures or hay fields, as it tends to spread when not destroyed by cultivation. In England it is not considered very objectionable if among sheep pastures, as the sheep graze it freely. We would be inclined to pay considerably more for clean clover seed than for that with even a slight sprinkling of rib grass seed. The seeds are yellowish-brown, a little smaller than red clover seed, and in shape somewhat resembling wheat or rye.]

TREATMENT FOR PEA BUGS.

W. J. B., Perth Co., Ont.:—"In regard to treatment to destroy bugs in peas, would an open bin of peas in a granary, containing from 125 to 150 bushels, be likewise affected by placing a dish of carbon bisulphide on the top of it, and how many pounds of said application would be necessary to treat the above quantity successfully?"

[About five pounds of carbon bisulphide would destroy the bugs in 150 bushels of peas, provided they were placed in a tight box not much larger than would hold the peas, as the liquid evaporates, permeating the entire space with the gas into which it can enter. If the gas can escape, or has too much space, it will be too weak to kill all the bugs. The gas is very explosive, so keep all fire away from it.]

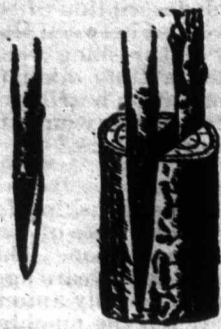
SALT ON BLACK LAND FOR WHEAT.

PRINCE EDWARD:—"I have some quite low, black land I intended sowing to wheat. Some of my neighbors thought there would be a tendency to the crop 'lying down,' and suggested sowing salt when I sowed the wheat. Would it be likely to increase the yield or strengthen the straw?"

[We incline to the opinion that the neighbors are right in advising an application of salt to the black land for wheat, as salt has the effect of reducing rank growth of straw, and therefore increasing the chances of a good yield of grain. See an article in April 1st issue of the FARMER'S ADVOCATE, page 171, "An Experiment with Salt."]

GRAFTING FRUIT TREES.

J. PHILIPS, Essex Co., Ont.:—"I would like to find out through your valuable paper, the ADVOCATE, how to graft fruit trees, such as plum trees or apple trees; also what kind of material to use and what time of the year it should be done?"



[While there are many methods of grafting, the essentials to success are much the same in all methods. The theory of grafting is based on the power of union between the young tissue, and for that union to take place it is necessary that the cambium layers should as nearly as possible meet in scion and stock. The cambium layer is that part of the tree lying between the bark and the inner wood. The time for top-grafting is in the spring as soon as the sap is in motion. The work may be commenced directly the buds of the tree begin to swell and continue till the leaves are half grown. The early grafts are, however, the more likely to succeed. It is important at least that the buds of the scion be in a nearly dormant condition. It is therefore well to cut the scions some time before the grafting is to be done, and keep them in a cool, dark place, packed in slightly moist sand. They should be cut with about four buds each, from healthy, vigorous shoots of last year's growth. A fine, sharp saw, a chisel or strong knife and small mallet are all the necessary tools. The branch should be carefully sawn off, leaving a smooth, clean surface. The limb or stock should be split in the center, as the accompanying illustration shows, and two scions trimmed to wedge shape and inserted, filling the split so that the growing layers of scion and stock come together, that they may have a chance to unite. The two especially important points are: 1st, to see that the scions fit tightly down its whole length; and 2nd, to be sure that every cut or exposed surface is completely covered with wax. A good wax is made as follows: Resin, 4 parts by weight; beeswax, 2 parts; tallow, 1 part; or, resin, 6 lbs.; beeswax, 1 lb.; linseed oil, 1 pint. Apply hot with a brush about a quarter of an inch thick, or a little less over the joints. If both scions are alive the following spring, the weaker one may be removed.]

RAISING YOUNG TURKEYS.

EAGIDUS REETZEL, Waterloo Co., Ont.:—"For a number of years I have endeavored to raise turkeys, but with little success. The first year I raised ten out of forty hatched, the second year twenty out of sixty, and the third season eight out of eighty birds hatched. They usually die about the time of feathering out, of diarrhea and other causes, and I have noticed they were troubled with very large lice, although I always applied insect powder to the old birds. What advice have you to offer?"

[In the poultry department of this issue there appears an excellent article, from the pen of "Gyra," on hatching and early treatment of the birds. In a later issue the subject will be continued, which, if followed, should teach useful lessons. No doubt the large lice were the cause of much fatality, but too close confinement is also responsible for so-called ill luck. Turkey-raisers should not forget that turkeys are naturally wild birds, living in the woods like partridge, and that to house them too closely is not wise. We have found that the late hatches, that were entirely taken care of by the old turkey in the fields, always came out best, provided they escaped foxes, skunks, and other enemies.]

COMBINED CORN PLANTER AND FERTILIZER DISTRIBUTOR WANTED.

D. W. MCKENZIE, King's Co., New Brunswick:—"Is there any good combined corn planter and fertilizer distributor manufactured in Canada? I do not see any advertised in the FARMER'S ADVOCATE. There are several kinds made in the United States, but I do not care to pay duty on them if I can get as good made here."

[No doubt there are thousands of readers of the FARMER'S ADVOCATE eager to get hold of just such a machine as Mr. McKenzie wants. Any firm that has them to offer should let it be known in our advertising columns at once before the planting season commences.]

PROPAGATION AND CULTURE OF BLACK CURRANTS—CANNING PEAS, BEANS, ETC.—CABINET TABLE.

Mrs. T. E. BARTLETT, Hastings Co., Ont.:—"Please send word through the time-honored ADVOCATE how to propagate tame black currants, and the best culture of them; also tame gooseberries? (2) What is the best method of canning beans, corn, and peas? Could they be sealed in self-sealers? (3) Give a plan of a kitchen cabinet table."

[(1) Currants and gooseberries are propagated by what are known as cuttings or slips taken from the young branches of the parent plant. They should be six to ten inches long. They are set perpendicularly in moist, loamy, warm soil, with not more than two or three buds standing above the surface of the ground. The following spring the young plants may be transplanted if desired, but they will take no harm in the close row six inches apart until the second spring. The plants should be pruned and

set out four to six feet apart each way in well-prepared, rich loamy soil. The soil should afterwards be kept cleanly cultivated or mulched deeply with strawy manure. In succeeding springs the bushes should be well pruned out, removing old wood as much as possible, leaving the head open.

(2) We have known a number of first-class housekeepers endeavor to can green peas, but we have never known one to succeed outside of a canning factory. Green sweet corn can be very well preserved by boiling the ears, shaving the grain from the cobs, and drying it over the fire or in an oven. We hope some of our kindly disposed lady readers will inform us of a successful method of canning these grains.

(3) No doubt many a farmhouse contains a kitchen cabinet table which is highly appreciated. We hope to receive diagrams and descriptions of these from some of our readers for publication.]

HONEY LOCUST FOR HEDGE.

J. R. R. LANARK Co., Ont.:—"Could you tell if all plants of honey locust for hedge have thorns on them first year after planting? A hedge company planted some for me last spring, and quite a number of plants, even 2 1/2 feet high, have no thorns."

[While honey locust plants generally show some thorns the first year, it is during following years that these develop, making the hedge a rough affair for stock to run against. The thorns grow very strong as the plants approach maturity.]

EFFECT OF FOOD ON FAT OF MILK.

H. W.:—"A maintained that the percentage of butter-fat in a cow's milk cannot be increased by giving a rich ration, but that the flow of milk may. B maintained it may be increased, for that milk is richer in the fall than in the summer. Please answer who is right?"

[The question as to whether a cow furnishes a uniform product under all conditions, independent of the kind of feed used, was for several centuries answered negatively by almost universal consent. It was considered settled, but the invention of Dr. Babcock, giving to the dairy world a simple and accurate means of measuring the fat content of milk, shed new light on this problem. The reading of the Babcock test did not reveal the variation in quality of milk due to feed that had been supposed to exist, and a great many careful and practical investigators have been studying the subject during recent years. The investigations that have been conducted in Canada and the United States have generally indicated that feed has comparatively little, if any, influence in determining the quality of milk. It seems impossible at this date to decide absolutely whether A or B is correct, as recognized authorities are not quite agreed. The fact that cows give richer milk in autumn than in June is accounted for by the cows being in an advanced period of lactation rather than a difference in quality of food. We may point out, however, that a rather dry ration in cold weather, when cows will not drink much water, will tend to produce less watery milk than succulent June pasture, the difference seemingly being due to an increase of water rather than a decrease of fat and other solids, the result, of course, being a variation in the percentage of solids, due to its being more dilute.]

BARN WITH BASEMENT FOR MANURE—PLANK FLOOR FOR COLT.

A. C. A., Addington Co., Ont.:—"I would like to get the opinion of you or your readers in regard to building a stock barn on the following plan with a view to saving all the manure, both solid and liquid, in the best condition. It would be a basement barn, built into a sidehill with southern aspect, with end of barn to south-east. Instead of having stock in basement they would occupy all or part, as required, of first floor, excepting a twelve-foot drive floor through center of barn. Cattle would stand in two rows, lengthwise of building, with heads to center and feed passage between, so that feeding would be convenient from barn floor. The manure would be dropped through protected openings in floor behind cattle. Two sides and one end of basement would be stone wall, and south-east end would be boarded up, with large doors to close up in winter and also to allow of driving in to haul out manure occasionally. There would be some device for carrying off any odor arising from the manure in the basement without allowing it to penetrate the floor on which the cattle were standing. The floor would be double planking.

(2) Should a young colt, which is kept tied in a stall, have manure left in stall to stand on, or would the plank floor be as well for him to stand on?"

(1) We have personal knowledge of two barns arranged somewhat similarly to the plan recommended in the above letter—those of Messrs. D. M. McPherson and McBain, Lancaster, Ont.—and both give good satisfaction. We would consider it wise to have the manure hauled out to the fields every few days, or spread gypsum on the pile to prevent the odor penetrating to the stables above. We hope to hear from any of our readers who can speak from experience regarding the matter.

(2) It is much better for the colt's feet to have his stall cleaned out once or twice a week. His hoofs should be trimmed two or three times during the winter in order to prevent a tendency to ring-bone or other trouble.]

FLOWING WELL TO SUPPLY HOUSE AND BARN.

L. WOOD, Simcoe Co., Ont.:—"I am sending you a drawing and instructions of how I am going to try and convey water to my stable from a flowing well at my house, asking you and your staff if you would kindly inform me, through your paper or otherwise, if it is practicable. The well is a two-inch pipe well, down in the ground about 100 feet, and there is a stream of water flowing out of it of about ten quarts per minute, and the outlet is about two feet above ground level. I want to know, if the conduit pipe to stable is attached to main well pipe, if the flow will rise the same height in stable as it does at present. The distance to stable is about 200 feet. Plan I. shows conduit pipe with a slight rise to stable; Plan II. shows conduit pipe with a slight fall to stable. Which of these plans would give best result, if practicable? When water is wanted at house, close Valve 2; and when water is wanted at stable, open Valve 2 and close Valve 3, which is the waste pipe to creek. When water is not wanted at stable, open Valve 3, and water will waste into creek. Of course, Valve 1 is shut all the time, only when water is wanted at house. Would I have to put another valve in well pipe just above conduit pipe to stop the water from rising at house if I wanted water at stable?"

[The accompanying plans, A and B, represent an artesian well, from which it is desired to convey water to the house and the stable, 200 feet apart.

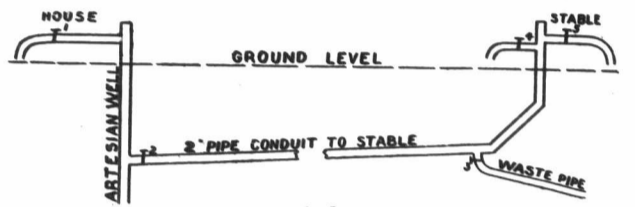


FIG. I.

In Plan A, the conduit slopes up slightly toward the stable, and in Plan B it slopes downward. The questions at issue are answered as follows:

1. The water will rise at the stable (4 and 5) as high as at the house (1).

2. It is easily seen that the downward slope, as in B, would empty the pipes better into the waste, and would keep the well clean from any sediment that might deposit in the pipes. This sediment would wash into the waste in Plan B, while in Plan A it would wash back into the well. Therefore the Plan B for laying the conduit is preferable.

3. How to get water to the different points required. If Valve 2 is closed, the water will, of course, go to the house, with 1 open. To obtain water for the stable, it would be sufficient to close 1 and 3, and open 2 and 4 or 5. No other valve would be necessary, since if the pipes to the house were full the pressure of the water in them would help to drive the water through the pipes to the stable. Even Valve 2 is unnecessary, since if 3, 4 and 5 were closed and the pipes full, the water from the well must escape through 1.

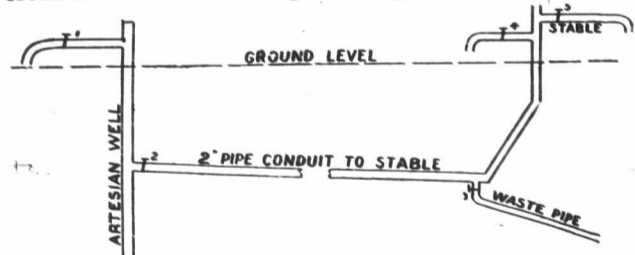


FIG. II.

It seems to me that the plan is a very ingenious and feasible one. If the frost is kept from the pipes, and the pipes are large enough to prevent choking, the system would undoubtedly operate successfully.

J. B. REYNOLDS, Dept. of Physics, O. A. C., Guelph.

POLLED DURHAM AND RED POLLS.

J. V., Mervin:—"Will you please tell me in the ADVOCATE what is the difference between Polled Durham cattle and Red Polls? Can they be bought in Canada? Why do their breeders claim they are better for milk than the Holsteins? Is it for quantity or quality of milk that the claim is made?"

[Polled Durhams are practically Shorthorns without horns. They originated some years ago in the United States from "sports" from pure-bred recorded Shorthorns, the first being a pair of twin heifers from a Gwynne cow. Many of the animals recorded in the Polled Durham Herd Book are eligible for registry in the American Shorthorn Herd Book; others, however, while carrying several crosses of pure Shorthorn blood, trace back to native mulley cows. The breed is not very widely distributed, and those who have been breeding them have given considerable attention to both the milking and beefing qualities, with the object of making them a general purpose breed. The Red Polls are a distinct breed, originating in the counties of Norfolk and Suffolk, England. They have undergone great improvement during recent years, and have come well to the front as general purpose cattle. They are said to have inherited the deep-milking qualities of their polled Suffolk ancestors. There are several herds of Red Polls in the United States, but we do not think there are any representatives of either breed in Canada. We are not aware that it is the claim of either breed that they are better milkers than any of the special purpose dairy breeds, whatever individual breeders may claim for their particular herds.]

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VETCHES FOR HOGS.

SIDNEY LESLIE, Essex Co., Ont.:—"Can you give your readers any information regarding growing vetches for hog pasture, as to time to sow, quantity of seed per acre, time to turn on the hogs, etc. Also, would vetches make good early feed for cows?"

[Vetches or tares for hog pasture should be sown about six pecks per acre, in drills as peas are sown, or broadcast, as early as the land is fit for other spring grain-sowing. The hogs should be turned on when the vetches are about eight or ten inches high. If a little clover seed is mixed with the vetch seed it will help the pasture late in the season. If the vetches are kept pastured off and not allowed to mature, the plants will keep growing fairly fresh all through the season. As a soiling crop for cows, vetches serve an excellent purpose. It is well to sow a few oats with the vetches for this purpose.]

AILING FOWL.

POULTRYMAN, N. S.:—"I have a thoroughbred Barred Plymouth Rock cockerel, bred from stock imported at a great cost from a noted New York breeder. He has been sick about three weeks. When first noticed he seemed to have no appetite, and acted dumpy, as if sick, and had diarrhoea of late. I have been dosing him with alum, copperas, pepper, resin, etc., as advised by poultry doctors, but he does not improve. He does not eat anything except occasionally a little whole corn or bread. My hens have had decently clean quarters, and had a variation of food: bone, scraps, shorts, bran, green food occasionally and scraps from house, oats, corn, etc. On account of quarreling with other fowls, I had him confined within the henhouse in a lath coop about three feet square for two or three weeks, but he was kept clean and fed regularly. That was some time before I noticed him ailing. Please give your opinion of the matter."

[It would appear from the symptoms given that the sick fowl is suffering from a bowel derangement. In all probability it was aggravated by the close confinement, as it is altogether unnatural for birds to be housed so closely. One seldom sees a young fowl go wrong in this way when allowed the liberty of a barnyard and has a comfortable roosting place and enough to eat. We would recommend giving a physic by adding a small quantity of salts (what will lie on a ten-cent piece) to soft food, after a fast. Give him his liberty in a sunny house and feed easily-digested food, seasoned with Dr. Hess' Poultry Panacea, advertised in another column of this paper. Be sure that the bird is not a victim of lice.]

MARKETS.

FARM GOSSIP.

Perth Co., Ont.

I have just subscribed for your valuable journal about two months ago, and am very sorry that I didn't read it long ago. As long as I find as much interesting reading of useful and practical information on agriculture in its different branches I don't intend to be without it. I notice quite a number of reports in your last issue which give me much pleasure to read, and I came to the conclusion to give you a few notes of our locality. The farmers throughout this country follow chiefly mixed farming and in many cases a rotation of crops. I have noticed that in some districts they cannot successfully grow all kinds of grain, but not so here. I am glad to say we can grow most anything in the grain and root line with good success, with the exception of corn, which is not raised at all for the ripened grain, but to a great extent for fodder and silage purposes. Dairying is followed to a great extent. There are a large number of cheese factories throughout the country, of which the greater part are also provided with the creamery plant, the latter being used mainly in the winter months, and enabling us to make quite a business of hog raising in connection therewith. In this section we support the Black Creek C. and B. Co.'s factory, owned and managed by T. Ballantyne & Sons. It is one of the finest constructed and most perfect cheese and butter factories in Ontario. In regard to the different breeds of dairy cattle, I think the Holstein-Friesian and the Ayrshire are amongst the most profitable. The former when first introduced received but slight attention, but as a result of testimony that speaks for itself, everybody is going in for Holsteins now. In some parts the farmers still adhere to breeding the different breeds of cattle, such as the Polled Angus, Herefords, Shorthorns, etc., and will no doubt realize a snug sum for their export cattle, as beef is at present a reasonable price.

Around here farmers are beginning to enrich their farms by sowing a considerable amount of clover and plowing it down the following fall or spring for manure, and have derived good results. We have also experienced that by constantly cultivating and hoeing roots, and especially corn, we greatly force their growth and maturity and also keep down the weeds. At a recent meeting of the Farmers' Institute in our village we had a prolonged and interesting discussion on how to plant and harvest corn. I, along with many more, did not think it of much importance whether the corn was sown in a way to allow the sun to strike on the ground between the rows of corn or not, but at the above meeting we heard that the quality of corn (to be used as fodder) depends largely on how it is cared for from the time it comes out of the ground until it is in the barn. It is also to be remembered the longer the corn stands out after being cut the more the feeding qualities decrease. We experienced with our last year's corn that it was lacking greatly in feeding value as compared with previous years, owing to it being sown too thick to allow it to be cultivated and the sun to penetrate to the ground.

The principal spring grains grown here are: Oats—Banner, Siberian, Peas—Golden Vine, Crown, Potter, Bayley—Some two-rowed, mainly six-rowed, Potatoes—American Wonder, Rural New Yorker, Empire State; among them the American Wonders are the best cookers. Corn—Leaming and White Cap Dent, Mangolds—Yellow Intermediate, Yellow Globe, Gate Post. The leading fall wheats are Dawson's Golden Chaff and Early Red Clawson. W. J. B.

New York Cheese Market.

"Only scattering lots of new cheese have arrived the past week, but the few coming have rarely shown desirable quality and selling slowly at generally 11 to 11½c, though one small lot of exceptionally fine quality from a favorite western New York factory brought 12c. The weather continues cold and unfavorable in the cheese-producing sections, and the supply of milk light as yet, and many factories that had expected to start up by April 1 have not as yet commenced operations, and it will be several weeks before any quantity of new cheese can be expected."—New York Produce Review, April 12th.

Lincoln County.

The winter of 1888-89 can be marked up as one of the longest and coldest experienced in the Niagara District for a long time. Even now (April 5th) there is a good deal of snow lying about, and the winds during the last week have had more than a suspicion of iciness about them. The sooner spring shakes winter out of her lap the better. What was said in my February letter of the fall wheat will apply pretty well now. The wheat generally got an excellent top on by late autumn, and notwithstanding the hard conditions since, looks fairly well. What was sown late is, of course, in a much worse condition. Hay has stiffened in price somewhat lately, ranging from \$6 to \$8. This has been partly owing to the abominable state of the roads the last months, and partly, no doubt, to the supply in the country being a little smaller than was thought. Cattle have advanced, but though buyers are offering \$4.75 for first-class stuff, not much is procurable. Good butchers' cattle are changing hands at 4c. per lb. The pork market is a disappointment, and from the pork-raisers' point of view there is "something rotten in the state of Denmark." Buyers are only giving \$4.10, live weight, for good stuff, and buyers and sellers alike urge that there is no money in it. Let us hope next month will see a change. Good milk cows are being readily picked up, at \$40, and there are not too many good ones about. Butter is getting a little easier, at 15c. and 16c. Eggs stiffened up a little during the cold snap last week and realized 15c per doz. A week or two of this weather and every hen in the country will be doing her level best to crowd the price down to 10c. Potatoes are firm, at 75c. per bag. A good many got touched by the frost and there are many complaints of the poor keeping quality. The most divergent opinions are being vented as to the chances of the peach crop this season. A vows they are all gone, B thinks a fair crop is probable. I have just finished an examination of a large number of buds, and the results are not widely dissimilar to those given in the February report. Early Crawford, from 10% to 20% good; Foster, 20% to 30%; Longhurst, 75%; Early River, 50% to 60%; Hynes' Surprise, 50%; Stevens' Rare Rippe, 10% to 20%. Orchards close to the lake will possibly be a little better than this; our own are about a mile from the lake shore. Farther away it is probable that a smaller percentage of good buds will be found. M. B.

Export Notes.

Never in the most prosperous times has there been such a steady increase in the value of exports to foreign countries from Toronto, and never has the value of the exports in any one month been so great.

The exports for the first three months of 1887 were \$981,373. The exports for the first three months of 1888 were \$1,556,434. The exports for the first three months of 1889 (this year) were \$2,710,662. In order to indicate the nature of the increase in the past three years, the following table is given, showing the increase in exports for the month of March in five years, beginning with 1885:

	Total Exports.
March, 1885.....	\$394,937
" 1886.....	504,610
" 1887.....	635,467
" 1888.....	531,778
" 1889.....	979,780

Last year there was practically no cattle trade in March, only forty-two head being exported. During the past month 4,487 cattle, valued at \$283,617, were passed through the customs. Manufacturers have made just as good a showing. The value of the exported manufactured articles in March, 1889, was \$167,367, but last month articles were exported to the value of \$272,982, being an increase of \$105,615.

Chatty Stock Letter from Chicago.

FROM OUR OWN CORRESPONDENT.

Following were the prices lately current, with comparisons two weeks and one and two years ago:

	Extreme prices now.	Two weeks ago.	Top Prices	
			1888	1887
Beef cattle.				
1500 lbs. up.....	\$4 85 to \$5 80	\$4 70	\$5 50	\$5 35
1350 to 1500 lbs.....	4 50 " 5 75	4 40	5 40	5 40
1200 to 1350 lbs.....	4 20 " 5 75	4 00	5 25	5 20
1050 to 1200 lbs.....	4 00 " 5 50	3 85	5 25	4 80
900 to 1050 lbs.....	3 90 " 5 50	3 80	5 00	4 75
Fed Westerns.....	4 15 " 5 35	4 25	5 10	4 90
Hogs.				
Mixed.....	3 60 " 3 92½	3 50	4 05	4 20
Heavy.....	3 55 " 3 85	3 50	4 10	4 20
Light.....	3 35 " 3 77½	3 50	4 02	4 15
Pigs.....	3 25 " 3 75	3 10	4 00	4 10
Sheep.				
Natives.....	3 00 " 5 05	3 00	4 90	4 25
Western.....	4 00 " 5 00	3 80	4 75	5 10
Lambs.....	3 75 " 6 00	4 00	6 00	6 00

The cattle are not selling at boom prices, but if the feeding cattle hadn't cost so much when put in they would be selling at prices that would leave fair margins of profit. There are very few strictly choice cattle, and exporters are having considerable trouble in getting enough good ones. Prices for feeding cattle are still high, and farmers are having trouble to get what they want. Cattle exporters bought 4,508 cattle here as follows: the past week: Shamberg, 375; Lehman, 211; Morris, 1,119; Brauer, 1,021; Alerion, 68; Swift, 458; Schwarzschild, 567; Gilchrist & Munro, 60; Conghlin, 101; Epstein, 100; Doud & Keefer, 200; Gordon & Ironsides, 30; Armour, 36; Lunness, 93. The total the previous week was 3,373, and a year ago 6,278.

A director of a big dressed meat concern speaks of the growth of the poultry trade in the East, and its influence upon the beef business. Not only do all the farmers raise more or less poultry, but it is sent there in refrigerators at all seasons from Illinois and adjoining States in large quantities. The increased consumption of mutton and poultry and of fresh pork has certainly made a marked difference in the demand for beef.

Indications point to comparatively small receipts of grass Texas cattle at all Western markets, especially during May, June and July.

The 2,172,399 hogs received at the Chicago yards the first quarter of 1889 averaged 230 pounds. The 2,073,632 received the same period of 1888 averaged 239 pounds. The range of hog prices is not only very narrow, but the fluctuations are very small. The general demand is good, but packers insist that they are losing money.

A Chicago sheep and lamb buyer, who handles them by the thousands, says: "The best time to market spring lambs is when they are eight or ten weeks old. Male lambs should be castrated as soon as possible after birth. If they are allowed to run a month it is better not to castrate them at all, as the operation will set them back seriously. They should be marketed, however, under three months old, as after that time their market value depreciates perceptibly. All sheep shipped out for feeding purposes even to points in this State, must be dipped in accordance with a recent Federal regulation."

Horses are selling higher than since the early nineties. A consignment of twenty-three head of prime draft horses, \$5,070, making an average of \$220 per head. Fourteen of the animals sold at a range of \$200 to \$325, making an average of \$235 per head. The consignment had been on feed since last November, and was grandly finished for the market. They were grade Percheron and Shire horses, weighing 1,600 to 2,110 pounds, and every animal was fit for the showing. One five-year-old black gelding, weighing 2,070 pounds, was knocked down to Al Ramp, Buffalo, N. Y., for \$325, and a bay four-year-old Shire gelding, weighing 2,110 pounds was purchased by the same party for \$300. Other offerings sold for \$240, \$235, \$237.50 and \$225 for exportation to Germany.

Toronto Markets.

We have a fair amount of business. A large number of farmers in the city purchasing supplies for spring; many report that the frost is disappearing from the ground rapidly the last few days. It certainly seems to point to a time when Thursday will also be a market day, for we had 50 loads of cattle on offer, of which only ten loads were held over for Friday's market. Both days totalled 115 loads. There was a fair trade, and a large number of cattle changed hands at noon.

There is a good deal of dissatisfaction at the new regulation of charging buyers weighing fees for cattle resold. One or two of the buyers insist on having two and three head of cattle weighed separately after the load is weighed and object to the payment of the regular fee.

Export Cattle.—Choice loads of export cattle sold at from \$4.85 to \$5 per cwt.; light export at \$4.70 to \$4.85. There was from 10c. to 15c. per cwt. decline on all classes of cattle.

Butchers' Cattle.—Choice butchers' cattle in good demand; sold at \$4.40 to \$4.65 per cwt. Loads of good butchers' cattle sold at \$4.25 to \$4.50 per cwt. Should supply continue there must be a heavy decline in prices next week.

Bulls suitable for the buyers sold at \$3 to \$3.25 per cwt., while stock bulls sold at \$2.30 per cwt.

Stock Heifers.—A few stock heifers sold at from \$3 to \$3.25 per cwt.

Stockers.—Stockers for the Buffalo market were in great demand, as there was a fear expressed that this trade would be shut down shortly, owing to Senator Willis' bill, at Albany, providing for veterinary inspection of all cattle imported into the State, but we notice the measure has been killed.

Feeders.—Heavy feeders in demand, weighing from 1,000 to 1,150 lbs. They are scarce, and worth from \$4.15 to \$4.30 per cwt.

It is reported that this is to be the last year of feeding cattle at Messrs. Gooderham's byres, as all the distillery slop is to be dried and sold as cakeed fuel. The plant is being installed, and operations are now in process of experiment.

Heifers.—A few sold to-day at \$3 per cwt.

Sheep.—The run of sheep and yearling lambs still continues light. Ewes sold at \$3 to \$3.50, bucks at \$2.75 to \$3 per cwt. Mr. West Dunn continues to hold this portion of the trade together.

Lambs.—Prices for grain-fed lambs were higher, selling at \$3 to \$3.50 per cwt. Common barnyard lambs sold at \$3.50 to \$3.75. Spring lambs selling from \$3 to \$5 per head.

Calfes.—About fifty on offer; prices unchanged at from \$2 to \$5 per head; medium to extra good veals from \$7 to \$10 per head.

Milk Cows.—The demand for extra good dairy cows and springers continues; only 12 on offer; very inferior quality; sold at from \$20 to \$45 per head.

Hogs.—About 1,000 on offer; prices for singers unchanged at \$4.37½. The quality of those offering has been better for the last two weeks—more nearly approaching the desired weights of 160 lbs. to 200 lbs. each; long, lean, bacon types. We have seen lately good bacon type in different breeds of hogs, and are of opinion that there is more profit in marketing hogs at 160 lbs. than at 200 lbs. We never hear complaint of soft bacon from hogs fed at cheese factories. This is a question for our experimental farms to further investigate. It is freely spoken of in the trade that there will be a keen demand for bacon hogs all this season. Drovers continue to report a shortage in their own districts. The prices are likely to be steady for some considerable time, and we do not look for any immediate advance: Light fat, \$4; thick fat, \$3.75; sows, \$3; stags, \$2.

Dressed Hogs.—The deliveries in farmers' loads very quiet; bad roads prevent travel. Light, \$5.25 to \$5.50 per cwt.; heavy, \$5 to \$5.25 for clean, bright stock.

Dressed Beef.—The demand from all outside points continues. Beef—fore quarters, \$4.50 per cwt.; hind quarters, \$7.50 to \$8.50.

Lambs.—8c. to 9c. per lb.; lambs, spring, each, \$4 to \$6. Two carloads billed for Montreal, and St. John, N. B.

Grain Markets.—The receipts of grain on the street market small; bad roads prevent delivery. White wheat steady; 390 bushels selling at 70c. per bushel; goose, 65c. per bushel. No demand for export.

Wool.—Millfed scarce; ton lots quoted at local mills, \$14; shorts, in ton lots, at \$16 per carload.

Seeds.—There has been daily improvement in our enquiries; business is moving more briskly. Red clover weaker, at from \$5 to \$6 per 100 lbs.; alsike, \$4.50 to \$7; timothy, \$2.75 to \$2.85.

Cheese.—Market very firm; dealers holding all choice stock for an advance; they quote to-day 11c. to 11½c. per lb.

Eggs.—Even the prolific Canadian hen is on strike; eggs scarce and dear; the market to-day was irregular, deliveries light, and dealers were asking all the way from 16c. to 20c. per dozen for strictly fresh. Following the scarcity of last week, the opening of the market showed the opposite condition. Free deliveries; prices dropped to 16c. per doz., and the market not cleared up at the close; indications are for even a lower price on Saturday.

Butter.—Deliveries of choice butter free; prices are easier. Small dairy prints at from 15c. to 16c. per lb.; creamery, in tubs and boxes, from 12c. to 21c. per lb.

Hay.—Only ten loads of hay on offer, and sold at \$9 to \$10 for timothy, and at \$6 to \$7.50 for clover.

Straw.—None on offer; quoted at \$6 per ton.

Montreal Markets.

Cattle.—Up till yesterday's market, prices in Montreal have been fairly well maintained, but a heavy run of stock on Monday, April 10, caused quite a break in prices, nominally a quarter cent per pound, but, I believe, actually more on the general run of sales, with, of course, best to prime grades making the best of the market and doing more towards holding their own than did the medium to inferior grades. The best cattle on the market sold for 5c. per lb., and they had to be selected. Good to choice beefers ranged from 4½c. to 4¾c., while common sold down lower accordingly than either of the above classes, making in some cases not more than 2c. per lb. Quite a number of cattle were left over at the close of the market to be carried over for Thursday's trade.

Sheep and Lambs.—Very few old sheep or yearling lambs are to be had on the market now, and those offered are quickly picked up by butchers at fair prices—4½c. to 5c. per lb. for lambs, and 3½c. to 4c. per lb. for sheep. Spring lambs sold from \$3 to \$5 each.

Calfes.—The offerings of calves on Monday's market were lighter than usual, but were plentiful enough to meet the requirements of the trade, and sold all the way from \$1.50 to \$10 each, according to size and quality.

Live Hogs were in fair supply, and sold at 4½c. to 4¾c. per lb., weighed off the cars.

Hides and Skins.—Nothing of importance has taken place in the situation of this market since last writing. The feeling is decidedly weaker, owing to the grubby nature of hides coming forward, for one thing, and to the easier feeling in other large communities, but as yet no change in price has been put into effect. Prices are as follows for green salted:—No. 1, 8½c. per lb.; No. 2, 7½c. per lb.; No. 3, 6½c. per lb. Calf skins steady, at 10c. for No. 1, 8c. for No. 2. Lamb clips, 10c. each; yearling lambs, 70c. to 80c. each.

British Markets.

Following the recent steady upwardness of the British markets, a turn has at last come, and prices during the past two weeks have declined fully one cent per pound from former prices. Best States cattle in London selling at 12c. and best Canadian at 11c., with Argentines 1c. per lb. lower. Calves on sheep were also lower by fully 1½c. per lb. best selling at 11c. per lb.



AN INDEPENDENT THINKER.

BY MARY E. WILKINS.

Esther Gay's house was little and square, and mounted on posts like stilts. A stair led up to the door on the left side.

Presently a woman appeared in a little flower garden in front of the opposite house. She was picking a nosegay.

Esther watched her. "It's dreiful hard work for her to git around," she muttered to herself.

The woman came out to the gate with some marigolds and candytuft in her hand.

Esther was very deaf. She could not hear a word, but she saw the deprecating shake of the head, and she knew well enough.

"I'd like to know why you can't, a minute. You kin hear your mother the minute she speaks."

The woman glanced back at the house, then she looked over at Esther. Her streaked light hair hung in half curls over her wide crocheted collar.

"I guess I'd better not. It's Sunday, you know," said she. Her soft, timid voice could by no possibility reach those deaf ears across the way.

"What!"

"I guess I'd better not—as long as it's Sunday,"

Esther's strained attention caught the last word, and guessed at the rest from a knowledge of the speaker.

"Stuff," said she, with a sniff through her delicate, uptilted nostrils. "I'd like to know how much worse 'tis for you to step over here a minute, an' tell me how she is when I can't hear across the road, than to stop an' talk comin' out o' meetin'; you'd do that quick enough. You're strainin', Lavinia Dodge."

Lavinia, as if overwhelmed by the argument, cast one anxious glance back at the house and came through the gate.

Just then a feeble, tremulous voice, with a wonderful quality of fine sharpness in it, broke forth behind her.

"Lavinia, Lavinia, where be you goin'? Come back here." Lavinia, wheeling with such precipitate vigor that it suggested a croak, went up the path.

"I wa'n't goin' anywhere, mother," she called out. "What's the matter?"

"You can't pull the wool over my eyes. I seed you agoin out the gate."

Lavinia's mother was over ninety and bedridden. That infinitesimal face which had passed through the stages of beauty, commonplaceness, and hideousness, and now arrived at that of the fine grotesqueness which has, as well as beauty, a certain charm of its own, peered out from its great feather pillows.

"Esther jest wanted me to come over there a minute. She wanted to ask after you," said Lavinia, standing beside the bed, holding her flowers.

"Hey!"

"She jest wanted me to come over an' tell her how you was."

"How I was?"

"Yes."

"Did you tell her I was miser'ble?"

"I didn't go, mother."

"I seed you a-goin' out the gate."

"I came back. She couldn't hear 'thout I went way over."

"Hey!"

"It's all right, mother," screamed Lavinia. Then she went about putting the flowers in water.

The old woman's little eyes followed her, with a sharp light like steel.

"I ain't goin' to hev you goin' over to Esther Gay's, Sabbath-day," she went on, her thin voice rasping out from her pillows like a file. "She ain't no kind of a girl. Wa'n't she knittin'?"

"Yes."

"Yes, she was knittin', mother."

although it was hardly the one which she recognized. It was full of a lovely, wavering, gold-green light, and there was a fine order and cleanliness which gave a sense of peace.

Still, she looked at nothing with the delight with which she surveyed her granddaughter Hatty when she returned from church.

"Well, you've got home, ain't you?" she said, when the young, slim girl, with her pale, sharp face, which was like her grandmother's, stood before her.

"Yes," said Hatty. Then she went into her little bedroom to take off her things. There was a slow shyness about her.

"You kin git you somethin' to eat, if you want it," said the old woman. "I don't want to stop myself till I git this heel done. Was Henry to meetin'?"

Henry was the young man who had been paying attention to Hatty. Her grandmother was proud and pleased; she liked him.

Hatty generally went to church Sunday evenings, and the young man escorted her home, and came in and made a call.

"Why, ain't you goin' to meetin'?" said she.

The old woman looked at her sharply. The tea things were cleared away, and she was at her knitting again, a little lamp at her elbow.

Presently Hatty went out and sat at the head of the stairs, in the twilight. She sat there by herself until meeting was over, and the people had been straggling by for some time.

"Where hev you been?" asked her grandmother, when she returned.

"I went out a little way."

"Who with?"

"Henry."

"Why didn't he come in?"

"He thought he wouldn't."

"I don't see why."

Hatty said nothing. She lit her candle to go to bed. Her little thin face was imperturbable.

She worked in a shop, and earned a little money. Her grandmother would not touch a dollar of it; what she did not need to spend for herself she made her save.

"Monday, she opened upon the subject."

"Hatty," said she, "I've been thinkin'—don't you believe it would be a good plan for you to take a little of your money out of the bank an' buy you a nice dress?"

Hatty never answered quickly. She looked at her grandmother, then she kept on with her sewing.

"I've been thinkin'—you ain't never had any real nice dress, you know—that it would be a real good plan for you to take some money, now you've got it, an' buy you a silk one. You ain't never had one, an' you're old enough to."

"You might want to go somewhar," continued Esther. "An'—well, of course, if anythin' should happen, if Henry— it's jest as well not to hev to do everythin' all to once, an' it's considerable work to make a silk dress— Why don't you say somethin'?"

"I don't want any silk dress."

"I'd like to know why not?"

Hatty made no reply.

"Look here, Hatty, you an' Henry Little ain't had no trouble, hev you?"

"I don't know as we have."

"What?"

"I don't know as we have."

"Hatty Gay, I know there's somethin' the matter. Now you jest tell me what 'tis. Ain't he comin' around no more?"

Still Hatty sewed, and said nothing.

"You might want to go somewhar," continued Esther. "An'—well, of course, if anythin' should happen, if Henry— it's jest as well not to hev to do everythin' all to once, an' it's considerable work to make a silk dress— Why don't you say somethin'?"

"I don't want any silk dress."

"I'd like to know why not?"

Hatty made no reply.

"Look here, Hatty, you an' Henry Little ain't had no trouble, hev you?"

"I don't know as we have."

"What?"

"I don't know as we have."

"Well, if you want to make yourself sick, an' go without eatin', you kin."

Hatty did go without eating much through the following weeks. She laid awake nights, too, staring pitifully into the darkness, but she did not make herself ill.

She knitted on week days too. She reeled off a good many pairs of those reliable blue-wool stockings, and sold them to a dealer in the city.

Six weeks after Hatty's lover left, the old woman across the way died. After the funeral, when measures were taken for the settlement of the estate, it was discovered that all the little property was gone, eaten up by a mortgage and the interest.

The two old women had lived upon the small house and the few acres of land for the last ten years, ever since Lavinia's father had died. He had grubbed away in a boot shop and earned enough for their frugal support as long as he lived.

"They say Lavinia Dodge has got to go to the poorhouse," said she.

"What?"

"They say Lavinia Dodge has got to go to the poorhouse."

"I don't believe a word on't."

"They say it's so."

That afternoon Esther went over to ascertain the truth of the report for herself. She found Lavinia sitting alone in the kitchen, crying. Esther went right in, and stood looking at her.

"It's so, ain't it?" said she.

Lavinia started. There was a momentary glimpse of a red, distorted face; then she hid it again, and went on rocking herself to and fro and sobbing. She had seated herself in the rocking-chair to weep.

"You'd oughter hev kept account."

"I s'pose I hed, but I never knew much 'bout money matters, an' poor mother, she was too old. Father was real sharp, ef he'd lived. Oh, I've got to go! I never thought it would come to this!"

"I don't think you're fit to do any work."

"No, they say I ain't. My rheumatism has been worse lately. It's been hard work for me to crawl round an' wait on mother. I've got to go, O Esther, it's awful to think I can't die in my own home! Now I've got— to die in the poorhouse! I've got— to die in the poorhouse!"

"I've got to go now," said Esther.

"Don't go. You ain't but jest come. I ain't got a soul to speak to."

"I'll come in agin arter supper," said Esther, and went out resolutely, with Lavinia wailing after her to come back. At home, she sat down and deliberated. She had a long talk with Hatty when she returned. "I don't care," was all she could get out of the girl, who was more silent than usual. She ate very little supper.

It was eight o'clock when Esther went over to the Dodge house. The windows were all dark. "Land, I believe she's gone to bed," said the old woman, fumbling along through the yard. The door was fast, so she knocked. "Lavinia, Lavinia, be you gone to bed? Lavinia Dodge?"

"Who is it?" said a quivering voice on the other side, presently.

"It's me. You gone to bed?"

"Yes, let me in. I want to see you a minute."

Then Lavinia opened the door and stood there, her old knees knocking together with cold and nervousness. She had got out of bed and put a plaid shawl over her shoulders when she heard Esther.

"I want to come in jest a minute," said Esther. "I hadn't any idee you'd be gone to bed."

"You'll ketch your death of cold in your nightgown," said Esther. "You'd better git somethin' more to put over you."

"I don't keer if I do ketch cold," said Lavinia, with an air of feeble recklessness, which sat oddly upon her.

"Lavinia Dodge, don't talk so."

"I don't keer. I'd ruther ketch my death of cold than not; then I shouldn't hev to die in the poorhouse. The old head, in its little cotton nightcap, cocked itself sideways, with pitiful bravado.

Esther rose, went into the bedroom, got a quilt and put it over Lavinia's knees. "There," said she, "you hev that over you. There ain't no sense in your talkin' that way. You're jest a-flyin' in the face of Providence, an' Providence don't mind the little flappin' you kin make, any more than a barn does a swaller."

"I can't help it."

"What?"

"I can't help it."

"Yes, you kin help it, too. Now, I'll tell you what I've come over here for. I've been thinkin' on't all the afternoon, an' I've made up my mind. I want you to come over and live with me."

Lavinia sat feebly staring at her. "Live with you!"

"Yes, I've got my house an' my pension, an' I pick up some with my knittin'. Two won't cost much more'n one. I reckon we kin git along well enough."

Lavinia said nothing, she still sat staring. She looked scared.

Esther began to feel hurt. "Mebbe you don't want to come," she said stiffly, at last.

"Lavinia shivered. "There's jest—one thing—" she commenced.

"What?"

"There's jest one thing—"

"What's that?"

"I dunno what— Mother— You're real good; but— Oh, I don't see how I kin come, Esther— you hev that over you. There ain't no reason why you don't want to live with me, I want to know what 'tis."

Lavinia was crying. "I can't tell you," she sobbed; "but mother— If you didn't work Sundays, Oh!"

"Then you mean to say you'd ruther go to the poorhouse than come to live with me, Lavinia Dodge?"

"I can't help it."

"Then, all I've got to say is, you kin go."

Esther went home, and said no more. In a few days she peering around her curtain, saw poor Lavinia Dodge, a little, trembling, shivering figure, hoisted into the poorhouse covered wagon, and driven off. After the wagon was out of sight she sat down and cried.

It was early in the afternoon. Hatty had just gone to her work, having scarcely tasted her dinner. Her grandmother had worked hard to get an extra one to-day, too, but she had no heart to eat. Her mournful silence, which seemed almost obstinate, made the old woman at once angry and wretched. Now she wept over Lavinia Dodge and Hatty, and the two causes combined made bitter tears.

"I wish to the land, I could find some excuse, but I ain't goin' to give up what I think's right."

Esther Gay had never been so miserable in her life as she was for the three months after Lavinia Dodge left her home.

She thought of her, she watched Hatty, and she knitted. Hatty was at last beginning to show the effects of her long worry. She looked badly, and the neighbors began speaking about it to her grandmother. The old woman seemed to resent it when they did. At times she scolded the girl, at times she tried to pet her, and she knitted constantly, week days and Sundays.

Lavinia had been in the almshouse three months when one of the neighbors came in one day and told Esther that she was confined to her bed. Her rheumatism was worse, and she was helpless. Esther dropped her knitting, and stared radiantly at the neighbor. "You said she was an awful sight of trouble, didn't you?" said she.

"Yes; Mrs. Marvin said it was worse than takin' care of a baby."

"I should think it would take about all of anybody's time."

"I should. Why, Esther Gay, you look real tickled 'cause she's sick!" cried the woman, bluntly.

Esther colored. "You talk pretty," said she.

"Well, I don't care; you looked so. I don't s'pose you was," said the other, apologetically.

That afternoon Esther Gay made two visits: one at the selectmen's room, in the town hall, the other at Henry Little's. One of her errands at the selectmen's room was concerning the reduction of her taxes.

"I'm a-payin' too much on that leetle house," said she, standing up, alert and defiant. "It ain't wuth it." There was some dickerin', but she gained her point. Poor Esther Gay would never again make her foolish little boast about her large tax. More than all her patient, toilsome knitting was the sacrifice of this bit of harmless vanity.

When she arrived at the Littles', Henry was out in the yard. He was very young; his innocent, awkward face flushed when he saw Esther coming up the path.

"Good afternoon," said she. Henry jerked his head.

"Your mother to home?"

"Ye-s."

Esther advanced and knocked, while Henry stood staring. Presently Mrs. Little answered the knock. She was a large woman. The astonished young man saw his mother turn red in the face, and rear herself in order of battle, as it were, when she saw who her caller was; then he heard Esther speak.

"I'm a-comin' right to the pint afore I come in," said she. "I've heard you said you didn't want your son to marry my granddaughter because you didn't like some things about me. Now, I want to know if you said it."

"Yes; I did," replied Mrs. Little, tremulous with agitation, red, and perspiring, but not weakening.

"Then you didn't have nothin' again' Hatty, you nor Henry?"

"Twan't an excuse!"

"I ain't never had anythin' against the girl."

"Then I want to come in a minute. I've got some-thing I want to say to you, Mrs. Little."

"Well, you can come in—if you want to."

After Esther had entered, Henry stood looking wistfully at the windows. It seemed to him that he could not wait to know the reason of Esther's visit. He took things more solemnly than Hatty; he had not lost his meals near his sleep; still, he had suffered. He was very fond of the girl, and he had a heart which was not easily diverted. It was hardly possible that he would ever die of grief, but it was quite possible that he might live long with a memory, young as he was.

When his mother escorted Esther to the door, as she took leave, there was a marked difference in her manner.

"Come again soon, Mrs. Gay," he heard herself say; run up any time you feel like it, an' stay to tea. I'd really like to have you."

"Thank ye," said Esther, as she went down the steps. She had an aspect of sweetness about her which did not seem to mix well with herself.

When she reached home she found Hatty lying on the lounge. "How do you feel to-night?" said she, unpinning her shawl.

"Pretty well."

"You'd better go an' brush your hair an' change your dress. I've been over to Henry's an' seen his mother, an' I shouldn't wonder if he was over here to-night."

Hatty sat bolt upright and looked at her grandmother. "What do you mean?"

"What I say. I've been over to Mrs. Little's, an' we've had a talk. I guess she thought she'd been kind of silly to make such a fuss. I reasoned with her, an' I guess she saw I'd been more right about some things than she'd thought for. An' as far as goin' to meetin' an' knittin' Sundays is concerned—"

"Well, I don't s'pose I kin knit any more if I want to. I've been to see about it, an' Lavinia Dodge is comin' here Saturday, an' she's so bad with her rheumatiz that she can't move, an' I guess it'll be all I kin do to wait on her, without doin' much knittin'." Mebbe I kin git a few minutes evenin's, but I reckon 'twon't amount to much. Of course, I couldn't go to meetin' if I wanted to. I couldn't leave Lavinia."

"Did she say he—was coming?"

"Yes; she said she wouldn't wonder if he was up."

The young man did come that evening, and Esther retired to her little bedroom early, and lay listening happily to the soft murmur of voices outside. Lavinia Dodge arrived Saturday. The next morning, when Hatty had gone to church, she called Esther. "I want to speak to you a minute," said she. "I want to know if—"

"Mr. Winter brought me over, and he married the Ball girl that's been in the post office, you know, and somethin' he said—"

"Esther Gay, I want to know if you're the one that's been sendin' that money to me and mother all along?"

Esther colored, and turned to go. "I don't see why you think it's me."

"Esther, don't you go. I know 'twas; you can't say twan't."

"It wa'n't much, anyhow."

"'Twas to us. It kept us goin' a good while longer. We never said anythin' about it. Mother was awful proud, you know, but I dunno what we should have done. Esther, how could you do it?"

"Oh, it wa'n't anythin'. It was extra money. I ain't d'it." Knittin'!"

Esther jerked her head defiantly. The sick woman began to cry. "If I'd ha' known, I would ha' come. I wouldn't have said a word."

"Yes you would, too. You was bound to stan' up for what you thought was right, just as much as I was. Now we've both stood up, an' it's all right. Don't you fret no more about it."

"To think—"

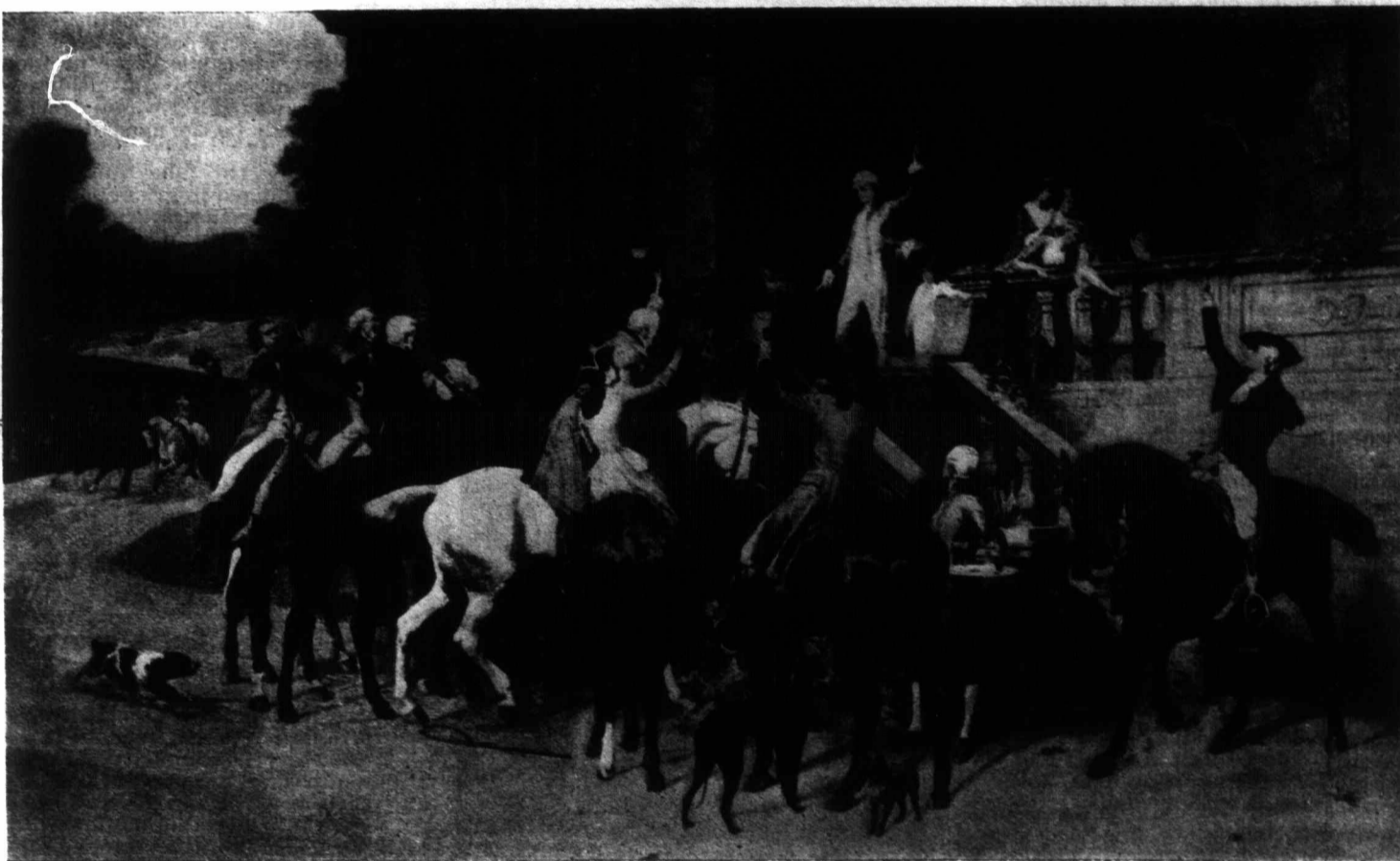
"Land sakes, don't cry. The tea's all steeped, an' I'm goin' to bring you in a cup now."

Henry came that evening. About nine o'clock Esther got a pitcher and went down to the well to draw some water for the invalid. Her old joints were so tired and stiff that she could scarcely move. She had had a hard day. After she had filled her pitcher she stood resting for a moment, staring up at the bright sitting-room windows. Henry and Hatty were in there: just a simple, awkward young pair, with nothing beautiful about them save the spark of eternal nature, which had its own light. But they sat up stiffly and timidly in their two chairs, looking at each other with full content. They had glanced solemnly and bashfully at Esther when she passed through the room; she appeared not to see them.

Standing at the well, looking up at the windows, she chuckled softly to herself. "It's all settled right," said she, "an' there don't none of 'em suspect that I'm a-carryin' out my pint arter all."

"One and Twenty."

This seems, indeed, to be a joyous anniversary, and we can well imagine all the bright hopes for the future which swell within this fortunate youth and his enthusiastic well-wishers. Every figure is full of animation, born of the festive occasion. This coming of age evidently means a great deal, for the surroundings bespeak wealth, and hint at the heavy responsibility entailed by inheriting vast possessions. What inward resolutions are often made at this great "One and Twenty" time! What great things are to be achieved! What youthful faults corrected! Yes, with such a majority as this, grave thoughts will naturally come to an earnest nature, and life is no longer quite the same. The artist has introduced a pretty "side light,"



"ONE AND TWENTY."

as it were, in his picture, for while all attention seems to be directed to the central figure—glasses raised, congratulation in every gesture—there is certainly one gallant gentleman to the right whose thoughts are divided between the special festivity of the occasion and that fair lady who is leaning over the balustrade. We will imagine she is a sister or cousin of young "One and Twenty," and, of course, very much interested in him, yet she cannot quite refrain from a smiling glance at the favored one who seeks it.

And so we leave them all. Boyhood has passed, manhood begins. He takes his future in his own hands—to make or mar. God keep him manly and brave and true, this fine young fellow of "One and Twenty."

Preserving Furs.

We have heard old-time housekeepers talk about "airin'" things in order to prevent their being moth-eaten, but we have found the reverse of this to be better. As soon as furs, woolens, etc., are laid aside, put them where the moth millers cannot get access to them to deposit their eggs, and they are safe from their ravages. During the summer months we keep a fox carriage robe by rolling it up and slipping it into a thick paper flour sack, and pasting paper over the entrance—putting it up early before any millers are flying. Dealers in furs paste paper around where the corners fit on the boxes, making them almost air-tight, and keeping them safely from all injury from moths.

It is said that parsley, eaten with onions, will destroy the offensive odor that affects the breath. The parsley should be served in sprigs and eaten as you would celery.

MINNIE MAY'S DEPARTMENT.

MY DEAR NIECES,—

There is an old song which used to enchant us in our school days, and many a time we have sung it—aye, even shouted it. The first line is, "Spring-time brings the robin and the bluebird home." Suppose we have a chat about the robin—the dear little bird which everyone loves. We all know that he is a migratory bird, going south when the cold comes, though a few robins remain all winter in some parts of the country, in sheltered spots. His return in spring is usually announced by the newspapers, like the movements of prominent people in towns and villages. Now Mr. Robin, like most human beings, has qualities both good and bad. He is a great favorite on account of his confiding ways, and we greet him cordially and give him the choicest crumbs from our table. But for all his winsome ways he is a greedy bird, and by his love of fruits generally, and cherries particularly, he causes much apprehension. Some people condemn him on this score, but he is too useful in other ways to be exterminated. He loves fruit certainly, but his food mainly consists of caterpillars, grasshoppers, and beetles—noxious insects which we are glad to be rid of. These compose more than one-third of his entire food, so we must not grumble too loudly, but let him have a tid-bit occasionally.

A strange thing about Robin is that although he is such a sociable and friendly little fellow, he is very pugnacious—always at war with some of his own kind. No bush was ever large enough to shelter too robins in amity. The nursery rhyme that records the courtship of Jenny Wren and Cock

Robin is a very unkind aspersion cast upon Robin's attitude towards the ladies of his tribe. He courted neither Jenny Wren nor any other Jenny, but one of the great family of Robins. "He wooed her with his sweet and simple song through the spring days, and when she has accepted his advances and chosen him for her mate he proves himself the most faithful and tender husband, loving no other bird but her."

Many beautiful legends cluster round the name of Robin, inspired no doubt by his friendliness. Who does not remember his kindness in covering with leaves the little babes in the

wood? One legend tells us that his breast is scarlet because "he scorched it in his pity for souls in torment. Down the sorrowful way went Robin, carrying water in his beak to the sufferers, and burning as he flew the feathers on his throat." One of the most beautiful legends is that when our Saviour hung on the cross a tiny bird hovered round Him, uttering piteous cries. About the seventh hour it settled on His crown of thorns, and tried with eager little claws and fluttering wings to remove the thorns which pierced his bleeding brow. The bird succeeded, but in doing so wounded its own soft breast, and the feathers were stained red by the wound. Then an angel's voice was heard saying, "Children of every house shall yearn with natural love towards the birds of the ruddy breast."

Some one has said Robin is not a good solo singer, but that a chorus of them is unrivalled. However this may be, the story is told of a robin's song cheering the dying sister of William Wordsworth. Robin's perch in the sickroom was a nail in the wall where a picture hung, and the little bird's presence and brightness were so much to the invalid that shortly before her death she composed almost the only verses she ever wrote:

"Methinks that in my dying hour
Thy song would still be dear,
And with a more than earthly power
My passing spirit cheer.
Then, little bird, this boon confer,
Come and my requiem sing,
Nor fail to be the harbinger
Of everlasting spring."

Robin's nest is seldom robbed. The boys who rob other nests usually leave Robin's alone. There is a saying in some places that whoever rifles a robin's nest will carry on his face the marks of the spots that speckle the eggs.

Now for a peep at Robin's home. There it is in

that bush, well hidden, and made of leaves and dry moss mixed with hair, and padded with wool and feathers. Robin takes care not to go straight to his nest. Oh, no!—he is too cautious for that. He circles about for a time, and approaches slowly. Peep in, and you will see five or seven speckled eggs there. When the fledglings are out, Robin is an admirable father. He has more important business now than singing, for has he not to provide worms for his numerous family? Dr. Watts said long ago that "birds in their little nests agree," but probably the Doctor forgot that a nest full of young robins are anything but agreeable, and to make matters worse, Father Robin, as they grow older, quarrels with them all, as he usually does with robins generally. Not only does he turn them out of the nest, but he orders them away from the locality. He and his mate think they have done enough for the youngsters, and now they may look out for themselves. So the poor little birdies have no alternative—out they go into the world; and a strange thing is that they do not go all together, but singly, solitarily, one by one winging their way to tracts unknown. Let us send after each of them a kindly wish. I could go on talking about this interesting bird, but shall close with a quotation from James Russell Lowell, who writes about the depredations of the robin in his garden: "Let them steal and welcome. I am sure I should had I had the same bringing-up and the same temptation. As for the birds, I do not believe there is one of them but does more good than harm, and of how many featherless bipeds can this be said?"

Your loving old Auntie— MINNIE MAY.

Recipes.

PUFF PASTE.

For a good, light puff paste, take equal weights of fine flour and butter and one teaspoonful of salt to each pound, break a part of the butter into small bits and mix these with the flour, then add enough water to moisten the flour so that there are no dry lumps in it, then draw together into a stiff paste and roll out thin; then spread some of the butter over the paste smoothly with a knife, dredge flour over it, fold it and roll again, and so repeat three or four times. Keep the paste cool and touch it with the hand as little as possible. Let it lie ten minutes, roll and fold it twice more and it is ready for the oven.

CHARLOTTE RUSSE.

Take half an ounce of gelatine and put in only just enough warm water to cover it; while this is slowly dissolving take one pint of thick, sweet cream and whip it up to a stiff froth; beat well the white of one egg; after the gelatine is dissolved boil it for two or three minutes, then sweeten and flavor it; when it is about as warm as new milk, add the cream and egg and beat the mixture until it is cold. If the sponge cake over which this is to be turned is baked on a large round tin which is scalloped around the edge, it adds much to the pretty effect of the dish. Put the cake while warm, to prevent its crumbling, into a round dish, allowing the scallops to show on top; then pour the whipped cream over it.

FURNITURE PASTE FOR WALNUT.

Mrs. P. R.—Please give a receipt for a good furniture paste for walnut. Ans.—Scrape four ounces of beeswax into a basin and as much turpentine as will soak it well. Powder a quarter of an ounce of white resin and add as much Indian red as will bring it to the desired color. Melt and mix and apply on a woolen cloth, rubbing it well in and polish with a rubber moistened with alcohol.

FURNITURE POLISH.

The following recipe will restore the original polish of furniture, especially in the case of such articles as pianos, fancy tables, cabinets, lacquered ware, etc., which have become tarnished by use. Make a polish by putting half an ounce of shellac, the same quantity of gum lac and a quarter of an ounce of gum sandarac into a pint of water. Put them all together in a stone bottle near the fire, shaking it often; as soon as the gums are dissolved it is ready for use. Then take a roller of woolen rags—soft old broadcloth will do nicely—put a little of the polish on it, also a few drops of linseed oil. Rub the surface to be polished with this, going round and round over a small space at a time, until it begins to be quite smooth; then finish by a second rubbing with spirits of wine and more of the polish. Furniture thus treated will have a brilliant luster equal to new.

The Little Wolves of Worry.

One of the rarities of our age is a person who is happy. The happiest people are generally those who, while cultivating habits of prudence and forethought, desiring only a comfortable independence, are indifferent to the accumulation of great wealth, and addicted to simple pleasures and home entertainments; who cherish a wholesome aversion to ostentatious hospitality and ceremonious display; who select their friends on account of their sterling character, and never think of inquiring how much they are worth. We meet with such now and then, who at eighty retain something of their youthful freshness of feeling and warmth of heart.

If there was a wolf constantly following any of us to worry out our lives, would we not at once try to have it destroyed? The same course should be pursued with regard to the many little wolves, the cares and trials of life which strangle our happiness and destroy our health. *Journal of Hygiene.*



The Family Fairy.

There was once a fairy who had acted all her life as family adviser to a certain royal house. Generally she did everything that could be asked for or wished, but not always. She was obliged to take after her parents; and, good one day, she was bad the next. When she was good, she was as good as gold, as her fairy mother had been; but when she was bad, she took after her father, who was a very bad fairy indeed. Nobody was more grieved at this than the family fairy herself. Every other day she would sit and cry over her sins of yesterday, but directly midnight came she would get up and laugh, and go on still further in wickedness.

It was very lucky that she was unable on her bad days to undo all the good done in her periods of

"First Come, First Served."

Three dear little puppies, so pudgy and fat,
Are climbing the stairway steep;
They're all in a flurry
With trying to hurry—
The last one is ready to climb.

They started quite fairly to climb to the top;
Why, then, is poor Tim behind?
He happened to stumble,
And then had a tumble:
His brothers were very unkind.



Not a moment they waited to let him catch up:
"One biscuit is scanty for three!"
Said Pat to wee Wee Wee,
"Stout heart wins rare lady—
First comers first served will be."

Such selfish remarks for a puppy to make!
They've never been taught at all
To help one another
Or wait for a brother
If he should happen to fall.

virtue, but it was very unfortunate that she was never able to set right all the wrong she effected. Still, since christenings, coronations and marriages are movable feasts, she was to all intents and purposes a good fairy, and was much sought after at the court on all festive occasions, things being so arranged as to make them take place on days when her goodness was golden. Her gifts, too, were of the very best quality—not such poor things as beauty, wealth or cleverness, but goodness, wisdom, courage, generosity, and humility. During her bad days she was never invited to court. Under her protection the royal line flourished, and made itself beloved by all.

But a day came, and with it the beginning of the end—a thing now to be told of.

How it happened was never quite known. Everybody tried to lay the blame on somebody else. A new king had come to the throne, and a royal bride being chosen for him, the marriage was fixed to take place. Whose fixing it was that made it come about on one of the fairy's wrong days was never known. Some said that leap-year was responsible, others that the fairy herself, by maliciously remaining good on one of her bad days, disturbed the regular order of her changes. However that might be, she came to the wedding looking as good as gold, but hiding all the time a temper as bad as it could be.

When the time came for the offering of the

wedding gifts, all waited for the benevolent fairy to speak first, the courtiers standing round with hands up ready to applaud. She waved her wand over the royal pair with the gentlest of smiles.

"Your Majesties," said she, "shall be the most forgetful couple that have ever existed since the world went round."

The whole court screamed with horror. The queen began to cry, but before the tears had reached the end of her nose she forgot what she was crying for and left off to laugh. The family fairy departed in wicked glee, and spent the next day weeping herself ill on account of the dreadful fate she had brought on her special pet royalties.

Indeed, now their misfortunes had begun. Sometimes they forgot each other entirely. It would take the court days and days to remind them of their position in life and their mutual relations. The fairy came and paid them visits of condolence, and wrung her hands over their lapses of memory. Then on her bad days she would go home and laugh, and calculate what a brood of misfortunes should presently spring from the curse she had so successfully implanted.

When their little daughter was born, and the christening day had to be fixed, both the king and queen had forgotten which were the fairy's good days and which were her bad. The king said they were the odd days of the week, and the queen said they were the evens. To settle the matter they asked the fairy to call "quite quietly—only ourselves, you know; don't dress!" which meant that the fairy was to leave her wand behind her.

So the fairy came unceremoniously, looking as good as gold. She was charmed to see the baby princess, and talked of all the good things she would give her when the christening day came.

The queen, convinced that this was one of the fairy's good days, made a note of the date, and from that the christening day was fixed. Now, this was just what the fairy in her artfulness had devised when she came pretending to be so good and gracious in her intentions. So at the christening she waved her wand over the princess, crying, "She shall be the most disobedient child that ever was born!"

Saying this she vanished, leaving the whole court plunged in grief.

As the princess grew out of babyhood, she became the most disobedient child that ever was known. Everything she was told not to do she did, and everything she was told to do she didn't.

The family fairy came and cried her eyes out over the deed she had done. "Only one thing you can do," she said, "to remedy such a state of affairs. Always tell the princess to do the exact opposite of what you really wish."

"That is all very well," said the queen, "but I so often forget what it is I really want her to do, and put me in a corner like this and it's like algebra. I shall never remember which way—the thing turns inside out when I want it to be outside in."

Nevertheless, except to her father and mother, the princess became, through the fairy's device, a very model of obedience.

[TO BE CONTINUED.]

Our Library Table.

"CAPTAIN JANUARY." Laura E. Richards.—There are some books which grow upon us; we cannot tire of them any more than we can tire of Nature's loveliness. Such a book is "Captain January." The story is simplicity itself—no second reading is required to express its meaning; but the *telling*—there is where lies its exquisite charm. It should be read with a certain method. I would say: read the book through, then refer to certain passages, which seem at each re-reading to open out into fresh beauty. The simple grandeur of the old Captain's character, and that of the quaint, passionate and loving child, Little Star, are drawn with rare skill. The scene is laid in a lonely lighthouse off the coast of Maine, where lives Captain January (the keeper) with the lovely child he rescued from a cruel wreck. One can well imagine the loneliness of the scene through this graphic description: "There is an island off a certain part of the coast of Maine—a little rocky island, heaped and tumbled together as if Dame Nature had shaken down a heap of stones at random from her apron when she had finished making the larger islands which lie between it and the mainland. At one end—the shoreward end—there is a tiny cove and a bit of silver sand beach, with a green meadow beyond it and a single great pine; but all the rest is rocks—rocks. At the further end the rocks are piled high, like a castle wall, making a brave barrier against the Atlantic waves; and on the top of this cairn rises the lighthouse, rugged and sturdy as the rocks themselves, but painted white and with its windows shining like great smooth diamonds. This is Light Island." Such is the home—we can all see it. The devotion of this dear old man to his little waif of the sea is equalled by her adoring love for him. He is her "Daddy Captain"; she is his "Star Bright"—"Pigeon Pie"—"Peach Blossom," and a dozen more pet names invented by the one of whose eyes she is the very light. Captain January's views of education are unique, as expressed in the following dialogue with an old sea friend:

"Get the school readers, hey! and teach her yourself, do you?" queried Captain Nazro.
"No, sir!" replied the old man; "I don't have no school readers. The child learns out o' the two best books in the world: The Bible, and William Shakespeare's book. Them's all the books she ever seed—*sar*, I should say."

"William Shak—" began Captain Nazro; and then he broke off in sheer amazement, and said simply: "Well, I'm blown!"

"The Minister giv'em to me," said Captain January; "I reckon he knows. There's a dictionary too," he added, rather sadly, "but I can't make her take to that, nohow, though there's a power o' fine words in it."

One can well picture the strange training Little Star gets. The pair often "play" Shakespeare. Especially when she dresses up in some beautiful clothes contained in her mother's trunk—washed ashore from the wreck—Star unconsciously falls into a quaint method of speech which is amusing and captivating. She is never tired of hearing her Daddy Captain repeat the story of the rescue, prompting him if he makes the slightest slip—after the manner of little children.

When—after all these years of companionship—the time arrives that little Star's relatives by chance discover her, and Captain January is forced to see that his Jewel Bright ought to leave him, the scene is heartrending.

"I think there is no doubt of Star's being Mrs. Morton's niece."

"And what if she be?" Did she take her out of the sea as ragged like all the devils let loose, and death itself a-hangin' round and fairly howlin' for that child? Did she stand on that rock, blind and deaf and e'ena' most mazed with the beatin' and roarin' and one'arthly screechin' all round, and take that child from its dead mother's breast, and vow to the Lord as helped in savin' it, to do as should be done by it? Has she prayed, and worked, and sweat, and laid awake nights, for fear that child's fingers should ache, this ten years past? Has she—? The old man's voice broke off suddenly.

The angry fire died out of his blue eyes, and he bowed his head humbly. "I ask yer pardon, Minister," he said quietly, after a pause. "I humbly ask yer pardon. I had forgotten the Lord, for all I was talkin' of Him so glib. I was takin' my view, and forgettin' the Lord had His. He takes things by and large, and nat'rally He takes 'em larger than mortal man kin do. Amen! So be it!"

The beautiful and pathetic finish of this story equals all the rest—which is saying much. To quote further would, perhaps, take from many readers the full and perfect enjoyment of a book which, of its kind, is a classic.

This authoress has written many other charming stories, called "The Captain January Series," a list of which is on the inside cover of the book.

FELIX.

Sleep and Health.

It is not sleep alone that rests the brain cell, though sleep is absolutely essential to recuperation of the brain as a whole. But not all parts of the brain are involved in any one kind of mental effort. The blood supply of the brain is so arranged that by expansion or contraction of different arteries parts of the brain may be flushed with blood and other parts dammed off, so to speak, somewhat as the various currents of an irrigated field are regulated by the gardener. And as rapid flow of blood is essential to great mental activity, this means that one part of the brain may be very actively at work while another part is resting and recuperating. Thus it is that a person suffering from brain fatigue may leave his desk and go out into the fields with a golf stick, or on the highways with a bicycle, and, by diverting his mind, give the overworked cells a chance to rest and recuperate. But it must not be overlooked that such exercise involves other brain cells, which, in turn, become exhausted, and that, in the end, for the recuperation of the brain as a whole, sleep is absolutely essential. No recreation, no medicine, no stimulant will take its place. The man who does not give himself sufficient hours of sleep, or who is unable to sleep when he makes the effort, it literally burning away his brain substance and can no more keep on indefinitely in this way than a locomotive can run on indefinitely without getting fresh supplies of fuel.—*New York Sun.*

Agriculture in the Bible and Bible Times.

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ARTICLE IV.

"The first Garden and Gardener."

We cannot dwell longer now upon this fascinating theme of how this earth was prepared to be the home of man, and not only home, but the source from which his wants were to be supplied.

As Professor Owen has said, "Man is the ideal being towards whose appearance nature had been working from the earliest ages, a being therefore whose existence had been foreordained." As David says of God, "the earth hath He given to the children of men."

We pass on now to the opening story of how man at the very beginning was set to till the earth.

The story of Eden never loses its charm; but we must look at it now only as far as it bears upon our present subject.

In Gen. ii., 8 and 9, we read: "The Lord planted a garden eastward in Eden; and there He put the man whom He had formed, and out of the ground made the Lord God to grow every tree that is pleasant to the sight," etc.

Eden, "the delightful place" or "pleasantness"—God's garden; where it was we do not know. Where it matters not. It was God's handiwork; a garden planted by the Great King, and therefore sure to be bright and beautiful. We have come to call it "Paradise," a name which was originally given to

the pleasure grounds or parks of oriental monarchs.

Milton has sung its beauties in "Paradise Lost." Less known is the picture of Cædmon—the farmer on the lands of Whitby Abbey in England—who, in the 7th century, wrote a metrical paraphrase of parts of the Bible. Of Eden, he says:

"It stood good and spiritual, filled with gifts,
Fair washed the general land with running water
And welling brooks. No clouds as yet
Over the ample ground bore rains,
Lowering with winds;
Yet with all fruit earth stood adorned."

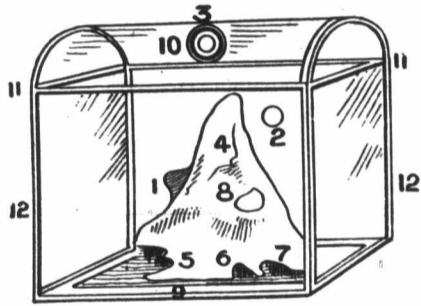
Long treatises have been written to prove, or disprove, some supposed location for this cradle of the human race. In the myths and legends of the ancients are found many stories suggestive of various parts of the Scripture narrative. The garden with its beauties—the wondrous trees, the temptation to eat of the fatal fruit, the serpent, the curse, the awful guards placed around the approach to the tree of life—all these have their counterpart in the folklore of races of long ago.

Perhaps later we may be able to give space to some of these intensely interesting stories, told or written as we tell or write now, to instruct or to amuse the serious, the inquisitive, the children of ancient days.

We are interested now in the work God gave to men. Gen. ii., 5: "The Lord God took Adam, and put him into the Garden of Eden, to dress it and to keep it." The "earth" was to be his workhouse and his storehouse. He was to work, and that was to be not only a delight, but his livelihood. The garden had flowers as well as trees; it was a "pleasant place" and beautiful.

There man learnt his first lessons in the oldest of occupations—"to dress the earth and make it more beautiful by his toil, to keep—that is, to guard—and protect from harm that which he called by the dear, sweet name of "home."

How many a man and woman since to whom God has given some "spot of earth"—"to dress it and to keep it"—has found it "Eden" indeed—a "place of pleasantness"; and the tiny farm has seemed to many to deserve the name of Paradise. There is a significant lesson for us in the fact that the first employment given to men was the healthful, delightful work of caring for some corner of God's earth, that all mankind might be the richer thereby. Next there follows the sad story of the Fall and the Curse.



Map of the heavens and earth, by Cosmas, a monk of Alexandria, sixth century, known as "The man who sailed to India." Shows supposed site of Eden. Reproduced from Geikie's "Hours with the Bible." Original in British Museum.

KEY.

1. The setting sun.
2. The rising sun.
3. The arch of the heavens.
4. The mountain which receives the rising and setting sun.
5. The Mediterranean.
6. The Red Sea.
7. The Persian Gulf.
8. The Garden of Eden.
9. Part of great ocean encircling the world.
10. The Creator surveying His works.
11. The firmament dividing and supporting the upper waters.
12. The heavens at each side of the earth.

The punishment was expulsion from the Garden of God, with all its delights. Yet, it was not destruction, nor even removal from God's presence and God's earth. All that it meant has not been revealed, but aside from spiritual loss, it evidently meant hardship, anxiety, disappointment, and death in the future. Work was to be more arduous and less remunerative. The very earth seemed to frown upon them, for in place of fruit luscious and sustaining, instead of trees yielding knowledge and life, the ground cursed for man's wrong doing brought forth to his sorrow "thorns and thistles." Gen. iii., 17, 18. Whatever else this may mean (and its full significance is beyond our ken), it points to truth we are learning all along, that only by hard work and long toil can the earth be wooed to yield us our daily bread. Thorns, thistles, briars, weeds, that haunt us year by year and dog our footsteps wherever man treads—these are here with us to stay. No doubt they have their uses; they are no unmitigated curse, but they are a perpetual reminder of what folly and covetousness can do to wreck or mar human happiness.

Of the identity of the "thorns and thistles" here referred to, nothing certain is known, but some of these pests now prevailing in Palestine and Bible lands will be referred to in another chapter.

Waur Things than a Cough.

An old Scotch beadle, Saunders by name, was a great victim to asthma. One day whilst in the act of opening a grave, he was seized with a violent fit of coughing. The minister, towards whom Saunders bore little affection, at the same time entered the kirkyard, came up to the old man as he was leaning over his spade wiping the tears from his eyes, and said, "That's a very bad cough you've got, Saunders." "Ay, it's no very gude," was the dry response, "but there's a hantel fowk lyin' round about ye that would be gey glad o't."

THE QUIET HOUR.

Help that Comes Too Late.

'Tis a wearisome world, this world of ours,
With its tangles small and great,
Its weeds that smother the springing flowers,
And its hapless strifes with fate;
And the darkest day of its desolate days
Sees the help that comes too late.

Ah! woe for the word that is never said
Till the ear is too deaf to hear,
And woe for the lack to the fainting head
Of the ringing shout of cheer:
Ah! woe for the laggard feet that tread
In the mournful wake of the bier.

What booteth help when the heart is numb?
What booteth a broken spar
Of love thrown out when the lips are dumb
And life's bark drifteth far—
Oh! far and fast from the alien past
Over the moaning bar!

A pitiful thing the gift to-day
That is dross and nothing worth,
Though if it had come but yesterday
It had brimmed with sweet the earthen—
A fading rose in a death-cold hand
That perished in want and dearth!

Who fain would help in this world of ours,
Where sorrowful steps must fall,
Bring help in time to the wanting powers,
Ere the bier is spread with the pall;
Nor send resources when the flags are furled
And the dead beyond recall.

For baffling most in this weary world,
With its tangles small and great,
Its lonesome nights and its weary days,
And its struggles forlorn with fate,
Is that bitterest grief, too deep for tears,
Of the help that comes too late.

—Margaret E. Sangster.

Some "Might Have Beens."

"There, I meant to have sent that coat and hat of Elsie's to the mission rooms!" said Mrs. Warner, as she began to clean out the closet in her little daughter's room in the early spring morning. "I am so sorry, for it would have kept some little body so comfortable during the very cold weather we have had. But now the weather is so mild, I think I had better pack it away until another winter."

That was one of the "might have beens." Some little child would have been made very happy by having that good warm coat which Elsie had outgrown, but just because of thoughtless procrastination it was left hanging in the closet, of no use to anybody.

"I believe there is a funeral across the way. I wonder who is dead," said Mrs. Whiton, as she stood by the window one afternoon.

"It was that little Barton girl's mother," replied the daughter, Agnes. "You know I told you she went to our Sunday-school and was in my class. Our teacher told Mrs. Hunter that the mother had been ill ever since they came here a month ago."

"It must be the very lady that Mrs. Hunter asked me to call upon because she was ill and a stranger," said the mother. "I told Mrs. Hunter I would try to go, but I really forgot all about it, so many other things have taken up my mind and my time."

That was one of the "might have beens." "I was a stranger and ye took Me not in." What comfort that neighbor could have brought into that suffering stranger's life if she had taken the time and trouble to go and see her during the last few days of her stay on earth. Oh, the "might have beens" that have made life lose so much of cheer and brightness! We could have brought joy into a sorrowing heart by a few words of hearty sympathy, but we let the opportunity pass and did not speak them. We might have given a lift to somebody who was carrying a tenfold heavier burden than we were, but we did not consider what help we could give, and passed by on the other side. Why are we so careless of these things that are but small matters for us to do, and yet are productive of so much good in the world? Why do we let the moth and rust destroy things that might have been of such great value to others if given at the proper time? Things that are useful to others should be considered as belonging to those of God's children who need them. They should never be allowed to hang or lie uselessly in secluded places in our home. We shall be called to account for wrapping up such talents and putting them aside where they are of no use to anybody as much as for letting other talents God has given us be idle.

Let us all remember the injunction, "Do good as ye have opportunity," and then we shall not have to sorrow over the "might have beens," the remembrances of which have come too late to bless and help.

"And still beyond your household duties reaching,
Stretch forth a helping hand—
So many stand in need of loving comfort
All over this wide land;
Perchance some soul you aid to-day, to-morrow
May with the angels sing—
Some one may go straight from your earthly table
To banquet with the King."

Let every dawn of morning be to you as the beginning of life, and every setting sun be to you as its close.

We cannot remain at rest! When we think of enjoying ourselves, a foe is sent us to try our valor, a friend to try our patience.

He that will not permit his wealth to do any good to others while he is alive, prevents its doing any good to himself when he is dead.

Puzzles.

The following prizes are offered every quarter, beginning with months of April, July and October: For answers to puzzles during each quarter—1st prize, \$1.50; 2nd, \$1.00; 3rd, 75c. For original puzzles—1st, \$1.00; 2nd, 75c.; 3rd, 50c. This column is open to all who comply with the following rules: Puzzles must be original—that is, must not be copied from other papers; they must be written on one side only of paper, and sender's name signed to each puzzle; answers must accompany all original puzzles (preferably on separate paper). It is not necessary to write out puzzles to which you send answers—the number of puzzle and date of issue is sufficient. Partial answers will receive credit. Work intended for first issue of any month should reach Pakenham not later than the 15th of the month previous; that for second issue not later than the 5th of that month. Leave envelope open, mark "Printer's Copy" in one corner, and letter will come for one cent. Address all work to Miss Ada Armand, Pakenham, Ont.]

1-CHARADE.

In sunny France, long years ago,
My whole was well defended;
The long besieged, surrendered not,
As by the foe intended.
For one appeared, a leader brave,
Angel first imp they could not tell,
The army second on this support
And defeats the enemy well. M. N.

2-DOUBLE ACROSTIC.

1, A species of cake; 2, when; 3, to plunge; 4, a hideous scream; 5, against; 6, overthrow; 7, a net.
Primals and finals spell the name of a noted author. "Dick."

3-A FLEET.

(Example—The ship of manufacture, workmanship.)

1. The ship first in competition.
2. Two ships of noble rank.
3. The ship of a firm.
4. The ship of the student.
5. The ship of burdensome toil.
6. The ship of mutual attachment.
7. The ship of political knowledge.
8. The ship of inhabitants.
9. The ship for sailors.

F. L. S.

4-CROSS-WORD ENIGMA.

First in cat, not in dog;
Second in tag, not in log;
Third in country, not in town;
Fourth in feather, not in down;
Fifth in spring, not in fall;
Sixth in cane, not in doll;
Seventh in dish, not in pan;
Eighth in race, also in ran;
Ninth in Dan, not in Sam.
Whole is an adroit manager. "UNA."

5-DOUBLE ACROSTIC.

1, Coldness; 2, a cave; 3, the last month; 4, the rainbow; 5, native simplicity; 6, a wicked person, transposed; 7, a large spoon; 8, a narrow valley; 9, a funeral solemnity.
Primals and finals each spell the name of a hero of modern history. A. E. T.

6-REBUSES.

1. H \$\$\$
OR \$\$\$

2. WE (UR 2C ME) EK
(LY CE) EK

"ARRY 'AWKINS."

7-HALF SQUARE.

A small European hawk; to set a value on; a warlike horse; to pour; a color; a type measure; a consonant. "BUTTERCUP."

8-CHARADE.

My first makes company, my second shuns company, my third assembles company, my whole puzzles a company. "BUTTERCUP."

9-ANAGRAM.

"I ON RAT CONES, FED."

"I went to the war—'twas long ago,
When to get "rat sup" was thought smart,
Yet I do not know as I made any show,
Tho' in TOTAL I took a great part." "DICKENS."

10-ENIGMA.

My first is in lark but not in wren,
My second is in raven but not in hen,
My third is in grave and also in gay,
My fourth is in sport but not in play,
My fifth is in ill but not in well,
My sixth is in speak but not in tell,
My seventh is in piece but not in bit,
My eighth is in kitten but not in kit.

My whole is an unwelcome visitor in nearly every home each winter. JESSIE HYDE.

11-CONUNDRUM.

What four things has God not got? "FLORENCE."

12-NUMERICAL ENIGMA.

My 1, 5, 6, 2, is a Norse poem; 4, 2, 10, 9, is a virgin; 6, 5, 7, 9, is a bauble; 6, 3, 5, 8, 9, is an organ of the body.

My whole's a collection of tales
By a great American author;
Or a mixture of many foods,
With spice to make it hotter. M. N.

13-DOUBLE ACROSTIC.

In "dress" so costly and fine,
In "cider" better than wine,
In "cream" good and prime,
In "peaches" from a sunny clime,
Bought for a dime.

In "places" we want to see,
In "hives" filled with bees,
In "stones" from River Dee,
In "diamonds" got with a fee
From the land of Zuyder Zee.

In "moments" gone so quick,
In "pigeon" shot by Dick,
In "onion" grown by Mick,
In "sardine" bought on tick,
Eat all this, you'll be sick.

Now a puzzler gay from this list you'll get—
He's really an addition to our set;
Also the kind of puzzle in which he delights—
Drear is his crime, but he's all right.
Good night! Good night! "ARRY 'AWKINS."

Prizewinners.

The prizes for original puzzles for January, February and March are awarded as follows: First (\$1), to F. L. Sawyer ("Ogma"), 118 Ann St., Toronto; 2nd (75c.), to L. B. Force ("Dickens"), Oriol, Ont.; and 3rd (50c.) to Richard Stinson ("Dick"), Harriston, Ont.
The names of winners for solutions will appear next issue. UNCLE TOM.

Answers to March 15th Puzzles.

- | | | |
|---|---------------------------------------|---------|
| 1-Drear-rear-car-are. | 2-cower | 3-zibet |
| | olive | inane |
| | witan | bairn |
| | evade | enrol |
| | renew | tenio |
| 4-Rejuvenescence. | | |
| 5-Haste-hate; Boyne-bone; penal-peal; ducal-dual; booth-both; maple-male; dream-dram. Centrals=syncope. | | |
| 6-Colorado, Dominion, Mexico, Lanark, Durham, Montreal. | | |
| 7-Rag-a-muff-in. | 8-Explain, coxcomb, hexangular, | |
| Oxford, exhale, proxy, galaxy, expostulate. | | |
| 9-All Fools' day. | | |
| 10-Crime-rime-me. | 11-Valve, care, maid, vicar, Rome, | |
| label. | | |
| 12-armand | 13-Sam-p-son, Kit-chen-er (chin, | |
| rearer | her), Minto (toe), Tarte, Hardy, | |
| malice | Dreyfus (dry fuss), Sal-is-bury, Her- | |
| arista | schell. | |
| nectar | | |
| dreary | | |

14-Farm-m=far; mien-i=men; mild-l=mid; milt-l=mit; moist-i=most; moist-o=mist; monde-n=mode. Subtracted letters=million.

SOLVERS TO MARCH 15TH PUZZLES.

"Ena," "ARRY 'AWKINS," Lizzie Conner, Jessie Hyde, Peter Hyde, G. E. K., "Toledo," Stephen H. Collins, A. E. T., "Dick," M. R. G.

ADDITIONAL SOLVERS TO MARCH 1st PUZZLES.

"Dick," "Ena," "Barney," M. A. A., J. McLean, Jessie and Peter Hyde, G. E. K., "Toledo," M. R. G., A. E. T., Lizzie Conner.

COUSINLY CHAT.

An accident happened the Pakenham mail-bag recently, and I received some mutilated letters containing puzzles, but was unable to decipher the contents. Doubtless some will find their names missing this time, but the above will explain the cause.

I regret that some of the puzzlers are again accused of sending copied puzzles; indeed, I am quite certain that some of those sent during the past month are stale conundrums. I think we shall have to make expulsion from our Corner the penalty for this sort of dishonesty if it occur in future.

The editor continually begs me to "boil down the puzzles," consequently I am obliged to reject many really worthy ones, but I cannot help it, so you must not blame me.

Crief, Peter, Barclay, and Vera.—The above paragraph will explain the non-appearance of your puzzles. Indeed, you all do very well for such little people, and I should like to give you a chance. But do not despair—try again, and send solutions too, every issue.

C. B. M.—I presume you have ere this seen your name for the issue mentioned. Sometimes the work comes too late to appear in proper season.

Barney.—There was something wrong, but you did very well, and I give you credit for it.

Buttercup.—Just near the season for buttercups to bloom, so we bid you welcome. Do not send so many puzzles next time, but make those you do send as good as possible. Why not solve also?

"Dick."—You awful fellow! Why will you send those big form puzzles, that are hard to compose and take up so much room? Space is at a premium, "Dick," my dear boy, so shorter puzzles, if pithy, are more acceptable. The race has been very keen, but you are "in it." Try your hand at chatty personal puzzles.

"Florence."—So you are trying a new line with your new name. I hope you will succeed, but it's hard work all around now. ADA A.

A Dream.

A lady, in her elegant carriage, drove up to the great dry-goods store, and stepping daintily out she walked into the busy place. Approaching a weary-looking girl at one of the counters, she said:

"What time do you get off duty?"

"Usually at six, madam," replied the astonished girl, "but to-day at five."

"Don't you get very tired working so long?"

"Yes, madam; but I must work or starve."

"Well, will you let me take you for a drive of an hour, after you are through to-day? I'm sure it will do you good?"

The girl, knowing the wealth and social position of the lady, blushed with pleasure, and she was only too glad to accept the invitation so politely and kindly extended, and the lady, with a cheery smile and bow, walked out.

Then the man who dreamed this woke up and wondered how in the world people could dream such improbable and ridiculous things.—*Detroit Free Press.*

GOSSIP.

AN IMPORTANT COMING SALE OF DAIRY CATTLE.
Mr. B. Hertz, Charlottetown, P. E. I., announces in our advertising columns in this issue that, owing to making a change in his business, he will on May 10th sell by auction, without reserve, his entire herd of dairy cattle, consisting of registered Jerseys, Guernseys and Holsteins. Mr. Hertz some three or four years ago purchased Mrs. E. M. Jones' great show herd of Jerseys, which, with their produce, will be included in this sale, together with a number of imported animals from the Islands of Jersey and Guernsey, and a splendid herd of Holsteins. This is one of the largest and best herds of dairy stock in Canada, and its dispersion should interest breeders of Jerseys, Guernseys, and Holsteins throughout the whole Dominion, as it is rarely that so distinguished a collection of cattle is offered for sale.

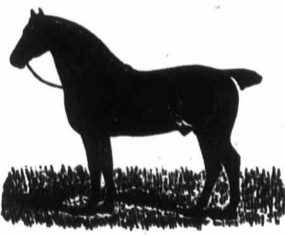
AUCTION SALE OF JERSEYS
About the middle of June (date next issue) we will sell our entire herd, THIRTY HEAD, of high-class individuals, richly bred in the blood of noted performers of the St. Lambert and Tennessee blood, such as Signal's Lilly Flagg (1,047 lbs. butter in a year), Bisson's Belle (1,028 lbs.), Landseer's Fancy (936 lbs. 144 ozs.), Oonan (22 lbs. 2 1/2 ozs. in 7 days), Ida of St. Lambert (30 lbs. 2 1/2 ozs.). Cows, Heifers in calf, Heifer Calves, and Young Bulls.
-o- H. FRALEIGH, FOREST, ONT.

... GREAT ...
DAIRY CATTLE SALE
The subscriber will sell by PUBLIC AUCTION, ON MAY 10th, his entire herd of Dairy Cattle, containing Mrs. E. M. Jones' great herd of Jerseys, supplemented by importations direct from Jersey, Guernsey, and Alderney. Sale positive and without reserve. All animals registered.
-o- BENJAMIN HEARTZ,
Charlottetown, P. E. I.

FOR SALE:
Nine Clydesdale Stallions
Just landed from Scotland; also a few imp. and home-bred Shorthorn females.
-o- JOHN ISAAC,
KINELLAR LODGE, MARKHAM, ONT.

STALLIONS FOR 1899:

The champion Hackney, JUBILEE CHIEF (2122).
The Standard-bred, BIG CHIEF 29532, A. T. R.
The Guideless Trotter, JOHN HENRY; registered as ARABAS 20183, A. T. R. For Route Bills, write



R. S. FULTON, BROWNSVILLE, ONTARIO.

ALEX. HUME & CO., MENIE P. O., ONT.

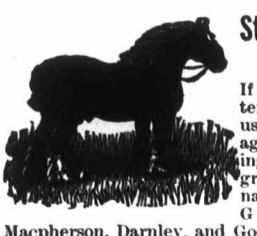
IMPORTERS AND BREEDERS OF

AYRSHIRES and YORKSHIRES.



A number of our deepest-milking prizewinning cows have dropped us very promising, beautifully-marked bull calves. Several litters of the right kind of Yorkshires ready to ship. Can furnish pairs of either calves or pigs, not akin. Our prices are right. Write us.

DO YOU WANT TO BUY
-A-
CLYDESDALE



Stallion, Brood Mare, or Filly?

If so, it will be to your interest to correspond with us. We have them of all ages and of the best breeding strains. In the pedigrees will be found the names of such sires as Grandeur, Macgregor, Macpherson, Darnley, and Good Hope.

I. DEVITT & SONS, FREEMAN P. O. Farm quarter mile from Burlington Station, G. T. R.; nine miles from Hamilton, C. P. R. -om

Seven Imported Clydesdale Stallions

Four just landed, two winners at Royal Northern Show, 1898. For particulars address -o- GEORGE ISAAC, BOMANTON, ONT. Cobourg Station, G. T. R.

- SNELGROVE -
BERKSHIRES and COTSWOLDS

High-class Berkshires of the large English bacon type, bred from the best specimens of the best importations. Young Boars and Sows of breeding age for sale. Also choice spring pigs six to eight weeks old. Can supply pairs not akin. Yearling Cotswold Rams and Ewes for sale.
-om R. P. SNELL, Snelgrove, Ont.

One Imp. Clydesdale Stallion For Sale!
3 YEARS OLD IN JUNE. Large, Quality Good, and Breeding Right. For particulars apply to

JNO. DAVIDSON, ASHBURN, ONT. Station: Myrtle, C. P. R. or G. T. R.

FOR SALE--Toulouse Geese Eggs at 25c. each. Yorkshire and Tamworth Pigs under six months at farmers' prices. -o- JOHN HORD & SON, Parkhill, Ont.

CATERPILLARINE.

A preparation for checking the ravages of all tree-climbing insects and caterpillars. Costs one cent per tree. Sold by all seedmen and druggists. Prices, \$1.00, \$1.50, and \$2.50 per ten-pound tin. SEND FOR CIRCULAR. -om

Dr. Wm. Mole, 443 Bathurst Street, TORONTO.

Do you keep a DOG?
Send for free pamphlet on feeding, treatment, etc., and catalogue of foods, etc.
To SPRATT'S PATENT Ltd 239 E. 50th St., New York.

SPLENDID FARM FOR SALE.

The "Braeside Farm," of 250 acres—dairy and grain farm—near Mount Elgin, Durham, County Oxford; watered by spring creek and artesian wells. Large stone house; good buildings; good fences; in excellent state of cultivation. For further particulars apply to

LEWIS A. PRICE, MOUNT ELGIN, ONT., or M. WALSH, Barrister, Ingersoll.

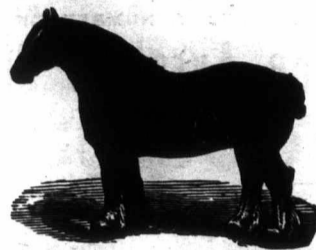
BIG MONEY FOR AGENTS THE STAR RIVETER

For MENDING HARNESS, BELTING, etc. Indispensable to Farmers, Livestockmen and Threshermen. STAR RIVETER complete, with 50 tubular rivets, \$1.50. Best selling article ever introduced. Agents write for special prices and territory.

ENTERPRISE MAN'G CO., - TORONTO, ONT.

FOR SALE... IMPORTED AND CANADIAN-BRED Clydesdale Stallions

From One to Four Years Old. Also



SEVERAL THREE YEAR OLD FILLIES,

All registered and warranted sound. Inspection invited.

ROBT. DAVIES, Thorncliffe Stock Farm, TORONTO.

CLYDESDALES



We have several imported Clyde mares 8 and 10 years old for sale at moderate prices.

D. & O. SORBY, GUELPH, ONT.

CLYDESDALES, HACKNEYS, COACH HORSES.

Alex. Galbraith, JANESVILLE, WISCONSIN.

OFFERS A SPLENDID SELECTION OF EACH BREED AT PRICES TO SUIT THE TIMES.

His Clydesdales are an extra choice lot, possessing great substance and weight, with excellent quality, and of the most fashionable breeding.

CLYDESDALES, AYRSHIRES and POULTRY.

We are now offering a limited number of imported stallions and mares, and booking orders for young Ayrshires from our show cows.

R. Ness & Sons, Howick, Que.

SHORTHORN CATTLE AND LINCOLN SHEEP.

Imp. Baron Blanc 11th at head of herd. Seven young bulls for sale—good ones. Also a few females.

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ASHTON FRONTVIEW FARM

A. J. Watson, Castlederg, Ont.

SHORTHORN BULLS, by Statesman, brother to Topman. Also, one BARON LEE BOAR, 15 months old, and one boar 8 months old.

FOR SALE, Three Choice Young BULLS,

Red and roans. Imported Prime Minister heads my herd.

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SHORTHORNS For Sale: THREE CHOICE YOUNG BULLS.

Also, heifers and young cows.

R. CORLEY, BELGRAVE, ONT.

SHORTHORN BULLS

From 10 to 14 months old, also 4-year-old bull, Elvira's Saxon 21064. Breeding and quality first-class.

R. MITCHELL & SON, Burlington Station, Nelson, Ont.

Highland Park Herd of Shorthorns, Berkshires

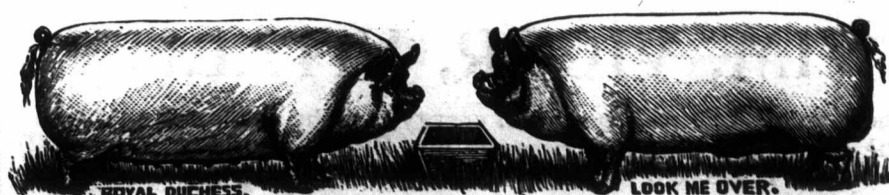
Are strictly up-to-date in style, quality and breeding. Present offerings: Three young Bulls, young Boars and Sows of various ages.

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FOR SALE:

Four Shorthorn bulls, three Berkshire boars, seven Southdown and Leicester rams; females all ages; and B. & W. Leghorns. Write or come and see.

E. JEFFS & SONS, Bondhead, Ont.



SUMMER HILL HERD OF YORKSHIRE HOGS. LARGE, LENGTHY, ENGLISH TYPE.

Among them being the undefeated prizewinning boar, "LOOK ME OVER" 2602. Also Royal Duchess, a first prize sow at the Royal Show of England in 1893, and several choice young sows bred to Look Me Over; also, young stock of both sexes, single or in pairs, not akin.

D. C. FLATT, MILLGROVE P. O., ONTARIO.

W. C. Edwards AND COMPANY. IMPORTERS AND BREEDERS. Laurentian Stock and Dairy Farm, North Natic Mills, P. Q. Pine Grove Stock Farm, Rockland, Ontario.

Ayrshires, Jerseys, Shropshires, Berkshires. Shropshires and Scotch Shorthorns.

Our excellent aged herd of Ayrshires is headed by our noted imported bull Cyclone. Tam Glen heads the young herd, and Lisgar Pogis of St. Anne's heads the Jerseys. The young stock are all from time-tried dams.

A. E. SCHRYER, Manager. We can be reached either by steamboat, the C. P. R., or C. A. R.; the C. A. R. making connections with the G. T. R. at Coteau Junction. Rockland is our station on all lines.

WE ARE OFFERING FOR SALE 8 HIGH-CLASS YOUNG IMPORTED SHORTHORN BULLS OF THE BEST SCOTCH BREEDING.

TOGETHER WITH A FEW Home-bred Bulls AND A NUMBER OF Cows and Heifers. BOTH IMPORTED AND HOME-BRED. ROYAL MEMBER (64741)

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Pure-bred Ayrshire Imported Cattle.

LARGEST AND MOST EXPENSIVE IMPORTATION IN AMERICA.

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GUERNSEYS. The grandest of dairy breeds; good size, hardy, persistent producers of the richest colored milk and butter when fed in the stable. CHESTER WHITES. The farmers' favorite; easy feeders, early maturers, good breeders, giving satisfaction bred as pure or as cross breeds. DUROC-JERSEYS. Easiest fed, easiest fattened; will do best when fed on forage crops. TAMWORTHS. The ideal bacon hog; two boars fit for service; 10 sows (bred); some prizewinners included. Write

WM. BUTLER & SONS, DEREHAM CENTRE, ONT.

Ten Shorthorn Bulls FOR SALE,

Seven red and three roan, from 10 to 16 months old. In a herd of 95 head, no white calves since 1892.

THE HERD HAS PRODUCED

such bulls as Topman, Banker, Lord Stanley, and Moneytuffel Lad, all of them

1ST PRIZE and SWEEPSTAKE WINNERS

at the principal shows of Canada and the United States. Also, three 1st prize herds out of five at Chicago, 1893.

A Yonge street trolley car leaves the Union Station, Toronto, to C. P. R. crossing, north Toronto; a car leaves here for Richmond Hill, four times a day, passes the farm.

J. & W. RUSSELL, RICHMOND HILL, ONT.

SPRING GROVE STOCK FARM

Shorthorn Cattle and Lincoln Sheep. Herd prize and sweepstake at Toronto Industrial Exhibition, 1897 and 1898.

Herd headed by imported Blue Ribbon—17005—and the famous Moneytuffel Lad—20321—High-class Shorthorns of all ages for sale. Also prizewinning Lincolns.

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Importer and Breeder of Shorthorns and Shropshires

Offers young bulls and heifers, rams and ewes of the most approved breeding and finest quality, at moderate prices.

Station, Telegraph, Telephone, Post Office, three minutes' walk.

River Bow Stock Farm.

B. SNARY & SONS, CROTON, ONT. Breeders of Shorthorn Cattle, Poland-China and Chester White Swine.

We offer for sale seven good young bulls, from seven to twelve months old; eight heifers of choice quality and breeding. Sired by Chief Captain. Pigs of both sexes and all ages at moderate prices, quality considered.

SHORTHORNS 9 BULLS, 4 HEIFERS,

Mostly Scotch-bred, and got by such bulls as Kinellar Sort (imp.), Northern Light (imp.), Prince and Prince Bismark. Prices right. Correspondence Solicited, and Visitors Welcome.

G. A. BRODIE, Stouffville Sta., G. T. R. BETHESDA, ONT.

FITZGERALD BROS., Mt. St. Louis, P. O.

Offer for sale six Short-horn Bulls from 9 to 14 months old; also 2-year-old roan bull, St. Louis—2418—, a Morton-bred bull with exceptionally grand pedigree. Also a few females of all ages, bred to imp. bull, British Statesman (63729)—29653—, now at head of our herd.

Hillsdale Telegraph Office; Elmvale Station, G. T. R.

Springhurst Shorthorns.

4 Young Bulls

GOOD ONES. BRED RIGHT. READY FOR SERVICE. ALSO, Young Cows and Heifers FOR SALE.

H. SMITH, HAY, ONT. Exeter Station, G. T. R., half mile from farm.

SCOTCH-TOPPED SHORTHORNS.

Am offering five young bulls, four of which are by Guardsman, the sire of St. Valentine, champion for three years in succession in the United States. The fifth is out of a Guardsman dam. Also a few cows and heifers, mostly by Guardsman.

JOHN GARDHOUSE, HIGHFIELD, ONT. Weston Station, G. T. R. and C. P. R.

Maple Lodge Stock Farm

SHORTHORNS.—Imported Knuckle Duster, and the great sire and show bull, Abbottsford, in service. Several choice heifers for sale, and a grand lot of young bulls by Galthiness, from good milking dams. Some splendid Leicester ewes and rams for sale also.

A. W. SMITH, MAPLE LODGE P. O., ONT.

HAWTHORN HERD OF DEEP-MILKING SHORTHORNS.

3 heifers bred to Beau Ideal—22554—, of first-class quality and A 1 breeding.

Wm. Grainger & Son, - Lonsdale, Ont.

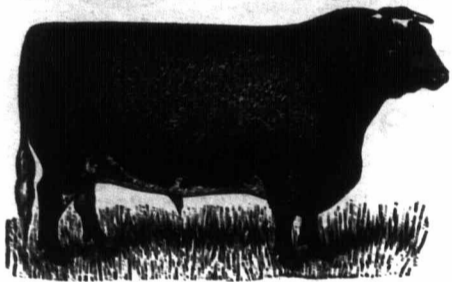
PLEASE MENTION FARMER'S ADVOCATE

GOSSIP.

W. W. Everitt, Chatham, Ont., breeder of Jersey cattle and Barred Plymouth Rock and Black Minorca fowls, has a herd of twenty-five head of richly-bred Jerseys, about one-half of which are milking or due to calve soon. Among the matrons of the herd is the solid-colored five-year-old Charity of Glen Rouge 102899, by One Hundred Per Cent, full brother in blood to Stoke Pogis 3rd, sire of twenty-seven cows averaging over twenty pounds of butter in seven days. This cow has raised four calves in five years, and her splendid three-year-old daughter (also solid color) swings a model shaped udder and is a persistent milker. She is by Perfect Combination, of the same blood as the winning cows in the World's Fair test. The three-year-old Leap Year Elsie is a solid fawn daughter of Massena's Son, a sweepstakes winner at Toronto, Montreal, and Ottawa, and whose dam made the great record of nine hundred pounds of butter in one year. Lady Lil is by Mighty Dollar, another first prize winner at Toronto, and her dam is Brevia Pogis. The present stock bull is Handsome Rioter, by Lullum's Rioter, winner of sweepstakes and head of first prize herd at Toronto Exhibition; dam Hugo Beauty 2nd, daughter of Hugo Beauty, first prize at Toronto Exhibition. Among the young bulls for sale is a three-year-old son of Magnolia of Highfield, by Hugo Alpheia of Oaklawn, another first prize winner at Toronto, and a yearling son of Lady Lil by Massena's Son. Also a number of young calves of both sexes. The Black Minorcas are up-to-date, and the Barred Plymouth Rocks are of Shearer's strain, the pen being headed by a prizewinning cockerel.

AN ATTRACTIVE SALE OF JERSEYS.
Mr. S. Fraleigh, of St. Mary's, Ont., and his son Howard, of Forest, Ont., being interested in other lines of business and hence unable to give the necessary attention to their Jerseys, have resolved to dispose of the entire herd about the middle of June, and will announce the date in our next issue. This herd consists largely of Tennessee-bred Jerseys, deep in the blood of imp. Tormentor, sire of forty-one tested cows with records of from 14 to 23 lbs. in seven days; of Oonan, a cow having a record of 22 lbs. 2 oz., the dam of six tested daughters with records of 14 lbs. to 20 lbs. 4 oz.; of Bisson's Belle, 1028 lbs. butter in a year; Little Goldie, with a record of 34 lbs. 8 oz. in seven days, and of many others of a similar class. The best of St. Lambert blood is also represented through many of the sires in the pedigrees of these cattle, and many of them are fine individuals, having been selected with care and regardless of expense. This will afford an unusual opportunity for farmers and breeders to secure high-class stock at their own prices. Fuller notes will be given in a later issue.

ARTHUR JOHNSTON
Greenwood P. O. and Telegraph Office,



OFFERS FOR SALE
4 young imported Shorthorn Bulls big, good and 8 home-bred and in fine form. Also, 8 Imported Heifers, together with 25 home-bred Cows and Heifers. All of which will be sold at moderate prices.
Claremont Station, C. P. R.
-om Pickering Station, G. T. R.

SHORTHORNS
OF THE
Grimson Flower and Minnie Strains



And from such sires as Scotchman 2nd, Duke of Lavender, Premier Earl, Indian Chief, and Clan Campbell. A few splendid young bulls ready now. Cows-would sheep.
DAVID BIRELL,
-om Greenwood, Ont.

Scotch Shorthorns For Sale:
90 HEAD TO SELECT FROM.

We are offering four young bulls by Valkyrie, and a number of cows and heifers (including some show heifers), from such sires as Valkyrie = 21806 = Young Abbottsburn's Heir = 15047 =, and imp. Mariner = 2720 =, served by imp. Diamond Jubilee (Vol. 15) now at the head of herd. Farm 1 mile north of town.
T. DOUGLAS & SONS,
-om Strathroy Station and P. O.

SPRINGBANK FARM.
Shorthorn Cattle, Oxford Sheep, and Bronze Turkeys. Young bulls for sale.
JAS. TOLTON, WALKERTON, ONT.

VIM, VIGOR, VITALITY

The man of vigor, the woman of energy, are the winners in life's race. The struggle is hard and tiresome but **DR. WARD'S BLOOD AND NERVE PILLS** will give you energy, vigor, health and strength to conquer obstacles and make life happy and healthy. Here is proof;—

Gentlemen: I have been troubled with kidney complaint for several years. I sent for a box of Dr. Ward's Blood and Nerve Pills, and they did me more good than all the doctors and medicines combined. I would have been in my grave long ago if it hadn't been for Dr. Ward's Pills. I am 70 years old, and I am sure I owe my life to this medicine. My wife has also derived great benefit from Dr. Ward's Blood and Nerve Pills, her trouble being dyspepsia, liver complaint and a run-down system. Since using your remedy she is now enjoying the very best of health. Yours truly, James Monahan, Boatbuilder, Carleton, N. B.
Dr. Ward's Blood and Nerve Pills are sold at 50c. per box, 5 boxes for \$2 at druggists, or mailed on receipt of price by **THE DOCTOR WARD CO., Limited, Dept. F. 71 Victoria Street, Toronto.** Book of information free.

W. D. FLATT,
HAMILTON P. O. and TELEGRAPH OFFICE,



OFFERS FOR SALE
Twenty-two Shorthorn Bulls
CHOICE
from three to fifteen months old.
Persons requiring show bulls can be supplied from this bunch.
TWENTY COWS AND HEIFERS
served by imported bull, Golden Fame = 29056 =. Farm 6 miles from Hamilton. Catalogue sent on application. Visitors met at G. T. R. or C. P. R. if notified. Prices consistent with quality.
Inspection invited. -om

W. G. PETTIT & SON,
FREEMAN P. O., Burlington Junction
-om Telegraph Office.

10 SHORTHORN BULLS 10
By Indian Statesman = 23004 =, from 10 to 20 months. Twelve young cows or heifers with calves by side or in calf. Twelve ram and 20 Shropshire ewe lambs, sired by (Imp.) Flashlight. Also, Berkshire boars and sows, all of which will be sold at moderate prices. Farm half mile from Burlington Junction, G. T. R.

SCOTCH SHORTHORN BULLS AND HEIFERS
HERD ESTABLISHED IN 1872.
Such sires as imported Royal George and imported Warfare have put us where we are.
A. & D. BROWN,
ELGIN COUNTY. -om IONA, ONTARIO.

4 - SHORTHORN BULLS - 4
SCOTCH BREEDING.
Good growthy ones from 5 to 15 months. Also one coming 3 years. Would spare a few heifers. Prices very moderate. Write—
SHORE BROS., White Oak, Ont.

Deschenes Jersey Herd.
HEADED BY IDA'S RIOTER OF ST. LAMBERT 47570.
4 young bulls fit for service—registered. Also Tanworth swine from diploma herd, Canada Central Fair, Ottawa, 1898.
R. & W. CONROY,
DESCHENES MILLS, QUEBEC.

S. WICKS & SONS
MOUNT DENNIS, ONT..

Offer two Registered A. J. C. Jersey Yearling Bulls. These are grand youngsters; cheap if sold at once. We have also some fine Registered C. K. C. Collie Pups; also some fine young Registered Bitches. Manufacturers of the Skee Hot Water Incubator. Hatches 100 per cent. The best and most scientific incubator in the market. -om

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Offering choiced young Bulls and Heifers by Costa Rica's Son.
DAVID DUNCAN,
DON, ONTARIO.
Nine miles from Toronto Market. -o

BRAMPTON JERSEY HERD.

Offering high-class A. J. C. cows and heifers in calf, and heifer calves; 9 choice young bulls; High-grade cows in calf; and Berkshires.
B. H. Bull & Son,
om BRAMPTON.

ST. LAMBERT OF ARCFOST 36943
whose sire was 100 Per Cent.; dam, St. Lambert's Diana 69451. Official test, 18 lbs. 6 ozs. in seven days. A few choice young bulls and heifers rich in his blood, from deep and rich milking dams, for sale at moderate prices. Tuberculin tested. **H. E. WILLIAMS,**
Sunnylea Farm, -o Knowlton, P. O.

Jersey Cattle

THAT WILL PUT
MONEY IN YOUR POCKET.
Mrs. E. M. Jones,
Box 324. BROCKVILLE, ONT., CAN.

GLEN ROUGE JERSEYS.

WILLIAM ROLPH, Markham, Ont., offers twelve Jersey Bulls and Heifers (pure St. Lamberts), out of tested cows. Grand individuals. Prices right. 22-y-om

INGLESIDE HEREFORDS.

UP-TO-DATE HERD OF CANADA!

TAMWORTHS

Orders booked for Spring Figs. Pairs not akin. Send for Illustrated Catalogue. Address,
H. D. SMITH, COMPTON, QUE.

F. W. STONE ESTATE,
GUELPH, ONTARIO.

The first Hereford herd established in Canada by importations in 1859 of the best prizewinners of England, followed by repeated further importations, including winners of first prize at Royal Agricultural Show. Choice young Hereford Bulls for sale. Also McDougall's Sheep Dip and Cattle Wash, fresh imported, non-poisonous and reliable; thoroughly tested by over forty years' use on farms of above estate. -om

..MAPLE HILL..
HOLSTEIN-FRIESIANS

I offer for sale **MADGE MERTON** 5th, sire Colanthus Abbekerk 2nd, dam Madge Merton (nine months old); **INKA 5th's MERCEDES**, sire my champion show bull Count Mink Mercedes, dam the Advanced Registry cow Inka 5th, record 18 1/2 lbs. butter in a week (one month old). Remember my herd won championship gold medals in 1897 and 1898.
G. W. CLEMONS, ST. GEORGE, ONT.

"GEM HOLSTEIN HERD."

STOCK FOR SALE

We only keep and breed registered Holstein-Friesians. We have now some choice young bulls and heifers, also some older animals, all of the very best dairy quality, that we will sell, one or more at a time, on reasonable terms. Correspondence solicited.

ELLIS BROS., Bedford Park P. O., Ont.
7-y-om Shipping Station, Toronto.

HOLSTEIN BULLS

that we think you will want when you know their breeding, and the large OFFICIAL milk and butter records of their nearest ancestors. Six of them are sired by a son of our great cow, Korndyke Queen, others by sons of De Kol 2nd, and some by Manor De Kol. Heifers and young cows of equal breeding. It's better to buy the best. We furnish papers to pass them through without duty or detention. There is no quarantine. Write for just what you want.
Henry Stevens & Sons, Lacona, N. Y.

Brookbank Holstein Herd

50 CHAMPIONS FOR MILK AND BUTTER. 50
A number of desirable young BULLS on hand, from one to eight months old, from our great milkers. Write for just what you want. Females of all ages. -o

A. & G. RICE, Currie's Crossing,
Oxford County, Ontario.

HOLSTEIN-FRIESIAN BULLS

of the very richest milk and butter breeding, from 3 to 11 months old, for sale. Also, Eggs for hatching from a grand pen of B. P. Rocks at \$1.00 per 15; from Rouen Ducks at \$1 per 11. Satisfaction guaranteed.
H. BOLLERT, - CASSEL, ONT.

4 HOLSTEIN-FRIESIAN BULLS

from 9 to 12 months old, of choice breeding.
Apply to—
William Suhring, Sebringville, Ont.

NORTH HASTINGS HOLSTEIN HERD

Contains blood of De Kol 2nd, Pauline Paul, Pietertje Hartog, Mechthilde, Inka, and Korndyke strains. Headed by a son of Manor De Kol.
Now Offering calves of both sexes, sired by a son of Manor De Kol, who has for a dam Netherland Hengerveld, with an official butter record of over 26 lbs. 10 ozs. butter in seven days. For dams these youngsters have such cows as Pietertje Hartog De Kol, Belle Burke Mechthilde, De Dickert's 3rd De Kol, and Inka Darkness 3rd's Jessie.
J. A. CASKEY, Madoc, Ont., N. Hastings Co.

FOR SALE: A NUMBER OF
Choice Ayrshire Bulls

Fit for service; also a few heifers.



And eggs for hatching from choice matings in Barred Rocks, Black Spanish, and Black Minorcas at \$2.00 per 13. Cayuga and Rouen Ducks at \$1.50 per 11. Have still a few fine Rock cockerels left.
JAS. McCORMACK & SONS,
-o ROCKTON, ONTARIO.

Six-Young Ayrshire Bulls-Six
FOR SALE!

From eight to ten months old; all imported in dam, and all from good herds. Will sell them right. Address
ROBT. HUNTER,
Manager to W. W. Ogilvie. LACHINE RAPIDS, QUE.

MAPLE CLIFF Dairy and Stock Farm.

AYRSHIRES Three young bulls fit for service, and bull calves.
BERKSHIRES, TAMWORTHS,
Booking orders for spring litters.
R. REID & CO., HINTONBURG, ONT.
Five minutes' walk from Cen. Expl. Farm, Ottawa.

MEADOWSIDE FARM,
J. YULL & SONS, Props., Carleton Place.

Breeders of high-class, deep-milking Ayrshires. Sweepstakes young herd at Ottawa. Shropshire sheep from prizewinning stock. Berkshire pigs and Barred Plymouth Rocks. Young stock for sale. Visitors met at Queen's Hotel. Give us a call. -om

CHOICE AYRSHIRE BULLS

Four calves dropped in August, October, December and March, and sired by Craigielea of Auchenbrain (imp.), first prize bull at Toronto in 1897 (the only time ever shown).
W. W. BALLANTYNE,
Formerly Thos. Ballantyne & Son. Stratford, Ont.
"NEIDPATH FARM" adjoins city, main line G.T.R.

AYRSHIRES FOR SALE.

The kind that can speak for themselves. Size, constitution, dairy and show combined. Six young bulls for sale, by Glencairn 3rd (imp.), dam Primrose (imp.). Five from Napoleon of Auchenbrain (imp.). Their dams are all Glencairn heifers. Five of their dams were shown last fall at Toronto, London, and Ottawa. Also a few good cows. No culls sold.
JAMES BODEN, TREINNOCK FARM,
-om STE. ANNE DE BELLEVUE, QUE.

AYRSHIRE BERKSHIRE BULL FOR SALE. PIGS

Bull 10 mos. old; sire Neidpath Chief - 2142 -; dam Conney - 2683 -; by Castle Douglas (imp.) - 1126 -.
Pigs, pure-bred, 6 mos. old, either sex.
-om **GEORGE HILL, DELAWARE, ONT.**

AYRSHIRES!

Three bull calves for sale, three to six months old; sired by Royal Monarch 1941, and from A1 cows. Prices right. **J. A. R. ANDERSON,**
-o HAMILTON, ONTARIO.

AYRSHIRE CATTLE.

KAINS BROS., Byron, Ont. (R. R. London), are offering a number of grand young bulls, prizewinners; also a few choice females. Prices right. -o

GUERNSEYS.

This is the dairy breed for ordinary farmers. Large, vigorous, and hardy; giving plenty of rich milk. Several fine young bulls for sale at very reasonable prices. A few heifers can be spared.
Address—
SYDNEY FISHER,
17-y-o ALVA FARM, KNOWLTON, P. O.

GOITRE CAN POSITIVELY BE CURED

By applying **SICCANTA** externally. This is beyond the experimental stage. We can furnish unsolicited testimonials from our patients, and guarantee satisfaction. \$1.00 a bottle by mail, with full directions.
RUSSEL C. TEFT, MARKHAM, ONT.
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EUROPEAN ADVERTISEMENTS.

Hampshire Down Sheep.

GREAT ENGLISH PEDIGREE SALES,

July, August, and September, 1899

WATERS & RAWLENCE, SALISBURY, ENGLAND.

Will sell by auction during the season upwards of

50,000

PURE-BRED EWES, LAMBS, RAMS

Including both Rams and Ewes from the best Registered Prizewinning Flocks in the country. Commissions carefully executed. Address:

WATERS & RAWLENCE, SALISBURY, ENGLAND.

J. E. CASSWELL, Laughton, Folkingham, Lincolnshire,

breeder of Lincoln Long-wooled Sheep, Flock No. 46. The flock was in the possession of the present owner's great-grandfather in 1785, and has descended direct from father to son without a single dispersion sale.

W. W. Chapman, Secretary of the National Sheep Breeders' Association, Secretary of the Kent or Romney Marsh Sheep Breeders' Association, and late Secretary of the Southdown Sheep Society.

Pedigree Live Stock Agent, Exporter and Shipper. All kinds of registered stock personally selected and exported on commission; quotations given, and all enquiries answered.

FAMOUS ALL OVER THE WORLD. ALFRED MANSELL & CO., LIVE STOCK AGENTS AND EXPORTERS, SHREWSBURY.

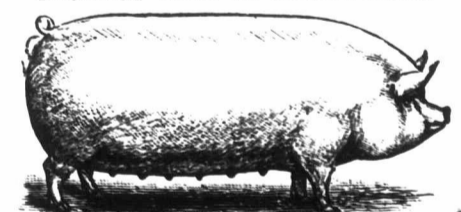
BRITISH STOCK selected and shipped to all parts of the world. Write for prices to ALFRED MANSELL & CO., Secretaries of the Shropshire Sheep-Breeders' Association, Shrewsbury, England.

SMITH EVANS, GOUROCK, ONT.

Breeder and importer of registered Oxford Down Sheep. Selections from some of the best flocks in England. Stock for sale at reasonable prices. Inspection invited.



HIGHEST TYPE OF BACON HOGS.



Oak Lodge Herd of Large Yorkshires

The largest herd of pure-bred Yorkshires in America. This herd has won the best prizes offered for the breed during the last ten years.

STOCK BOARS.—Three imported boars, all winners at the Royal Show, including championship and gold medal.

BREEDING SOWS.—Royal Duchess, Royal Queen and Royal Queen 2nd, all winners of highest awards at Royal Show, and 15 of the best sows to be purchased in England.

PRIZEWINNING STOCK A SPECIALTY.

J. E. BRETHOUR, BURFORD, ONT.

MARYSHIRE HERD OF IMPROVED YORKSHIRES AND BERKSHIRES

Have no more for sale at present. Will book orders for spring pigs from the same stock as I breed my winners from.



R. G. MARTIN, Marysville, Ont.

Thorncroft Herd of Improved Yorkshires

Choice pigs, February and March litters. One extra good boar eleven months old. All bred from Featherston and Brethourstock. Prices very reasonable.

Eggs from ten varieties pure-bred poultry, \$2 per setting; 3 settings, \$5.

WM. C. WILSON & SON, EAST ORO, ONT.

W. R. BOWMAN, MT. FOREST, ONT.

Offers York and Berk. Boars and Sows, weighing from 30 to 40 pounds, at \$6 each, registered; a few boars weighing from 200 to 300 pounds, at \$12 to \$14 each.

PINE GROVE FARM HERD OF LARGE YORKSHIRES.

Imported and Canadian-bred, from the Hasket family, which has taken more prizes at the leading fairs in Canada and the World's Fair at Chicago than any other family of Yorkshires in America.

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Herd headed by four first prize stock boars of large size, strong bone and fine quality. Young Boars and Sows, all ages, for sale. Orders booked for spring pigs.

GEORGE GREEN, - FAIRVIEW P. O., ONT.

Telegraph and Station: Stratford, G. T. R.

LARGE ENGLISH BERKSHIRES

Maplehurst Herd.

IF YOU WANT MONEY-MAKERS FROM US.

We have the kind that both the farmer and the packer want. Stock of Best Breeding, all Registered. Pairs not akin. Write us—

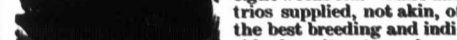
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SPRING OFFERING

Yorkshires

AND

Berkshires



A fine lot of boars and sows eight weeks old. Pairs and trios supplied, not akin, of the best breeding and individual merit.

Write H. J. DAVIS, BOX 290, WOODSTOCK, ONT.

Breeder of Yorkshires, Berkshires, Shorthorns.

Special Sale for 30 Days on Following:

One Chester White boar, 12 months (imp.); one Chester White sow, 12 months (imp.), safe in pig; one Berk. boar, 2 years old, a herd header.

Berk. pigs all ages. Write and secure a bargain.

om- H. BENNETT & SON, St. Williams, Ont.

LARGE ENGLISH BERKSHIRES

For a choice pig of any age, bred from imported stock, right in quality, right in price, and guaranteed to be as represented, write

W. J. SHIBLEY, Harrowsmith, Ont.

JAS. DORRANCE, SEAFORTH, ONTARIO.

BREEDER OF

Shorthorn Cattle and Berkshire Pigs

Young stock always for sale.

LARGE ENGLISH BERKSHIRES FOR SALE

All ages, from prizewinners of the very best quality. Royal King 5215 at the head of the herd. Write for prices.

ALB. NAUMAN, Fisherville, Ont., Haldimand County, Ont.

OXFORD HERD OF POLAND-CHINAS

The home of the winners

Headed by the imported boars, Conrad's Model and Klondike, assisted by Bacon Boy and Lennox. Has won 64 out of a possible 69 first prizes. Stock of all ages for sale. Write for prices or come and see

W. & H. JONES, OXFORD CO., MT. ELGIN, ONT.

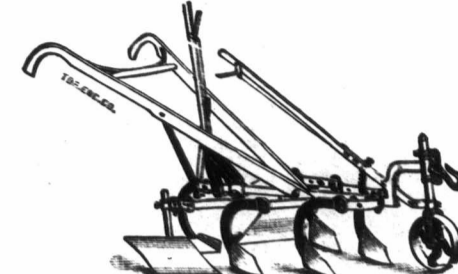
POLAND-CHINA BOARS

FIT FOR SERVICE.

A few choice sows three months and under. Black Wilkes (imp.) and Jack Sanders head of herd. A few choice Black Minorca cockerels cheap.

R. WILLIS, JR., GLEN MEYER, ONT.

QUEEN CULTIVATOR



The best One-Horse Farm Garden and Orchard Weeder in the world. One sweep of rear lever will change our Queen Cultivator from the widest to narrowest cut.

ASK FOR IT! BUY NO OTHER!

THE COPP BROS. CO. HAMILTON.

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This is the Barn that the Hurricane Blew Down.

But the walls built with Battle's Thorold Cement stood firm as a rock.

THE Thorold Cement IS TESTED BY A HURRICANE.

Read what Mr. Burt Kennedy, of Ilderton, Ont., says about Thorold Cement:

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Dear Sirs.—We think Thorold Cement is the best Cement in use for building walls and floors in stables. Last June I built a wall 36 x 100 x 11 feet high at back and 8 feet at front.

For Free Pamphlet with full particulars, address

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E. D. GEORGE, PUTNAM, ONT., Importer and Breeder of

Ohio Improved Chester White Swine.

The largest and oldest established registered herd in Canada. I make this breed a speciality, and furnish a good pig at a fair price. Write for prices.

IF YOU WANT Chester Whites Write me for particulars.

The imported sires, John A. 751, and Nonsuch 910, at head of herd.

JOS. CAIRNS, Lambton County, CAMLACHIE P. O.

BORNHOLM HERD IMP. CHESTER WHITES.

Stock for sale at all times, all ages. Nothing but first-class stock shipped. Inspection invited. Correspondence answered.

Daniel DeCourcey, Bornholm P. O., Ont.

CHESTER WHITE SWINE.

Young stock, both sexes. Booking spring orders.

W. E. WRIGHT, - GLANWORTH, ONT.

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DO YOU STUDY ECONOMY?



THE Woodward Water Basins

WILL PAY FOR THEMSELVES IN ONE SEASON.

Latest and most scientific method of Watering Stock.

WRITE THE Ontario Wind Engine and Pump Co. (LIMITED), ATLANTIC AVE., TORONTO.

TAMWORTHS

My stock was founded on Hallman & George bred females, with Spruce Grove Model 405 at the head. Young boars and sows now ready for shipment, and other sows to farrow.

R. O. MORROW, Hilton P. O., Northumberland County.



Tamworth and Imp. Chester White Boars.
Fit for spring service. Also, a choice lot of fall sows and sows due to farrow in March and April. Am booking orders for spring pigs from the sweepstake herd of the leading exhibitions of Ontario and Quebec in 1897. We pay express charges to your station, and guarantee safe arrival of all stock shipped. Pairs furnished not akin. Drop a card before buying elsewhere.

H. GEORGE & SONS, Crampton P.O., Ont.

Tamworths, Holsteins, and Barred Rocks.



Tamworth (January, 1899) farrow (choice), sired by (Royal winner) Whitacre Crystal (Imp.). Also, booking orders for spring litters, sired by imported boars. One ten months' sow, in farrow. Breeding and quality of stock unequalled. Barred Rock settings.

A. C. HALLMAN, NEW DUNDEE, ONT.

Four Months 3 TAMWORTH BOARS 3

By a Bull-bred boar, and out of an O. A. C. bred sow.

JOHN PULFER & SON, Prices Right. BRAMPTON, ONT.

Chatham HERD OF Tamworths



One 12-mos. boar and 1 10 mos.; 18 6-mos. sows, bred to imported sire; 10 sows 4 mos.; half a dozen 3-mos. sows, and a bunch of boars of the same age. Also, 30 weanlings of both sex, and booking orders for spring stock.

J. H. SIMONTON, Box 304, Chatham.

CHRIS. FAHNER, Crediton, Ont.

I have to hand a choice lot of young TAMWORTH SOWS. Some carrying their first litter and others carrying their second litter. These sows will be sold at cut prices, by writing at once. Also, write for my new Catalogue.

TAMWORTHS.



Have twelve sows of the choicest breeding and quality due to farrow to my two boars, Brownsville Duke and Revell's Choice, bred direct from imported stock; also some choice fall pigs.

JOHN FULTON, Jr., Brownsville, Ont.

18-Tamworth Brood Sows-18 FOR SALE.

From George and Laurie stock, and in pig to a George-bred boar. Also a few beautiful St. Lambert Jersey heifers.

W. D. REESOR, MARKHAM, ONT.

The 3 Popular Breeds, TAMWORTHS, YORKSHIRES, BERKSHIRES.

We have bought the best, and only retain the choicest females as matrons. Write us before buying elsewhere.

COLWILL BROS., Newcastle, Ont.

TAMWORTHS AND POULTRY FOR SALE--Pigs of all ages; also eggs from Barred Rocks, White Rocks, Silver Wyandottes, Black Minorcas, Black Spanish, Partridge Cochins, Red Caps, Leghorns, Hamburgs, Pekin and Rouen Ducks, at \$1.00 per setting.

E. J. & A. LAURIE, WOLVERTON, ONT.

STRATFORD BROS., BRANTFORD.
Tamworth boars, Dorset rams, Shetland ponies, Light Brahmas, Houdans, Cornish Indian Game, Black Langshans, White Langshans, White Plymouth Rock, Buff Plymouth Rock, Barred Plymouth Rock. Prices right.

DUROC - JERSEY SWINE

We have an excellent lot of long, strong, hardy young Duroc-Jersey pigs now on hand. Also a few choice young boars ready for service. We have also a choice flock of White Minorca Chickens. Eggs, \$1 per dozen. Address, **TAPE BROS., Ridgetown, Ont.**

IN POULTRY SUPPLIES

WE LEAD, OTHERS FOLLOW.

Sole Canadian Agents for the Cyphers Incubator, endorsed by all as the only up-to-date incubator on the market. Endorsed and used by L. G. Jarvis, Agricultural College, Guelph; A. G. Gilbert, Agricultural College, Ottawa, and all leading poultrymen. **Bone Mills, Mica Grit**, and anything needed in the poultry line. Two 300-egg size Willett's silver medal Incubators for sale, taken in part exchange for Cyphers Incubator. Price, \$15 each; \$25 the two. Also, a 240 Meyer's Incubator—price, \$20.

C. J. DANIELS, 221 RIVER ST., TORONTO.

GOSSIP.

Talking Ayrshires are offered for sale in this issue by James Boden, Ste. Anne de Bellevue, Que. They speak for themselves in their dairy performance and premiums won.

W. G. Pettit & Son, Freeman, Ont., report the following recent sales of Shorthorns and Shropshires: To Wm. Maw, Milton, the two-year-old bull, Red Chief, same family as Coral, the champion heifer at Toronto and Ottawa, 1896; to John Sockett, Rockwood, the eight-months-old bull Statesman, by Indian Statesman; to Smellie Bros., Norval, Ont., a four-teen-months-old red bull by Indian Statesman, out of Mara 12th; to M. M. Smith, Milan, Que., for the Agricultural Society of that district, the eighteen-months-old bull Golden Treasure; to W. S. Carpenter, Simcoe, Ont., ten choice yearling ewes; to W. H. Foreman, Port Carling, Ont., one pair of two-year-old ewes; and to J. G. Hammer, Burford, Ont., nine ewe lambs. They have six young bulls for service still on hand. Amongst the lot is the young bull Grand Quality, fifteen months old. He is doing exceedingly well, and will likely visit some of the large shows this fall. They also have a calf, seven months old, by Indian Statesman, that is likely to take a place in the front ranks this fall. He has size, style and quality combined.

H. Bollert, Cassel, Ont., writes that though he was ill a long time and unable to push business, the sales of Holsteins and Plymouth Rocks from Maple Grove were satisfactory and numerous. Mr. M. E. Woodworth, of Lacolle, Que., in December last ordered the two-year-old heifer Tidy Princess, and upon receiving her wrote that he never before saw such udder development on either heifer or cow, it measuring five feet eleven inches in circumference. He was so pleased that he ordered another pair, in the two-year-old heifer Heimke 4th's Colantha and the young bull Sir Netherland De Kol. A grand young bull, in Sir Jenne De Kol, went to Mr. A. M. Campbell, Dominionville, Ont. In his veins flows some of the richest blood obtainable. Mr. A. M. Bald got a grand pair in the bull Tidy Prince Abbecker and the heifer Pieterje Beauty De Kol—a real beauty. Her dam is now milking from seventy to seventy-two pounds per day without any forcing. He has still on hand a couple of bulls just as richly bred as the above. Of the Barred Plymouth Rocks, of which he offers eggs for hatching (as per advertisement), he is proud. They are a pen that are hard to beat, and must give satisfaction to the most fastidious.

At a council meeting of the National Sheep-Breeders' Association of England, the following resolution was, at the suggestion of Mr. W. W. Chapman, secretary of the Association, on the motion of Mr. E. Prentice, seconded by Mr. A. C. Skinner, unanimously carried:—"That in view of the important interests involved, and of the great advantage that would accrue to breeders of registered sheep by the adoption of mutual arrangements for the transference of registered sheep from their record in one country to that of another; and also of the importance of devising means to prevent the substitution of unregistered sheep for registered sheep, etc., this council resolves that an international conference of representatives of the sheep-breeding industry throughout the world be invited to assemble at York, in June, 1900, at the time of the Royal Agricultural Society's meeting in that city, for the purpose of considering the above or any other questions affecting the interests of sheep-breeders generally." In view of the difficulty arising from the whole of the postal addresses of sheep societies throughout the world not being known, we are asked to request any such society to address themselves direct to Mr. W. W. Chapman, at the offices of the National Sheep-Breeders' Association, Fitzalan House, Arundel Street, Strand, London, England, who will at once give attention to any communication, and who also desires, through the medium of our circulation, to inform breeders of registered sheep that it will be taken as a great favor if they will communicate to him any suggestions or information that may, in their opinion, be desirable to bring before the said conference.

LATE AMERICAN SHORTHORN SALES.

At the sale of Mr. Geo. E. Ward, of Hawarden, Iowa, held at Omaha, March 28th, twelve bulls averaged \$233.33, forty-three females \$266.16, and fifty-five head averaged \$259. The highest price of the day, \$1,035, was made by the roan four-year-old cow, Monarch's Lady, by Gay Monarch, C. B. Dustin & Son, Summer Hill, Ill., being the buyer. The three-year-old roan bull Gold Dust, by Golden Rule, brought \$550, and St. Valentine 12th, \$605, which was the highest price for a bull. Mr. H. F. Brown, Minneapolis, Minn., sold forty-four head, March 29th, at an average of \$213. Eight bulls averaged \$231.25, and thirty-six females \$200. \$400 was the highest price for a female, and \$310 the highest for a bull. On March 30th C. S. Barclay sold sixty-one head at West Liberty, Iowa, for an average of \$193.44. Seventeen bulls made an average of \$194.46, and forty-four females an average of \$192.27. The highest price for a bull was \$405, and for a female \$430.

NOTICES.

A Good Honey Yield.—Mr. W. J. Robinson, Portage la Prairie, has for a number of years been paying a great deal of attention to bee-keeping. He finds that they do particularly well in his district, as there is any quantity of white clover about and plenty of basswood trees along the river. In the last six years he has obtained no less than five tons of honey from a comparatively small apiary. Last fall he put 55 hives in the cellar and expects to have them come out in good shape.

"Cock o' the North" Grain Separator.—The firm of John Abell & Co., Toronto, learned long ago how to make threshing machinery, but did not stop with the first machine that seemed a success. Forward has been their watchword, and to-day the "Cock o' the North" stands for excellence in workmanship, expediency and expedition. A cross-section of the machine shown in John Abell's advertisement shows how the threshing and separation takes place. It does not leave much chance for grain to be thrown out with the straw. Engines, clover hullers, feed mills, and cream separators are also made by this firm in the same excellent manner. Their illustrated pamphlet, No. 67, is one every prospective purchaser of these lines of machines should have.

TEST OF

Alpha De Laval and Reid's Improved Danish Cream Separators

Made at Nilestown Factory of Thames Dairy Co.

Date, 1899.	Machine	Amount skimmed per hour	Speed revolutions per minute.	Butter-fat left in skim milk at following temperatures.	Lbs. Milk per Lb. Butter.
January 25	Alpha	2800	6000	80 85 90 95	21.10
January 27	Reid's	2800	6200	.05 .02 .01 .01	22.45
January 30	Alpha	2600	6000	.15 .14 .12 .10	
January 30	Reid's	2600	6200	.05 .03 .02	

On January 25 Buttermilk from Cream of Alpha churned at 50 tested .05 (no water added).

January 26th Buttermilk from Cream of Reid's Improved Danish churned at 48 tested .10 (no water added).

Mr. Richardson, St. Mary's, and Mr. John Brodie, Mapleton, were present when testing Reid's Improved Danish, January 27th.

On January 30th both Separators were running at the same time, and the skim milk from the Reid's was put through the Alpha. There were 3,700 lbs. of milk received, and after it had been skimmed by Reid's Improved at a temperature of 90 degrees the Alpha skimmed 303 lbs. of Cream from the skim milk which tested 8/10 of 1 per cent.

The Cream from each Separator was ripened by the use of a pasteurized starter, and contained .65% of acid at the time of churning when tested by Farrington's Alkaline Tablets.

(Signed) **T. B. MILLER,**
Manager Thames Dairy Co.



"The Scientific Compounds for Stock and Poultry."
Formulated by a Physician and Veterinary Surgeon.

DR. HESS' STOCK FOOD

For Horses, Cattle, Hogs, and Sheep; an appetizer, a flesh producer, a blood purifier and tonic. It expels worms.

DR. HESS' POULTRY PAN-A-GE-A
Cures Diseases and Makes Hens Lay.

Its wonderful effects are at once shown when fed to young fowls, preventing or curing gapes, indigestion, diarrhoea or other bowel disorders; promoting a healthy, vigorous growth of muscle, bone and feathers. Use it and the ills of poultry-raising will rapidly disappear.

INSTANT LOUSE KILLER KILLS LICE. INSTANT LOUSE-KILLER Kills Lice

The effective and convenient article for destroying lice on horses, cattle or poultry, ticks on sheep, fleas on dogs, etc. Just the thing to dust in the nest and on the sitting hen. It destroys the large, gray-head lice that are so fatal to chicks and turkeys.

DR. HESS & CLARK, Ashland, O., U. S. A.

Price: Pan-a-ge-a and Louse Killer, 35c. each; Stock Food, 7 lbs., 65c.; 12 lbs., \$1.00; 35c. articles by mail 5c. extra. Send for Scientific Book on Stock and Poultry, FREE.

Famous EVAPORATOR or FEED BOILER

For Poultrymen, Stock-Raisers, and Dairyemen.

Can also be used for Boiling Sap; being light, can be readily carried into the bush.

Does the Quickest Work with Smallest Cost.

Boiler is made of galvanized steel, thoroughly tight and removable for cleaning. Fire-box, grates and linings are made of cast iron, which will not burn out quickly.

Body is made of steel, which heats quickly, and is properly protected against warping and burning out.

DIMENSIONS, ETC.

Width. Depth. Height.
SIZE OF FIRE-BOX . . . 19 40 11
SIZE OF FIRING DOOR . . 11 x 12 inches.
CAPACITY OF BOILER . . 50 gals. Imp.

The Newest and Most Successful Boiler Made in Canada.



THE McCLARY MANUFACTURING CO.,
London, Toronto, Montreal, Winnipeg, and Vancouver.

If your local dealer cannot supply, write our nearest house.

proved

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Lbs. Milk per lb. Butter.

21.10

22.45

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Tablets.

Dairy Co.

"Poultry."

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ICE-A

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HOUSE

KILLER

Kills Lice

BOILER

Stock-Raisers,

men.

Boiling Sap;

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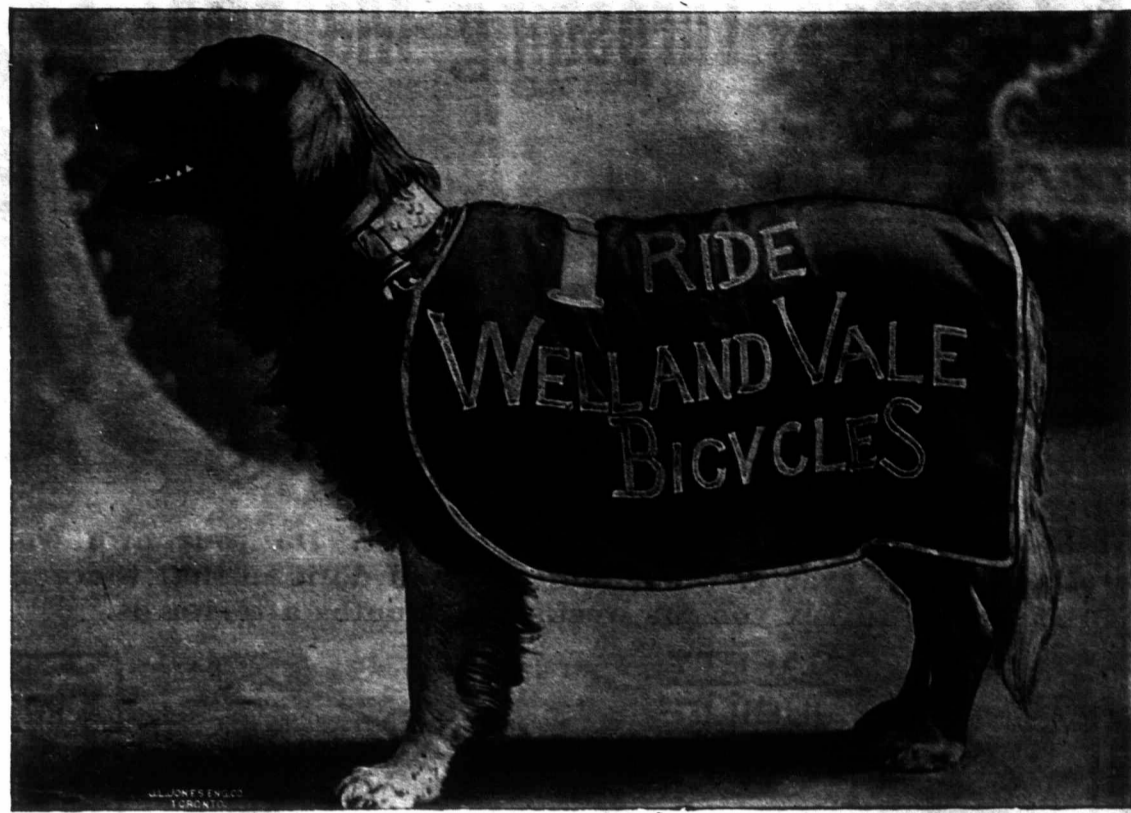
ouever.

"Chainless"

"Perfect"

"Garden City"

"Dominion"



WELLAND VALE MFG. CO., Limited,

ST. CATHARINES, ONT.

EGGS!

Rose-Combed Buff Orpingtons

Grand layers and table birds. Mine are the finest strain in England; four unrelated pens. 10s. 6d. per setting.

T. G. BINNEY,

HOUGHTON Playden, Sussex, Eng.

BARRED PLYMOUTH ROCKS BRED FOR UTILITY.

Birds may score 100 in the showing and be useless as a business fowl. Eggs that will suit the farmer, from hardy, well-bred stock, with free range, \$1 per 15; for incubators, from same stock, \$4 per 100; from choice breeding pen, mated by I. K. Felch, and birds scored by him 90 to 93, \$3 per 15. These will produce prizewinners. (MISS) P. J. COLDWELL, Constance, Huron, Ont.

DO YOU WANT EGGS

From the Best Strains Procurable?

If so, try us for B. and W. Cochins, L. Brahmas, Black Spanish, Langshans, Minorcas, and Javas. Buff Leghorns, S. L. Wyandottes, Red Caps, \$1.50 per 13. Barred Rocks (try our Rocks, they will please you), W. & B. Leghorns, and Pekin Ducks, \$1 per setting. Won 300 prizes last season. Satisfaction guaranteed. J. C. LYONS, Lucknow, Ont.

EGGS FOR HATCHING

From Barred Plymouth Rocks (imported direct from I. K. Felch, Natick, Mass., U. S.); Silver and Golden Wyandottes, and Pekin Ducks. My Wyandottes are all bred from my noted prizewinners. Only \$1 per setting of 13 hen or 11 duck eggs. Several extra good Silver Wyandotte cockerels for sale at \$1.25 each.

J. E. MEYER, - KOSSUTH, ONT.

EGGS! EGGS! EGGS!

From very choice selected pens of Barred Plymouth Rocks, Black Minorcas, and White Wyandottes, at \$1 for 15 eggs. From Toulouse Geese at \$3 for 11 eggs, or 30c. per egg. Also a few pairs of Toulouse Geese. W. W. EVERITT, Box 552, CHATHAM, ONT.

EGGS. It pays to get the best. We

have them in L. and D. Brahmas, B. and W. Rocks, W. Wyandottes, Black Minorcas, and Indian Game, at \$1.25 per setting.

JACOB B. SNIDER, German Mills.

\$1.00 per Setting. Eggs from the "Ontario"

prizewinning Golden and Silver Wyandottes, Barred and White P. Rocks, and Pekin Ducks. A few Bronze Turkey Eggs at 25c. each.

JAMES LENTON, Park Farm, Oshawa.

SNELGROVE POULTRY YARDS.

Barred Rocks Exclusively - Canada's Business Hens.

I am breeding from birds of Hawkins' Royal Blue and Perfection strains this season. Eggs for hatching, \$1 per setting; three settings, \$2.

W. J. CAMPBELL, Snelgrove, Ont.

EGGS FOR HATCHING

From Bronze Turkeys, Pekin and Rouen Ducks, B. P. Rocks, Andalusians, Black Javas, Houdans, B. Leghorns, and Black Spanish. Turkey eggs, 25c. each; others, \$1.50 per setting.

W. R. KNIGHT, Bowmanville, Ont.

BARRED PLYMOUTH ROCKS

EGGS \$1.00 per setting from select stock. We guarantee satisfaction.

H. GEE & SONS, FISHERVILLE, ONT.

FOR SALE. Pekin and Rouen Ducks at \$1 per

setting. Satisfaction guaranteed.

ROBT. STEVEN, Box 176, Petrolia, Ont.

COCKSHUTT'S STEEL ROLLERS

ARE HIGH-GRADE

Roller Bearings.

Built in Four Sizes.



ASK YOUR AGENT, OR WRITE DIRECT.

Cockshutt Plow Co., Ltd., BRANTFORD AND WINNIPEG.

BINDER TWINE

PURE MANILA, 650 FT. TO LB. SPECIAL MANILA, TIGER, STANDARD.

FARMER'S

Farmers! Don't be taken in. There is none "just as good." These twines will not bunch at the knotter, and a Binder will run all day without stoppage, thus saving time, annoyance and a "lot o' cussin'."

We pack our twine in bags of the size of ordinary grain bags, and we are not ashamed to put our name upon it. Don't take any other.

CONSUMERS' CORDAGE CO., LIMITED, MONTREAL.

PEKIN DUCK EGGS

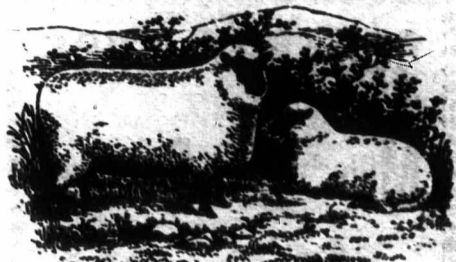
From grandly developed PROLIFIC PRIZEWINNING STOCK. \$1.00 for eleven. Perfectly packed.

E. A. SPENCER,

DORSET FARM, BROOKLIN, ONT.

SHOEMAKER'S POULTRY

BOOK on INCUBATORS, BROODERS, POULTRY HOUSES, etc. Tells how to raise chickens successfully, their care, diseases and remedies. Diagrams with full descriptions to build poultry houses. All about INCUBATORS, BROODERS and Poultry, with Lowest Prices. Price only 15c. C. C. Shoemaker, Freeport, Ill., U. S. & C.



To Farmers, Stock Dealers and Wool Growers: For Sheep, Cattle and Horses.

Leicestershire Tick and Vermin Destroyer

It effectually destroys Ticks, Lice, Worms or Grub, to which sheep, horses and cattle are subject, and enables the animals to thrive. It will be found far superior to other preparations used for the similar purpose. The proprietors will guarantee perfect success when used according to directions, as will be found on each box. It prevents scurf and scab, and renders the wool bright and clear. It is put up in tin boxes, price 30 cents each. One box is sufficient for twenty ordinary-sized sheep. It only requires to be tried to prove itself all that is claimed for it. Sold by druggists and grocers. Manufactured by G. O. BRIGGS & SON, 31 King Street West, Hamilton, Ont.

FOR FATTER SHEEP AND MORE WOOL

DIP YOUR SHEEP IN COOPER DIP

BENEFITS THE FLOCK ERADICATES INSECTS AND DISEASE

Used and endorsed by Hon. John Dryden, Minister of Agriculture, Toronto, Ont., and leading breeders everywhere.

SUPERIOR TO ALL LIQUID DIPS.

Twenty-five gallon packet, 50c.; one hundred gallon packet, \$2.00. If druggist cannot supply, send \$1.75 for one hundred gallon packet to EVANS & SONS, Montreal or Toronto.

Book premiums on application to Cooper Dip, Galveston, Texas.

LITTLE'S PATENT FLUID (NON-POISONOUS) SHEEP DIP AND CATTLE WASH

THE ORIGINAL Non-Poisonous Fluid Dip

Still the favorite dip, as proved by the testimony of our Minister of Agriculture and other large stockmen.

FOR SHEEP: Kills ticks, maggots; cures scab, heals old sores, wounds, etc.; and greatly increases and improves growth of wool.

CATTLE, HORSES, PIGS, ETC.: Cleanses the skin from all insects, and makes the coat beautifully soft and glossy. Prevents the attack of warble fly. Heals saddle galls, sore shoulders, ulcers, etc. Keeps animals free from infection.

NO DANGER! SAFE, CHEAP, EFFECTIVE. BEWARE OF IMITATIONS.

Sold in large tins at 75c. Sufficient in each to make 25 to 40 gallons of wash, according to strength required. Special terms to breeders, ranchmen, and others requiring large quantities. Sold by all druggists. Send for pamphlet.

ROBERT WIGHTMAN, OWEN SOUND, ONT. DRUGGIST. Sole agent for the Dominion.

SHEEP, CATTLE, CALF, HOG, AND EAR PUNCHES.

Patent Grain Truck and Bagger. Send for circular and prices to R. W. JAMES, Bowmanville, Ont.

SCABBY SHEEP. \$500 REWARD

To any party who can produce a scabby sheep which the Lincoln Dip will not cure. Write for particulars. Lincoln Sheep Dip Co. 855 Elliott St. Bldg. Buffalo, N. Y. Canadian Office: WEST CHEMICAL COMPANY, 15 Queen Street East, Toronto.

DESTROY EGGS

AND ALL IN WHAT YOU DO WHEN YOU USE

Miller's Tick Destroyer

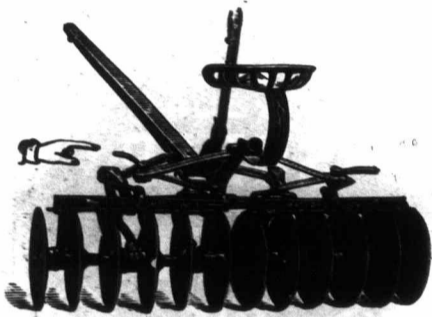
THE ONLY EXTERMINATOR.



CURES SCAB—Improves the wool. Use once and have no more bother this season.

HUGH MILLER & CO.,

167 King St., East, TORONTO.



FARMERS!

The leading improvement in Disk Harrows to-day is the spring pressure and its application to hard and soft ground. And to avoid weight on horses' necks the pressure must be applied directly over and in line with center of disk—just where you will find it in the Watford, and where it has been for years. See buggy spring construction for comfort. If no Watford agent in your neighborhood, write us and we will make an interesting price, which, however, must not be understood as having any bearing on the regular price. WHOLESALE or RETAIL. Just a special price for a special purpose. If in want of a good plow, just mention plows.

Thom's Implement Works, - Watford, Ont.
ESTABLISHED 1875.



The Wall Paper King

OF CANADA.

C. B. SCANTLEBURY,

Belleville, Kingston, Winnipeg.

Sample books of Choice Wall Paper for Residences, Churches, Offices, Lodge Rooms, Public Halls, Hotels, Stores, and our booklet, "How to Paper," sent free to any address. Write a postal. Mention what prices you expect to pay, the rooms you wish to paper, and where you saw this advertisement. We pay express charges. Mail Order Department at Belleville, Ont. Address all communications there.

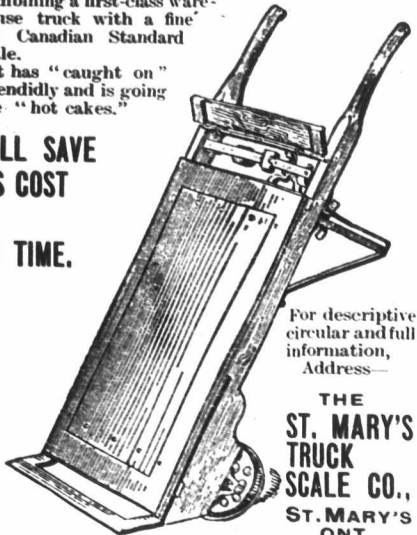
EVERY MERCHANT AND FARMER SHOULD OWN A

PARSELL TRUCK SCALE

Combining a first-class warehouse truck with a fine 800 Canadian Standard Scale.

It has "caught on" splendidly and is going like "hot cakes."

WILL SAVE ITS COST IN NO TIME.



For descriptive circular and full information, Address—

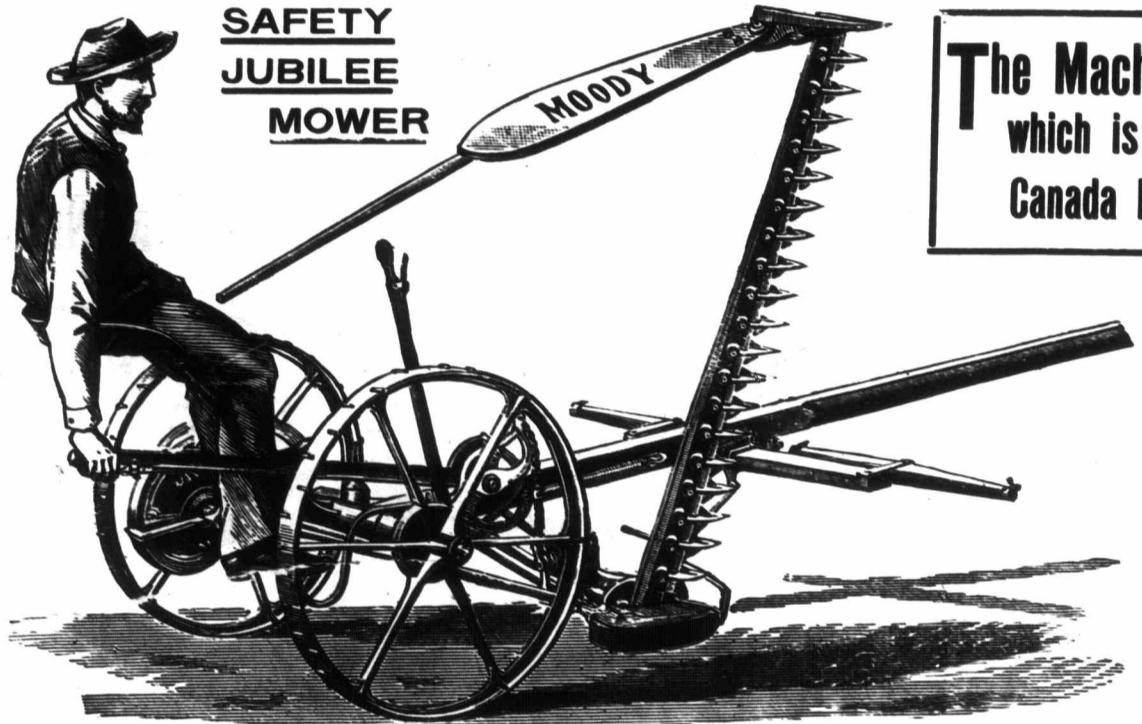
THE ST. MARY'S TRUCK SCALE CO., ST. MARY'S ONT.

A Farmer's Threshing Machine



Threshes and cleans the grain fit for market. Do your own work. Save the tolls, and do it exactly when you wish, and do it so that there will be no grain in the straw to vex you for weeks and months afterwards.

Agents Wanted. Send for Catalogue.



SAFETY JUBILEE MOWER

The Machine which is making Canada Famous.

The driver lifts cutter-bar into almost upright position without getting off the seat. Machine goes automatically out of gear as cutter-bar is raised, goes automatically into gear as the obstruction is passed and bar is lowered. Machine may be put out of gear instantly—as soon as you can say "Jack Robinson"—constituting a real Safety Mower. Roller Bearings, Serrated Guard Plates, Lang Pitman, High Driving Wheels, Simple Gearing,—last, but not least—Canadian Machine.

MANUFACTURERS:

Binders, Reapers, Mowers, Rakes, Seeders, Harrows, Threshing Machines, Hay Presses, Stone and Stump Pullers, Circular and Drag Saw Machines, Etc., Etc.

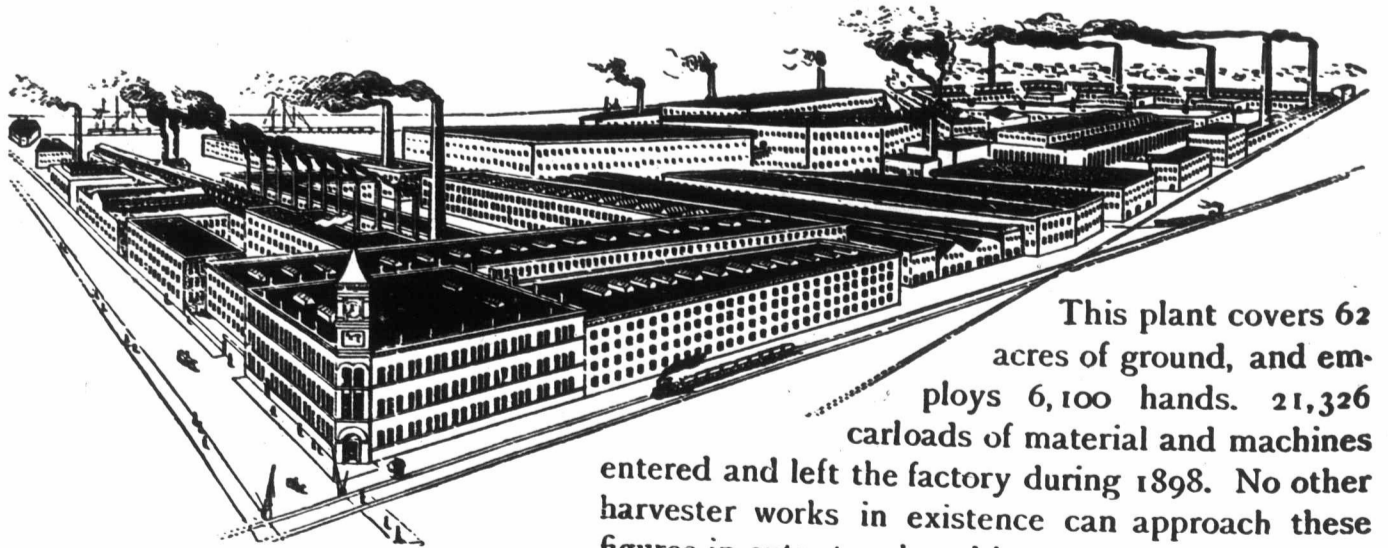
MATTHEW MOODY & SONS,

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TERREBONNE, QUE.

The Machines that Made America Famous

THE LARGEST HARVESTER WORKS IN THE WORLD.



This plant covers 62 acres of ground, and employs 6,100 hands. 21,326 carloads of material and machines entered and left the factory during 1898. No other harvester works in existence can approach these figures in output, sales, shipments, or size of plant.

DEERING MACHINES ARE BUILT ONLY BY DEERING HARVESTER CO.

Main Office and Factory:

CHICAGO, ILL.

Permanent Branch House:

LONDON, ONT.

DAVID MAXWELL & SONS

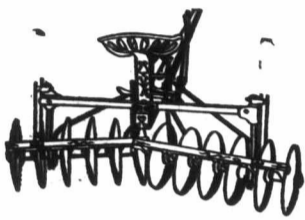
ST. MARY'S, ONTARIO.

MANUFACTURERS OF

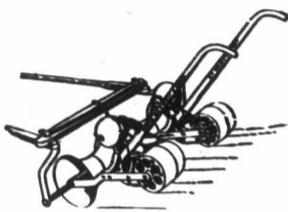
High-Class Farm Implements



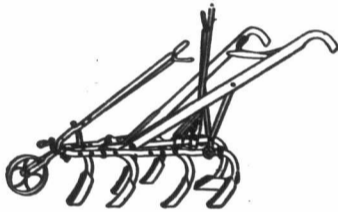
THE MAXWELL BINDER.



DISK HARROW.



TURNIP SOWER.



SCUFFLER.



Binders, Reapers, Mowers, Hay Rakes,
Hay Loaders,
Hay Tedders, Disk Harrows,
Scufflers, Turnip Sowers, Turnip
Slicers and Pulpers,
Hand and Power Straw and
Ensilage Cutters,
Churns,
Wheelbarrows, Cider Mills,
Corn Shellers, Pea Harvesters,
Lawn Mowers, Etc.



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ILLUSTRATED
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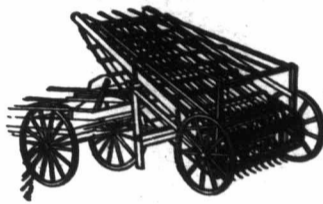
Agents Wanted in all Unoccupied Territory.



THE MAXWELL MOWER.



TEDDER.



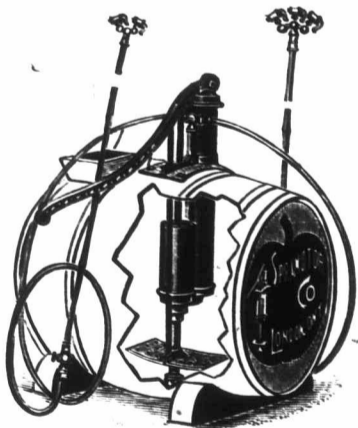
LOADER.



ALL SPRAYING, DISINFECTING AND
WHITEWASHING CAN BE
DONE WITH THE

SPRAMOTOR

It is the result of most careful and exhaustive experiment. Each feature was thoroughly tested before being placed on the market.



Toronto, November 9th, 1898.

Spramotor Co., London, Ont.
Gentlemen,—The machines for spraying and white-washing you have supplied to Dentonia Park Farm have done their work well, and are quite satisfactory. I could not have believed there was so much value in spraying fruit trees. We had a good crop of apples, whereas our neighbors who used no spraying machine had practically none.
Yours truly,
W. E. H. MASSEY.

CERTIFICATE OF OFFICIAL AWARD.

This is to certify that at the Contest of Spraying Apparatus, held at Grimsby on April 2nd and 3rd, 1898, under the auspices of the Board of Control of the Fruit Experimental Stations of Ontario, in which there were eleven contestants, the SPRAMOTOR, made by the Spramotor Co. of London, Ont., was AWARDED FIRST PLACE.

H. J. HUN
W. E. H. MASSEY
Judges.

If you desire any further information, let us know and we will send you a 72-page copyrighted catalogue and treatise on the diseases affecting fruit trees, vegetables, etc., and their remedies.

SPRAMOTOR CO.,
357 RICHMOND ST., LONDON, ONT.

Mention this paper. AGENTS WANTED.

HAMILTON

Engine and Thresher Works.

COMPOUND AND SIMPLE TRACTION AND
PLAIN ENGINES.

THRESHING MACHINES, CLOVER HULLERS,
HORSE POWERS, SAWMILLS.

WITH ALL LATEST IMPROVEMENTS. ALSO

ROADMAKING MACHINERY, STONE CRUSHERS,
ROAD ROLLERS AND GRADERS.

FOR DESCRIPTIVE CATALOGUES, PRICES AND TERMS, APPLY TO

Sawyer & Massey Company, Limited,
HAMILTON, ONTARIO.



This cut represents our 240-eggs capacity improved

SAFETY INCUBATOR

Like all our machines, it is absolutely self-regulating and supplies its own moisture. It is manufactured in Canada—hence there are no customs duties to pay on it. It is guaranteed in every particular and your money will be refunded if you are not satisfied at the end of the first hatch. No matter what INCUBATOR you place beside it, there is none that can out-hatch it. Thoroughly well built and perfectly automatic. It will hatch chickens, ducks, turkeys, and geese. Just send in your address and get one of our free circulars. There is money in it for you. Address—

J. E. MEYER, KOSSUTH, ONT.

COLOR and flavor of fruits, size, quality and appearance of vegetables, weight and plumpness of grain, are all produced by Potash.

Potash,

properly combined with Phosphoric Acid and Nitrogen, and liberally applied, will improve every soil and increase yield and quality of any crop.

Write and get Free our pamphlets, which tell how to buy and use fertilizers with greatest economy and profit.

GERTIAN KALI WORKS,
93 Nassau St., New York.

FREEMAN'S

—DOUBLE STRENGTH—

FERTILIZERS

Great Reduction In Prices.



CATALOGUE FREE.

The W. A. FREEMAN COMPANY, Limited,
HAMILTON, ONTARIO.

SUPPORT HOME MANUFACTURE

**CANADIAN-MADE
HAND
SEPARATORS**



Turns easy. Open bowl. Well finished. Most durable. Price reasonable. Best investment a farmer can make. Catalogue free. Dairy Supplies of Every Description. Contains Paper on Payment Paper, for 10 prints, neatly and tastefully printed. By mail, post-paid. Prices reasonable. Write us.

JOHN S. PEARCE & CO.,
LONDON, ONT.

CONTAGIOUS ABORTION AND HOG CHOLERA

can positively be cured or prevented by the use of

WEST'S FLUID,

which is also a cheap DISINFECTANT.

Circulars (specially prepared by a veterinary surgeon) on these diseases, on application.

THE WEST CHEMICAL CO.,
TORONTO, - - ONTARIO.

Agents wanted in all counties.

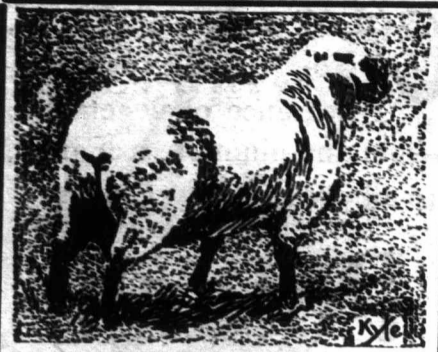


MARK YOU

your live stock of whatever kind with the thoroughly reliable, rust proof, non-corroding, easily read—
ALUMINUM
"STAY THERE" EAR MARKERS
Can't pull out, rust out or tear out. Name, address and consecutive numbers on each tag. Free sample, catalogue, etc. **WILCOX & HARVEY MFG. CO.,** 204 Lake St. CHICAGO, ILL.

EDMUND WELD,

Barrister, Solicitor, Notary Public, Etc.
Moneys loaned on real estate at lowest rates. Investments procured. Collections made.
ADDRESS: 87 DUNDAS ST., LONDON, ONT.



Persic Sheep and Animal Wash

For the complete and effectual removal of all insects or vermin peculiar to sheep and cattle. Powerful without being harsh; immediate in effect, without any irritating effects; it leaves the animal refreshed and in good spirits after use; does more than destroy the pests, it completely removes all traces of their attacks—healing sores or boils, curing open sores and leaving the skin whole and sound. Mr. G. A. Brodie, a prominent stock-raiser of Bethesda, Ont., used it with great success in castrating lambs, the wash healing the wounds rapidly and keeping the maggots away. He considers it the most effectual wash in the market, and heartily recommends it to farmers generally.

If your dealer hasn't it, write us for it, and tell us of anything special in the ailments of your flocks or herds and we'll advise you how best to use it.

THE PICKHARDT RENFREW CO., Limited,
STOFFVILLE, ONT.



BUCHANAN'S (Malleable Improved) PITCHING MACHINE

For unloading hay and all kinds of loose grain.



Unloads on either side of barn floor without changing car. No climbing necessary. Malleable Iron Cars. Steel Forks. Knot Passing Pulleys. Will work on stacks as well as in barns. Satisfaction guaranteed.



The Common-Sense Sheaf-Lifter

Works in connection with Pitching Machine, and is the most complete apparatus ever offered to the public for pitching sheaves. Sheaves left in the mow just as they come from the load.

RESPONSIBLE AGENTS WANTED

Circulars, Prices and Terms on application to
M. T. BUCHANAN & CO., Ingersoll, Can.



WANT A GOOD RAZOR?

If you send one dollar (\$1) to Stanley Mills & Co., of Hamilton, Ont., they will at once mail you a first-quality concave or hollow-ground Razor—a magnificent Razor—with fancy, strong celluloid handle; a Razor that is worth and was made to sell for \$3. It is an English-made Razor, ground in Germany by the finest cutlers in the world. No better Razor can be made. Our price is only \$1 each, post-paid, to any Canadian address. When ordering, say if you want round point or square point.

Address: Letter Order Department,
Stanley Mills & Co., Hamilton, Ont.

NOTICES.

American Field Fence.—The fence problem is rapidly being settled, as not only is it being simplified and cheapened, but all objectionable features are deminishing. In this issue the American Steel and Wire Co., of Chicago and New York, advertise a fence worthy of consideration.

Queen Cultivators.—The illustration and description of the Queen Cultivator in the advertisement of The Copp Bros. Co. of Hamilton, Ont., shows the implement to be a weed killer and moisture saver difficult to surpass, while it is very quickly adjusted, both as to depth and width. It is becoming more and more realized that the success of a hoed crop depends quite as much upon frequent cultivation as upon richness of the soil, so that it is highly important to have proper implements to do the work.

David Maxwell & Sons have been long in business, and have kept pace with the growing times. They always made good farm machinery, and made it well, and that is why they to-day enjoy the confidence and good wishes of their customers. Their harvesting and cultivating machinery, as well as their feed-preparing machines, give satisfaction. We can assure farmers and agents that they are a reliable, square firm. Their advertisement in this issue will show their classes of output, but their illustrated catalogue will tell much about the various machines that is worth knowing.

Good Roads Machinery.—The agitation for better roads that has been going on for the last few years was not premature, as so much depends upon speed at the present time. Agitation will, however, do little except action be taken, and we all know that manual labor cannot be secured to do what is needed. What is needed is proper road material, such as broken stone, proper grading machinery, and a roller that will settle the surface and press the stones into the beds. The Good Roads Machinery Co., of Hamilton, Canada, is prepared to supply their machines so perfected that no municipality can afford to be without them. By their use good roads are made easily, rapidly and substantially.

Boys and Girls for Farm Help.—The cry goes up that farm help is scarce. The enormous emigration to lands of other countries has made it so. When a farmer has not boys of his own growing up to assist him in his work, a way out of the difficulty presents itself in the opportunity to obtain a useful lad from among the young emigrants brought out by Dr. Barnardo, whose agent is Alfred B. Owen, 214 Farley Ave., Toronto. When a boy or a girl is applied for he or she is selected with a view to their suitability for the sort of work they are expected to do. The quarterly "Ups and Downs," issued under the auspices of Dr. Barnardo's Homes, at 25 cents per year, gives a clear insight into the Doctor's system of operation.

Dip the Sheep.—No good shepherd is foolish enough to turn his sheep away to pasture in the spring without seeing that they are free from ticks and small lice. To allow sheep to be pestered with these vermin is to throw away dollars' worth of feed that should go to build up fleeces and flesh. The cost of dipping a flock thoroughly, especially at the present time when shorn, is practically nothing when one of the good commercial dips (such as those advertised in our columns this issue) is used, as all are reliable. The lambs especially need treatment, as the ticks seem to know the value of spring lamb, and where to get it at this season. Not only is it important to dip sheep for vermin, but horses, cattle, and dogs are rid of lice and skin troubles in the same way. See the advertisements, showing prices of these two dips, in this issue.

McCormick Harvesting Machinery.—There is needed no greater evidence of the hopeful condition of farmers on the American continent than to find them investing liberally in harvesting and other machinery. We have it from the McCormick Harvesting Machine Company, of Chicago, that they built and sold 189,760 machines last year. While this immense number of sales may not have involved quite that number of transactions between individual men and the McCormick Company, we must conclude that a very great many shrewd American farmers have confidence in the McCormick machines. In fact, we may conclude that this mammoth concern is conducted on strictly business principles, sparing no amount of expense or pains to make their output satisfactory to every purchaser. Each machine turned out possesses a genius of design, an accuracy in workmanship, and a strength of material that creates popularity.

The Gem Grinder.—Every man that runs a reaper or mower realizes how troublesome it is to have the knives ground sufficiently often to do nice slick work. A man, a boy and a grindstone for from thirty to sixty minutes is not a combination that every farm can support right in the busiest season without considerable disadvantage. This is all unnecessary if one only has a Gem Grinder, which is advertised on the back cover of this issue. The grinding wheels are of corundum, a mineral that stands next to the diamond in hardness, the former being No. 9, while the diamond is classed 10 in hardness. The advertisement explains clearly what the grinder is, and what it is capable of doing. We see a special field for it in sharpening straw and ensilage cutter knives, as well as all sorts of tools. It may be interesting to learn that the president of this large, enterprising firm, Mr. Milton A. Snider, is a Canadian, who went to Chicago some twelve years ago, and by push and perseverance has developed this wheel-manufacturing concern until it has large branches in several large centers. Besides corundum, they also make emery and carborundum grinding wheels for many of the large American companies dealing in these things. Mr. Snider is also a controlling director of a very large Chicago mica firm, which indicates that he does business on business principles. The Gem Grinder should be a great seller. Its presents enormous advantages and is not expensive.

Used With Success For Coked Ankles, Etc.

Angola, Ind., June 22, '97.

The Lawrence-Williams Co., Cleveland, O.
Wish to use "Gombault's Caustic Balsam" on an outside splint, and as our dealer has no printed instructions I would be thankful if you would mail me pamphlet. Have used the above remedy with success on coked ankles, curbs, and enlarged glands, but want some instructions on this splint, as the patient is one of my favorite driving mares. F. W. KINNEY.

PAINT & PROSPER

Painting and prosperity go together naturally. Paint is the outward sign of prosperity. Paint saves property, increases its value. Twenty dollars worth of paint often adds two hundred dollars to the market value of a property. All owners reckon with this strange fact. But many put off painting too long, or paint without putting enough brains into the choice of paint, and their property "runs down." The paints that are made by thoughtful people for thoughtful people are

THE SHERWIN-WILLIAMS PAINTS

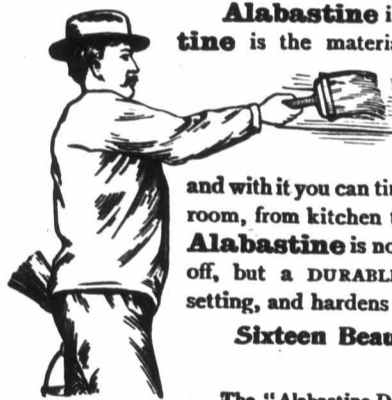
Their makers have tried for thirty years to make the best paint—the most enduring paint. They have succeeded. Every can of The Sherwin-Williams Paints is fully covered by a guarantee, and back of the guarantee are the reputation and all the resources of the company. You can be fully posted on paint by reading "Paint Points," an illustrated little book which we will send free on request.

THE SHERWIN-WILLIAMS CO. PAINT AND COLOR MAKERS,
Canadian Dept., 21 St. Antoine St., Montreal.

FOR SALE BY JAMES REID & CO., LONDON, ONTARIO.

Church's Alabastine

For Mixing in Cold Water



Alabastine is for whitening and tinting your walls. Alabastine is the material that has nearly driven all prepared kalsomines out of the market. Alabastine comes in dry, powdered form, ready for use by following directions and mixing with COLD WATER. Alabastine is put on with an ordinary wall brush, and with it you can tint your walls any color. Try Alabastine on any room, from kitchen to parlor, and you will be surprised at the results. Alabastine is not perishable like all kalsomines, rubbing and scaling off, but a DURABLE coating that goes through a regular process of setting, and hardens with age.

Sixteen Beautiful Tints and White

For Sale by Paint Dealers Everywhere

The "Alabastine Decorator's Aid" sent free on application. This is a valuable help to anyone wishing to decorate a room. We also supply catalogues of beautiful Stencils which we sell at small cost. Artistic work can be done with them with a little practice.

THE ALABASTINE CO., LIMITED
PARIS, ONT.

AN ACRE OF AVERAGE CROP.

CLOVER requires 25% more PHOSPHATE than wheat or other grains.

It also requires 75% more MAGNESIA.

TURNIPS require over 50% more PHOSPHATE than the grains.

WHEAT, notwithstanding this, shows 76% PHOSPHATE in its ash.

ALBERTS' THOMAS-PHOSPHATE POWDER (Rd.) is the safest manure to meet these demands.

WALLACE & FRASER,
Masonic Temple, 58 Canada Life Building,
ST. JOHN, N. B. TORONTO, ONT.

For Sale That valuable property, three miles east of Cobourg, known as the Fowler Farm—400 acres in the Province. 100 acres fall plowed; 20 acres in fall wheat; large young orchard; complete creamery outfit; large brick dwelling; brick cottage; frame barn with stabling for 60 head of cattle; brick barn and piggery; good soil and splendid situation. Immediate possession. Stock and implements will also be sold at a valuation. For further particulars, ADDRESS—**J. O'N. Ireland,** 25 Toronto Street, TORONTO, ONT.

IT PAYS TO ADVERTISE IN THE FARMER'S ADVOCATE

ROGERS' "S" PEERLESS MACHINE

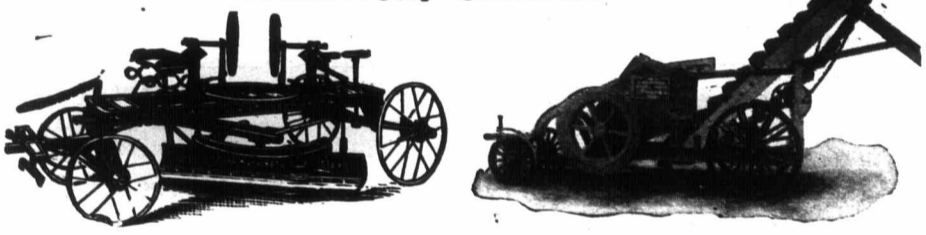
NOT AFFECTED BY CLIMATE CHANGES. BEST ADAPTED OIL MADE FOR GENERAL USE OF ONTARIO FARMERS. MORE USED, MORE SOLD. JUST AS CHEAP AS THE OTHER AND SO MUCH BETTER. YOU KNOW HOW IT WAS ABOUT OIL LAST YEAR. YOU WANT PEERLESS THIS TIME. ALL GOOD HARDWARES AND GENERAL STORES SELL IT.

QUEEN CITY OIL CO., Limited, TORONTO.
SAMUEL ROGERS, President.



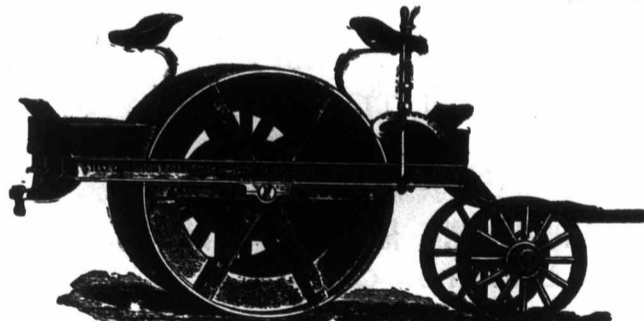
Last season the McCormick Harvesting Machine Company of Chicago built and sold 189,760 machines. This kind of expansion dwarfs every other achievement American history records in favor of the well being of the farmers. Buy McCormick machines and you will get your money's worth.

GOOD ROADS MACHINERY CO'Y, HAMILTON, CANADA.



Steel "CHAMPION" Road Grader.

"CHAMPION" Steel Frame Mounted Portable Rock Crusher.



"CHAMPION" Horse Road Roller.

Road Graders, Rock Crushers, Steam and Horse Road Rollers, Engines, Road Plows, Wheel and Drag Scrapers, Macadam Wagons for spreading Road Material, Elevators and Screens.

Send for Catalogues, Mailed Free to any Address on Application.

THE WORLD-RENOWNED "QUEEN" CHURN



It does not require a "CRANK" to work the Improved "QUEEN" Churn. Decidedly the Easiest Working Churn ever offered to the trade. A Child can operate it.

Before purchasing other Churns, be sure to make a critical examination of this one.

PATENT APPLIED FOR.

MANUFACTURED ONLY BY

THE LONDON AND PETROLIA BARREL COMPANY, LONDON, ONTARIO.

GOSSIP.

Wm. Grainger & Son, Lonsdale, Ont., in ordering a change in their ad., write: "We have sold our last young bull to Mr. James Foster, Tilbury, Ont. Mr. Foster has in him a right good calf. We sold to Mr. Frank Wood, of Lonsdale, Ont., the heifer calf Maid of Hawthorn 2nd, Vol. XVI., and to Mr. J. C. Skully, of Auburn, Ont., the heifer calf Britannia Lass 4th, Vol. XVI. These two heifers are got by Beau Ideal - 22554 - our present stock bull. He is a bull of great substance and quality, weighing close on 2,500 lbs. in nice working condition. He was got by the great Cruickshank bull Sittytton Stamp (imp.) - 18963 - (65368), and his dam is (imp.) Bessie Lass - 24824 - of the best milking family of Shorthorns in Scotland. We are having the best lot of calves this season we ever had - big and thifty, with fine, mossy hair."

Jos. Yule & Sons, Carleton Place, Ontario, write: "Our Ayrshires, Shropshires, Berkshires, and Plymouth Rock fowls are coming through the winter in splendid condition. We had great luck for heifer calves; out of forty cows we had thirty-two heifer and eight bull calves, all sired by Jock of Burnside - 1484 - winners of first prize at Ottawa in 1888. They are the finest lot of calves we have ever had. Have made the following sales: One bull and two heifer calves to J. R. Snider, Portage la Prairie, Man.; one two-year-old heifer and one bull calf to John Aikenhead, Hartney, Man., and one bull calf to John Currie, St. Catharines, Ont. We have a few litters of very fine Berkshires. They are like every other body's pigs, the real bacon type. Our Plymouth Rocks are a grand lot. We are prepared to supply any quantity of eggs. Prospects were never better for pure stock."

Mr. W. W. Ballantyne, Neidpath Stock Farm, Stratford, Ontario, in ordering a change in his advertisement of Ayrshires, writes: "I have just sold a very fine pair of young cows to Hon. Thomas Greenway, Crystal City, Man.; one is an imported-in-dam daughter of Denty 7th of Auchenbrain (imp.), and the other is a daughter of imp. Bessie 2nd of Auchenbrain, by Beauty's Style of Auchenbrain (imp.). Earlier in the winter Jas. Callander, of North Gower, paid me a visit and took away with him Stylish Kirsty, imported in dam, a capital cow and daughter of imp. Kirsty of Auchenbrain. The demand for bulls has been excellent, and I am now sold out of all old enough for service, but have a choice lot of young ones by Craigielea (imp.). Craigielea has developed into a very fine bull, and he is siring the right kind of calves. Among recent sales of bulls are one to Dan Drummond, from imp. Kirsty; one to Jas. Pullar, Sault Ste. Marie, Mich.; one imported Bessie 2nd of Auchenbrain; Donald Fisher, of Burnston, Ontario, got imported Denty 7th of Auchenbrain's last bull. A very promising young calf from Stylish Kirsty went to Alex. Doig, Lachute, Que. Stylish Daisy's capital bull was secured early in the season by John McKee, of Norwich, and the Bothwell Dairy Co. got a good one from Stylish Kirsty. John Blackburn, Gillies Hill, has a promising calf in the one he got from Stylish Denty (imported in dam)."

H. J. DAVIS' SHORTHORNS, BERKSHIRES AND YORKSHIRES.

Four of the ten Shorthorns at Mr. H. J. Davis' farm, near Woodstock, Ont., are matrons, and to one, Rosebud 23155, goes the credit of producing a promising young red-roan bull, Strathallan Brave, to Roan Prince, which is a straight, good handling fellow, possessing a wealth of natural flesh, with a level, good back, and approaching his useful age. A pair of young bull calves are also included in the number, and as they are the kind so much sought at present, parties desiring such stock should lose no time in seeing them.

Among the sixty-eight head of Yorkshires on hand at the time of our visit are a lot of splendid fresh young sows, and from which Mr. Davis has greatly increased his herd this spring. We have always advocated Mr. Davis' system of managing his brood sows, and this season we think demonstrates that we were not far astray, for we never saw so many brood sows of any breed with so many uniformly large litters. Mistress B 2931, by Golden Prince 2427, and out of Mistress 4th 42 (imp. in dam), at last farrowing, some two months ago, dropped seventeen pigs, and among them we saw some splendid youngsters, possessing plenty of length and quality. Lady Minto 3290, by Sovereign 2592, and out of Oak Lodge Snowflake 2107, is a splendid young sow, and gave her owner nine fine youngsters a month ago. Her dam also farrowed eight, and so on throughout the whole row of brood sows with their variety of pedigrees, which embrace many of the leading families of note, both in and out of the showings of this Province. Among the sires most recently employed was Sovereign 2592, by King David 1689, out of Country Lass 906, who did two seasons' service in the herd, and in whose place the young boar lately imported by Mr. Brethour has stepped, the pedigree of which was not at hand at the time of our visit, but as he was bred by Mr. Gibson in England, who has a world-wide reputation as a Yorkshire breeder, we are safe in concluding that Mr. Davis is justified in his employment. In confirmation he is a strong young animal, very uniformly made, and of the strict bacon type, with a splendid head and good bone. A bunch of young Sovereign's daughters are being mated to him this spring, and as they are as good a bunch as we have seen together for some time, we may reasonably look for something choice from them.

The Berkshires are receiving equal attention with the Yorkshires, and the successful system of management here shows itself, as the litters run from eight upwards. Among the sows suckling this spring we saw Golden Duchess 5132, by Royal Duke 3611, and out of Royal Duchess 2335, and Royal Beauty 2nd 2577, by King Charming 373, out of Royal Beauty, a pair of sows from which it would be perfectly safe to purchase young stock, their breeding and conformation being correct, while their management has been such as to bring out and transmit their desirable qualities to their progeny. The sire, Royal Lad 3044, by Royal Herbert 2102, and out of Lady 2872, was employed three seasons; while the young boar, Bandmaster, out of imp. Shapely, was recently purchased from Mr. Green, his breeder, to take his place. And to the excellence of the sires employed is due much of the satisfaction expressed by Mr. Davis' patrons upon receiving stock purchased by correspondence.

BELLEVILLE BOGLE & JEFFERS, COLLEGE

Students have a LARGER EARNING POWER who acquire the following lines of preparation under our efficient SYSTEM OF TRAINING. IT HAS NO SUPERIOR.

- 1. Bookkeeping. 2. Shorthand. 3. Typewriting. 4. Telegraphing (Commercial and Railway Work). 5. Civil Service Options.

Students may commence telegraphing on the first of each month, and the other departments at any time.

J. FRITH JEFFERS, M. A., Principal.

Address: BELLEVILLE, ONT.

Advertisement for 'What is Your Work?' featuring an illustration of a person at a desk and text about correspondence schools and an education by mail.

29 of our Students have recently taken good situations; 4 positions remain unfilled.

CENTRAL Business College

STRAITFORD, ONTARIO. gives the "best" in the line of business or shorthand education. In fair competition our graduates are nearly always chosen, while others are turned aside. Enter now. Circulars free.

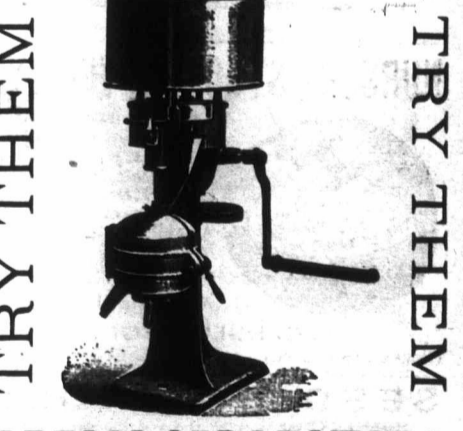
W. J. ELLIOTT, PRINCIPAL.

WOODSTOCK BUSINESS COLLEGE

AND SHORTHAND SCHOOL. We give an all-round practical education. Every transaction and every paper is real. Special advantages in Shorthand. Connected with the Business Educators' Assoc'n of Canada. Write for particulars.

H. M. KENNEY, PRINCIPAL, WOODSTOCK.

Alexandra Melotte



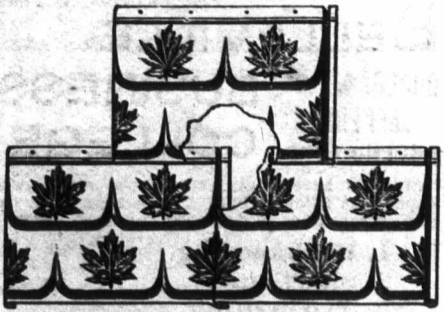
CREAM SEPARATORS

FOR PARTICULARS, APPLY TO R. A. LISTER & CO. LIMITED.

579 to 581 St. Paul Street, MONTREAL, - QUEBEC.

ILLUSTRATED STOCK SALE BILLS

THE LONDON LITHO. CO. (LIMITED) Lithographers and Printers, London, Ont.



IF PEOPLE ONLY KNEW

the advantages of using metal roofing constructed on our patent "SAFE-LOCK" principles they would not accept a substitute.

OUR "SAFE-LOCK" SHINGLES

interlock each other on all four sides, leaving no openings for snow or rain to get in. They are easily put on by anyone, are practically fire and lightning proof, and give a building a neat, finished appearance. We can tell you more. Ask for free catalogue and samples.

THE METAL SHINGLE AND SIDING CO., LIMITED.
PRESTON, ONTARIO.



HOTELS, SCHOOLS, LODGE ROOMS, PUBLIC HALLS, CLUB HOUSES, STORES, CHURCHES and PRIVATE RESIDENCES

can all be appropriately decorated with Pedlar's Steel Ceiling, not a substitute but superior to lath and plaster, will not crack and fall off, absolutely fire-proof, handsome in appearance. Estimates furnished on receipt of plans.

Pedlar Metal Roofing Co.
OSHAWA, CANADA.

NURSERY STOCK IN VERITY!



Our new catalogue is our agent, giving descriptions, PRICES, and how to plant fruit, ornamentals, shrubs, ROSES, Clematis, evergreens and small fruits. All well assorted, clean and handsome at the Central Nursery. Shall we send you one—nineteenth year. Also choice Seed Potatoes.

A. G. HULL & SON,
(Mention this paper.) St. Catharines, Ont.

SEED POTATOES

Saltzer's Champion of the World is said to have yielded over 1,000 bushels per acre. Good cooker. Price, \$1.75 per 50-pound bag, delivered at G. T. R. or C. P. R. station here.

C. W. THOMPSON,
P. O. BOX 84. NORTH BAY, ONT.

FOR SALE—SHADE TREES,

All kinds and sizes; ornamental trees; evergreens from 5c. each up, according to size and quality; flowering shrubs, all kinds; clematis, all colors; and other vines, shrubs, etc. No agent or any other dealer can supply better or cheaper, and give instructions or do the work that I can do. Grafting and pruning done.

C. A. BAKER,
Nursery, Ridout and Brick Sts., London.

FOR SALE.

Rio Grande Spring Wheat, 90c. per bushel, F.O.B., Guelph; Cotton Bags, 15c. each; fine sample. Also choice Red Fern, White Fife, Speculation and Goose Wheat at same price.

JAS. HEWER, SEEDSMAN,
GUELPH, ONT.

PLEASE MENTION FARMER'S ADVOCATE.

GOSSIP.

In writing to advertisers, mention the "Farmer's Advocate."

At the sale of Aberdeen-Angus cattle belonging to Messrs. Charles Eschey & Son, Botna, Iowa, held at Omaha, March 29th, fifty-two animals sold at an average of \$177.60. The eighteen bulls averaged \$163 and the thirty-four females \$185.15. The highest price was \$335 for a yearling bull, and the highest price for a female was \$330.

SNELGROVE BERKSHIRES AND COTSWOLDS.

Mr. R. P. Snell, Snelgrove, Ont., offers in our advertising columns young boars and sows of breeding age, and choice young pigs of this spring litters, of the large, lengthy type demanded by the times; also yearling Cotswold rams and ewes of the most approved sort. Mr. Snell's long experience and good judgment will enable him to supply the right kind of stock, and few men have better facilities and connections for mating, breeding, and developing up-to-date stock in the lines he is handling. Parties ordering stock from him may rely upon its being as represented.

MESSRS. CONROY BROS., CLYDESDALES, JERSEYS AND TAMWORTHS AT DESCHENES MILLS, P. Q.

At a point on the Ottawa River about seven miles from the capital, the traveler's attention is attracted from the electric car window by extensive milling and farming operations, the former to our left, where are seen large lumber and grain mills with elevators, showing unmistakable evidence of activity in the acres of lumber piles, while to the right may be seen as unmistakable evidence of extensive farming operations. Their farm buildings are beautifully situated on a wooded rise overlooking the river, in the center of their 400 or more fertile acres, which is under the personal supervision of Mr. G. Woodburn. The cattle stables are kept in excellent condition and occupy the entire size of the main barn, 50 x 120 feet, with stall accommodation for 100 head of cattle, adjoining which are two silos with a united capacity of upwards of 600 tons, which we were informed were filled to their utmost last fall. Spring water is piped right into the building from an adjoining field, and electricity furnished for lighting and power by wires from the milling plant on the river.

To the south and east of the barn, and facing the large, level yard, stands the 30 x 50-foot horse stable, also well arranged as to convenience, health and comfort, in which hangs many electric incandescents, giving forth brilliant illumination at the operator's command. As breeding has been carried on for some time, large, roomy box stalls are provided for in-foal mares and young colts.

Still to the south may be seen the 30 x 100-foot new hog pen, laid out with convenient-sized pens on either side of the passage, each of which is provided with roomy enclosed yards; while facing the yard on the south, and with the exception of the henhouse, the last building visited was the new 30 x 50-foot dairy, and here again we were impressed with the perfectness of the order and convenience of its appointment. Upon entering, one is confronted by a large separator of the most approved pattern, kept in faultless order, adjoining which (and in convenient connection) are placed the most modern buttermaking appliances, all of which are operated by a large dynamo receiving its power through electric wires from the fountain-head by the side of the great Ottawa River. Before leaving this building it would be an injustice to overlook the large cold storage room and adjoining ice house.

The Horses.—Clydesdales of the most approved type have been employed in the stud, and a few mares are bred annually. A large, roomy bay imported mare, with plenty of bone and hair of desirable quality, and an equally good Canadian-bred mare, were shown us that are due to foal in the early spring, while a splendid pair of young mares, full of quality, were hauling manure and doing general farm work. An occasional carriage horse is also raised.

The Cattle.—At present, the dairy herd is composed of Jerseys and Jersey grades, and some very useful high-producing cows, in prime form, are doing service. Everything points to this establishment having one of the leading Jersey herds of the Dominion in the very near future. Some typical foundation stock have been collected, which, without doubt, cost their owner some long prices. Dilva 30515, by Jersey Express (imp.) 5771, and out of Wilde 2125, was among the first purchases from Miller & Sibley. She is a solid fawn cow, with good constitution, carries a splendid milk vessel, and is credited with 5,409 lbs. of milk in 9 mos., and 15 lbs. 10 oz. butter in 7 days at 12 years of age. Since coming on the farm she raised a splendidly formed bull, St. Lambert of Deschenes 52671, by St. Lambert of Prospect 43211, which is approaching his second birthday anniversary. Flora Katie 108955, by Josh of Billing's Bridge 36238, and out of Kobe's Katie 87018, gave over 7,000 lbs. of 5 per cent. milk in 8 months, and 14 1/2 lbs. of butter in a week. Her son is also one of the herd. Heiress of Prospect 116423, by Major Appel Pogis 17861, and out of Ribbon's Gift 77375, at her first milking in less than 5 mos. gave 3,084 lbs. milk. Her bull calf by Wilde's Rioter of St. Lambert was dropped Sept. 11th, '98, and has sufficient promise to attract attention of parties requiring a gilt-edge sire. At the head of the herd we found the imported bull Ida's Rioter of St. Lambert 13656, and out of Beckie Y Pogis 63069, in excellent form and now 3 years old. In conformation he possesses immense length and depth, with well-sprung ribs, good barrel, loins and hips, and a good disposition. Another young bull worthy of notice is Emperor of St. Ann's 52228, by Victor Hugo of St. Ann's 25701, and out of Jolie Bess of St. Ann's 104126, rising 2 years old. His conformation as well as breeding is sufficient recommendation, and requires only to be seen to be appreciated.

The Pigs.—The foundation stock of the Tamworths has also been wisely selected, and in looking over the pedigrees we recognized that the most fashionable strains had been selected. Half a dozen and more brood sows are generally retained, and as the demand for this stock increases the firm are adding to that number. In glancing over the pedigrees we saw that the Amber Lutter predominated. In show-yard operations the firm have become favorably known, and many of the best prizes offered for Tamworths fell to their lot (including the herd diploma last fall at Ottawa), as well as many of the good individual winnings.

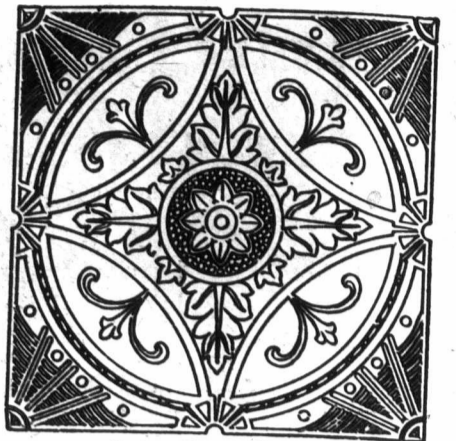
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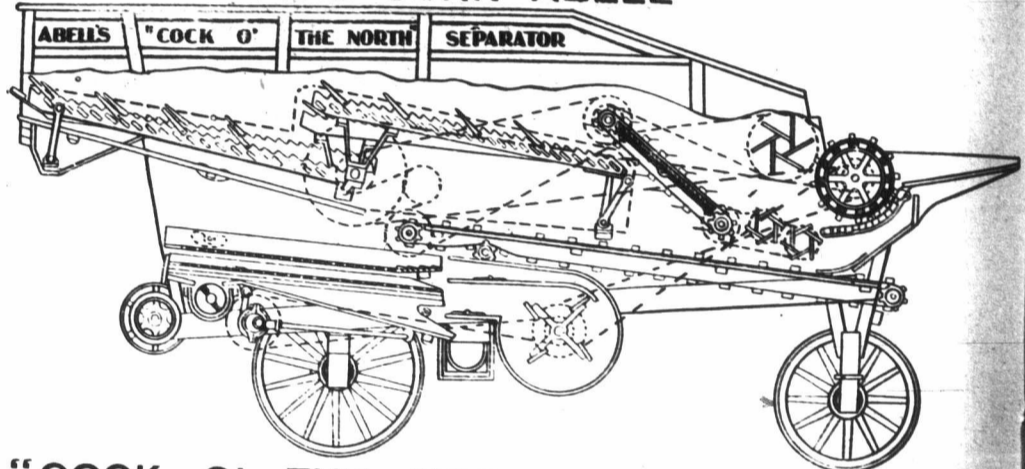
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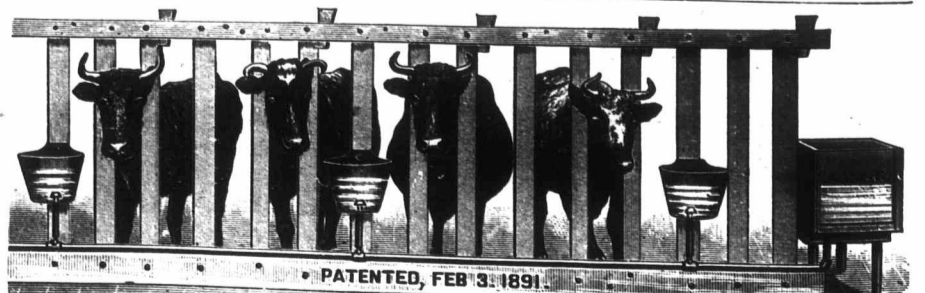
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Safer than Gasoline Engines.

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(Note the recent fires started by Gasoline.)

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All Steel.

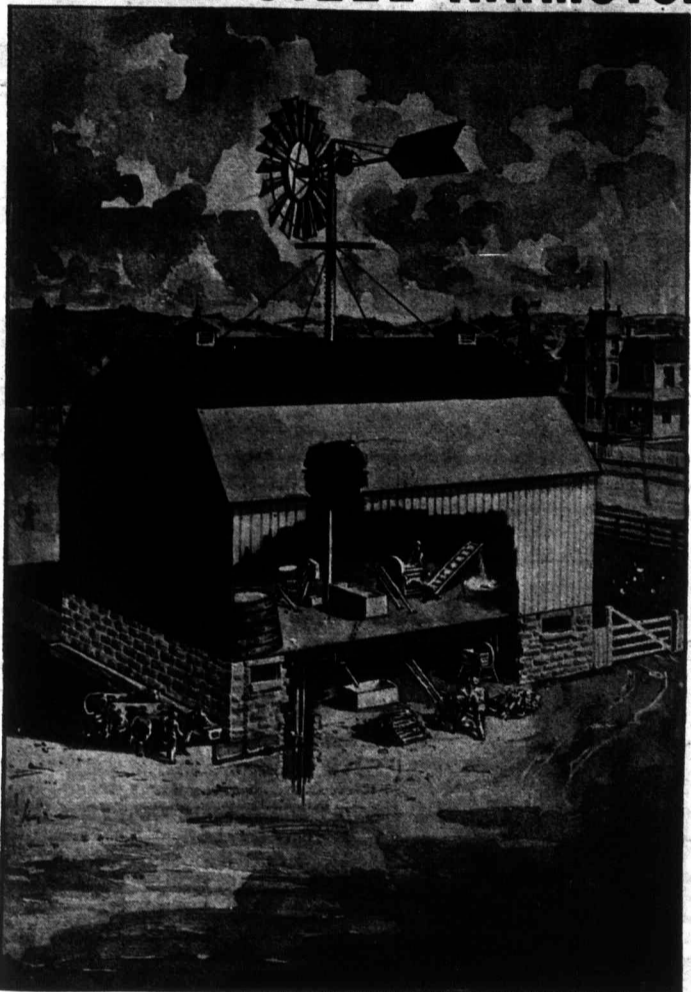
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"WOODWARD" WATER BASINS? THE LATEST.
Ontario Wind Engine and Pump Co., Limited, Atlantic Ave., TORONTO.



GOSSIP.

MR. A. C. HALLMAN'S HOLSTEINS, TAMWORTHS, AND BARRED PLYMOUTH ROCK FOWL.

A recent visit to Mr. Hallman's farm, near New Dundee, Ont., revealed the fact that the proprietor is receiving his full share of patronage from the stock breeders of this country, and that he is also endeavoring to produce the best animals for the times.

The Holstein herd, though considerably reduced in numbers through recent sales, is in every way worthy of the good attention it is receiving, and the excellent cows are doing good work as producers, as only individual members of the worthy families to which they belong can be expected to do, and when we know that the breed is represented by such strains as the Aaggie, Netherland, Artis, and Acome, it is not hard to account for. In all, we were shown over a dozen head, chiefly females over two years old, and while space will not permit us to deal with them individually, we feel that we would do the herd an injustice to pass them by only noting them in a general way. Ideal's Netherland, the strong 7-year-old daughter of Netherland Romulus, by Netherland Monk, whose dam was one of the big record cows of her day, and whose own dam (Ideal) was among the 20's when butler was the object, is a worthy member of the strong family to which she belongs, and has herself produced 40 lbs. of 5 per cent. milk per day without forcing.

Abbey Netherland, by Netherland Statesman's Cornelius (of showyard fame), and out of Abbey, by African Prince, is now in her 3-year-old form. At Toronto, as a yearling, she won 2nd in a big competition, and at London the same year landed 1st and diploma over all ages. Princess Margaret 2nd, the 4-year-old daughter of Princess Margaret (20 lbs. 1.04), by Netherland Statesman's Cornelius, is a fair-sized cow full of quality, and which bids fair to make a big record if forced. The 2-year-old daughter of Ideal's Netherland, by Cornelius, is a splendid model of a cow, with as much business appearance as most at her age, and without any special preparation she is producing 40 lbs. milk per day on dry feed.

At present Mr. Hallman has three 7-mos. bull calves by Flora's Sir Jacob, whose dam held a record of 21 lbs. butter and averaged 72 lbs. milk per day on farm fare. They are straight, thirty-looking fellows with lots of constitution and good handlers.

Lately imported to head the herd is the royally-bred 11-months bull, Judge DeKol Netherland, by Judge Akram DeKol; dam Moyetta, a 58-lb. cow in her 3-year-old form, of true dairy type and half-sister to the great Netherland Hengerveld, the highest officially-tested cow on record. This fellow, being strong in the great DeKol 2nd Netherland and Pieterje blood, and a good straight individual with masculine individuality, and great dairying indications, which do much to maintain, if not strengthen, the character of the herd.

Of the Tamworths much more might be said than space will allow. Since last year many important changes have been made in keeping with the advanced condition of the times. At Toronto last fall it will be remembered that Mr. Hallman won many of the good things offered, and while he had a large number with him, they did not include his entire herd, and while many good sows were seen there, many more were at home. Queen, by Rex, and out of Countess 2nd, is a strong, smooth, good sow, possessing splendid length and lots of quality, and is capable of carrying an immense weight if fitted.

Oxford Queen, by Nimrod (imp.), and out of Linnel Queen (imp.), was the 1st prize yearling sow at Toronto in a strong competition.

Blossom, by Nimrod, and out of Thamesford Belle, is a model of the breed, possessing size with quality and evenness.

Briery Banks Belle, by Rolland, and out of Amber Sarah, is about Mr. Hallman's ideal, and is a right even good sow with a smooth, even back, and carries her substance evenly down her sides and around her heart. She now suckles a young litter.

Binbrook Queen, the 3rd prize sow at Toronto last fall while suckling a litter of eleven, was purchased to mate with the young boar recently imported. She possesses good size with an abundance of quality, and carries her substance just where it is the most valuable to the packer and dealer.

The imported sow, Whitacre Countess 2nd 1040, by Whitacre Chief 3537, and out of Whitacre Countess 4337, was farrowed in March of '96. She was personally selected by Mr. Brethour last year at the Royal, and in his opinion was the best sow of the breed in England. In quarantine she farrowed a nice litter to Whitacre Monarch, E. H. B., 8 of which reached their destination in good form, and among them are some splendid stock, all possessing splendid quality.

As a show sow in England she was always able to command prominent places, winning many of the best prizes offered at such shows as the Royal and Bath and West of England. She now suckles a young litter. The sires employed in this herd have been selected with the greatest of care, and the two years of service performed by imported Nimrod has made an impression which is hard to estimate. His stock is becoming more and more in demand, and they have always been able to account well for themselves when called upon in competition for showing honors, and command good places in the severest contests. Nimrod is an excellent sire, and never failed to transmit his splendid length and depth to his progeny, and although he has found a new home near Madoc, he has left an impression which can only be obtained through the services of a sire of the strongest of breeding and individuality. His place has been taken by a pair of young boars which were bred in England—Whitacre Chrystal and British King; and of the former it may be said: he has much in his pedigree to recommend him, coming as he does through the famous Green Hill family, which has produced perhaps more worthy sires than any in the breed, while he himself has distinguished himself by winning 2nd at the Royal last June; and while British King's pedigree was not at hand at the time of our visit, he was selected from a pen in competition at the Royal, and came from one of the most noted herds in England.

At present Mr. Hallman has on hand a bunch of January and March pigs, with several sows yet to hear from. A choice pen of Barred Plymouth Rocks are kept on hand, and as the 30 odd hens are being mated with a strong typical bird obtained at a large price, he will be in a position to ship eggs for hatching that should please.

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"Steel King" Pumping Windmill



The "Steel King" is an all Canadian invention of great merit. It is capturing the trade in all Canada. We make Galvanized "Ideal" Pumpers and Steel Towers of all kinds, "Ideal" Power Windmills, Iron and Wood Pumps, "Maple Leaf" Grain Grinders, Bee Supplies, etc.



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Horse Owners! Use GOMBAULT'S Caustic Balsam

The Safest, Best and MOST EFFECTIVE ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or blain. Every bottle sold is warranted to give satisfaction for its use. Send for descriptive circular. THE LAWRENCE-WILLIAMS CO. TORONTO, CAN.

Woodstock Steel Windmills

FOR POWER AND PUMPING. GET A DANDY WITH GRAPHITE BEARINGS. THEY RUN WITHOUT OIL. STEEL TOWER PUMPS, TANKS, SAW TABLES, GRINDERS, AND WATERING TROUGHS. Woodstock Wind-Motor Co., Limited. Write for catalogue.

IT DEPENDS ON THE PROCESS

Used in the manufacture of salt whether the production is of the highest grade or not. The "Vacuum Process" for making salt is the most modern and scientific. It makes a finer and purer salt, most readily dissolved, and perfectly even in crystal.

WINDSOR SALT
Manufactured by The Windsor Salt Co., Limited, WINDSOR, ONT.



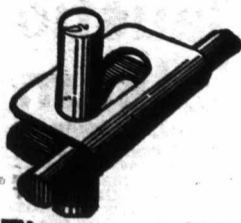
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FAMILY KNITTER! Will do all knitting required in a family, homespun or factory yarn. SIMPLEST KNITTER ON THE MARKET. We guarantee every machine to do good work. Agents wanted. Write for particulars. PRICE, \$3.00. DUNDAS KNITTING MACHINE CO., DUNDAS, ONTARIO.

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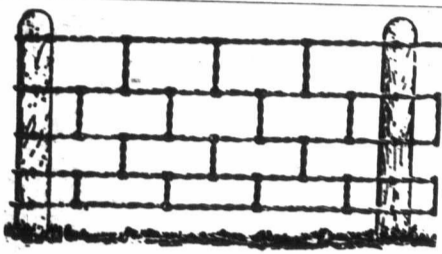


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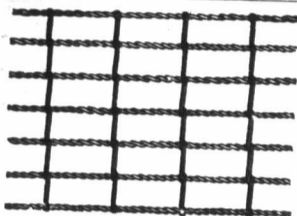
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Our patrons have been asking for a fence with cross-sections running through fence. Our Eclipse Fence Machine makes the fence cheaper, stronger than any other. We sell you the material and fence machine for a complete fence (no guessing what it's going to cost you), or fence machine alone, \$5.00. Write us for just what you want.

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WRITE FOR SAMPLE STAY and full particulars Machine \$10

Wholesale Price where we have no Agents. AGENCY FREE. NO DUTY TO PAY

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\$8 to \$15 MACHINE
to weave your own fence of Coiled Hard Steel Spring Wire 32 inches high, at 25 Cts. per Rod. 500 buys wire for 100 rods fence. Agents Wanted. Catalogue Free.

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VARIETIES:
Beder Wood Gandy Splendid
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Drop a card for Descriptive Price List.

MAIN & COLLYER, LONDON, ONT.

GOSSIP.

SMITH EVANS' OXFORDS.

The popularity which Mr. Smith Evans has attained for his Oxford sheep did not just happen so, for no man in the breed has worked more faithfully than he. One has only to refer to the prize award lists of the largest Canadian shows for a number of years to see where his sheep stand. Where the competitions have been the keenest he has come out well to the front. During our late visit (March 2nd) we found no unusual state of affairs, and about forty good, strong, useful ewes were safely in lamb to his last imported, Mr. Evans possesses the ability of fetching them forward in a way highly creditable, so that what he loses in time he usually overtakes before fall. The dozen or so ewe lambs are a splendid bunch; in fact, we cannot recall a more uniform lot together. The three that were imported last fall from England have done exceptionally well, possessing a splendid amount of bone, with immense backs and great fleeces. All the ram lambs except two (which were reserved) found ready buyers last fall, and many more could have been disposed of had they been on hand. The two remaining fellows are good, strong, useful sheep; in fact, above the average, and out of splendid ewes. One of the most noticeable features in Mr. Evans' breeding and selections is remarkable uniformity in size, color, and fleece. At the big fairs last fall this flock figured very conspicuously. At Toronto, every class won honors for which they competed, and the pen of Canadian-bred sheep outstripped their competitors. At London, about the same places were commanded as at Toronto, while at Ottawa there was no argument, and everything competed for was captured. At Brantford and Guelph the rest of the best prizes competed for were landed, including the best pen prizes, and as each year has developed sensational individuals, we may reasonably expect to meet Mr. Evans flying the brilliant ribbons when they meet again.

H. GEORGE & SONS' TAMWORTH AND CHESTER SWINE.

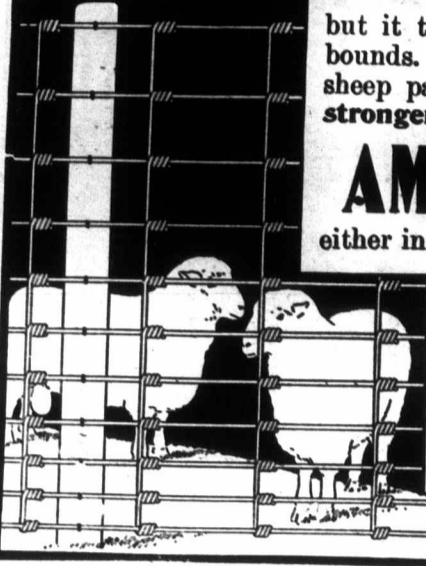
The well-known breeding establishment of Messrs. H. George & Sons, near Crampton, Ont., was the object of our visit to that section a short time ago, and operations along that line are pursued in full keeping with the demands of the times in breeding circles. The immense demand of the past few months absorbs almost their entire surplus stock, and frequently the firm find themselves compelled to contract for stock even weeks before they are farrowed. Their success in the showings and their punctual business methods, together with their keeping prominently before the public, are in a very great measure responsible for the great share of patronage they are receiving, although it must not be overlooked that the quality of sires and dams employed in their herds have been in strict keeping with their approved system of management.

In Chester Whites the firm were on the ground floor all through their palmy days, and the demand for this class of animals largely finds its way into their hands. Many importations have been made from time to time from the leading American breeders, and some really finely bred animals of both sexes have been brought over to maintain and strengthen the character of the herd, and to-day a fine bunch of fresh young brood sows are producing strong litters to the mating of an equally well-bred and meritorious sire. At the time of our visit a few youngsters had arrived, but the bulk of the sows were to farrow during the latter part of March and April.

Among the Tamworths the firm have been equally alive, and it did not require many months following their first introduction into the country to convince this firm that they were bound to receive a large share of public favor for the special purpose for which they were intended, and acting upon their judgment promptly and persistently, the result is that their name has become intimately associated with the breed through showing reports and otherwise. Many of the best and most popular families have creditable representatives here as their headquarters.

Much strength has been maintained through carefully selected sires and proper matings, and from their wide experience they have placed themselves in a position to keep in touch with the demands of the times. Some splendid sows have and will farrow with them this spring, and their business will undoubtedly keep pace with the times.

SHEEP MAY BE DUMB



but it takes a good fence to keep them in bounds. The most successful fence for all sheep pastures as well as for larger and stronger animals is the

AMERICAN FIELD FENCE

either in regular style or special sheep fence. This fence is most successful because

IT IS THE BEST AS WELL AS THE CHEAPEST.

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GOOD FARM FENCE

should turn all kinds of live stock and even traps; should expand and contract according to the weather so as always to be tight; should stand all storms—even fire and last indefinitely.

The Coiled Spring Page

is just such a fence.

Its virtue is attested by the fact that there is more of it in use than all other makes combined. Prices lower than ever this year.

THE PAGE WIRE FENCE CO., (LTD.)
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INDIAN CORN

This list is taken from FARMER'S ADVOCATE of March 1st, 1899, page 119.

NAME OF VARIETY.	Ottawa, Ont.		Nappan, N. S.		Brandon, Man.		Indian Head, N.-W. T.		Agassiz, B. C.		Average of all Farms.	
	Per acre.	Ton. Lbs.	Per acre.	Ton. Lbs.	Per acre.	Ton. Lbs.	Per acre.	Ton. Lbs.	Per acre.	Ton. Lbs.	Per acre.	Ton. Lbs.
RED COB ENSILAGE	24	1170	18	300	27	1440	14	1964	33		23	1375
Early Mastodon	24	1,060	21	1,450	27	1,120	8	764	29	1,400	22	558
Cloud's Early Yellow	24	473	12	1,850	27	1,000	12	450	26	1,460	20	1,440
GIANT P. ENSILAGE	22	1100	16	1550	25	380	15	492	38	450	23	1194
Early Butler	21	1,340	12	970	24	1,940	12	552	28	100	19	1,780
Evergreen Sugar	21	900	11	550	14	160	6	540	16	1,000	13	1,430
Rural Thoro. W. Flint	20	1,800	23	1,850	29	1,840	18	620	23	900	23	462
Champion W. Pearl	20	247	16	1,220	21	1,560	16	1,264	28	1,760	20	1,610
Sanford	20	113	20	1,800	23	200	13	1,720	22	1,100	20	186
SELECTED LEAMING	19	1380	14	1150	19	1160	13	796	22	220	17	1741
Pride of the North	19	940	15	1,350	24	1,500	9	742	29	30	19	1,322
White Cap Yellow Dent	19	170	17	1,200	28	1,200	12	1,740	25	160	20	1,294
Extra E. Huron Dent	18	1,180	15	1,020	23	200	11	572	25	1,920	18	1,773
Mammoth Cuban	18	30	16	1,770	20	1,800	9	216	20	1,800	17	333
King of the Earliest	17	1,200	17	100	19	940	10	1,780	24	1,610	17	1,926
Man. Eight-rod Flint	16	1,440	16	1,770	22	1,100	8	236	22	1,320	17	333
North Dakota White	15	1,240	16	1,770	22	1,080	10	1,384	19	1,600	17	1,603
Longfellow	14	1,920	17	650	23	1,080	9	1,800	21	1,000	18	742
Pearce's Prolife	14	1,113	17	1,200	25	600	11	1,232	21	900	17	1,472
Angel of Midnight	14	1,060	16	450	24	1,720	11	1,232	21	900	17	1,472
Compton's Early	13	180	16	1,550	25	1,700	14	1,568	24	1,500	19	99

It does not always pay to plant the cheapest seeds. The above varieties in large type speak for themselves. They are handled by

E. R. ULRICH & SONS, SPRINGFIELD, ILL., U.S.A.
Ask them for their seeds when buying.

Reliable Seeds

THAT'S what we have sold for the last 30 years, and our customers have never been disappointed. The thousands of testimonials on file in our office speak in the highest praise of the reliability of our Seeds, also accuracy, neatness of packing and promptness of our dealings with our patrons.

BELOW ARE SOME OF OUR PRICES—WILL YOU NOT TAKE ADVANTAGE OF THEM!

- Pearce's Canadian Giant Mangel.**
The best selected stock of Long Red mangel grown, immense cropper. 1 lb. 12c., post-paid 16c.
- Webb's Giant King Swede.**
No Swede ever grown has produced such crops, good keeper, good quality, good shape. 1 lb. 15c., post-paid 19c.
- Pearce's Half Long White Carrot.**
Best white carrot grown, so say the Guelph and Ottawa Experimental Farms reports. 1 lb. 20c., post-paid 34c.
- "Dwarf Essex" Rape.**
For sheep pasture or plowing under this is the best article grown. 1 lb. 10c., 10 to 25 lbs. at 8c. per lb., 50 to 100 lbs. at 6c. per lb.

- Danish Improved Sugar Beet.**
Nearly double amount of sugar in this than any mangel grown. No one in the trade has a monopoly of this beet. Our trial of all samples last year shows we have the best. 1 lb. 30c.; 4 lbs. (enough for an acre), \$1.00, postage 4c. per lb. extra.
- White Hullless Barley (new).**
A barley without beards or hulls, is not that a boon to the farmer? Heavy as wheat. Peck 75c.; bushel (48 lbs.), \$2.50.
- Spring Wheat.**
COLORADO—Best bearded variety. Bushel, \$1.15.
WHITE RUSSIAN—Best bald variety. Bushel, \$1.15. Bags 15c. each.

How many of Pearce's Eclipse Peas in a pint?
One guess for every DOLLAR your order amounts to.

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"Seedsmen to the Canadian People."

"CANADA'S GREATEST SEED HOUSE"

The Steele, Briggs Seed Co.'s

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Is the...

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- Because it is the Surest Cropper
- The Heaviest Yields
- Easiest Harvested
- The Handsomest Shaped Roots
- And the Very Best Field Carrot in existence

It may be properly called "Little Giant." Seldom exceeds six-teen inches in length, and has been known to measure twenty-seven inches in circumference; stands nearly one-fourth out of ground, with a strong, handsome top, broad and heavy at the shoulder, tapering evenly to a point, as perfect as if turned in a lathe. The color is pale green above ground, and a light creamy white under ground; flesh rich white, solid, sweet and very nutritious. Under good cultivation has yielded one thousand bushels per acre.

... As an Exhibition Prize Winner it is the Peer

Price (post-paid) per lb., 45c.; $\frac{1}{2}$ lb., 25c.; $\frac{3}{4}$ lb., 15c.; oz., 10c.

PLEASE NOTE.—As a safe-guard to growers, we supply the genuine "Improved Short White" Carrot in sealed packages only, printed in colors and bearing our name and trade mark as shown in the illustration. If your resident merchant cannot supply you, write to us for it. Refuse imitations of our packages and varieties said to be "just as good."

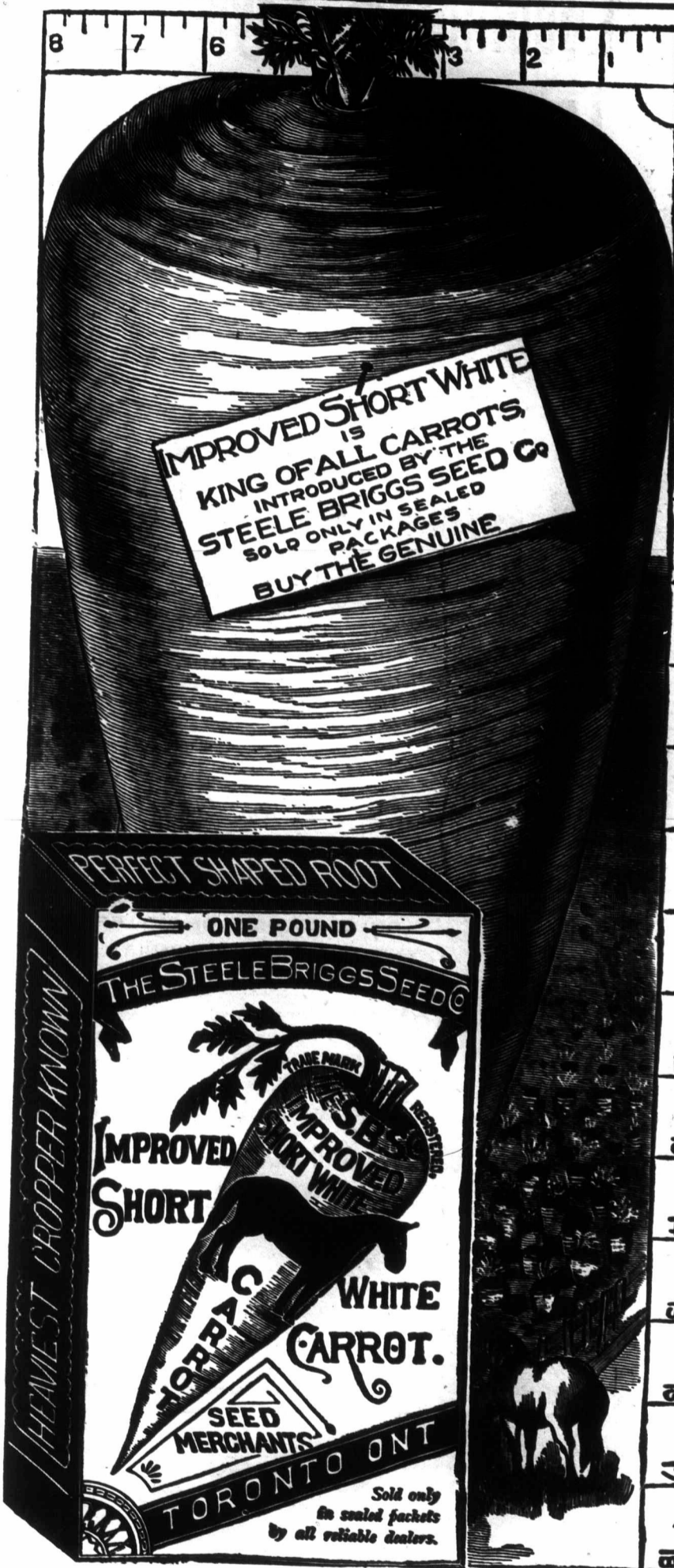
NEW... Danish White Oats

A remarkably heavy-yielding variety, produces strong, stiff straw, large, plump, heavy, bright grain with thin hull, and adapted to a great diversity of soils; withstands stormy weather without lodging or shelling.

Price by mail (post-paid) per lb., 15c.; 4 lbs. for 50c., or by freight or express (purchaser paying carriage) peck 25c.; bush., 80c.; 10 bush., lots or over, 75c. per bush. Cotton bags, holding 2 $\frac{1}{2}$ bush., at 15c. each.

Write for our Catalogue, contains descriptions and prices of the newest and best Field and Garden Seeds. Please mention this paper.

"Canada's Greatest Seed House"
The STEELE, BRIGGS SEED CO.,
TORONTO, ONT. Limited



WINONA NURSERY CO.

Offers for Spring of 1899.

A full line of stock, both fruit and ornamental, at very moderate prices. No agents' commission to pay.

Send for price list and catalogue. Dealers will find it to their interest to correspond at once with

J. W. SMITH,
MANAGER,
Winona, Ontario.

GOVERNMENT ANALYSIS

LABORATORY OF INLAND REVENUE,
OFFICE OF OFFICIAL ANALYST,
Montreal, April 8, 1895.

"I hereby certify that I have drawn, by my own hand, ten samples of the ST. LAWRENCE SUGAR REFINING CO.'S EXTRA STANDARD GRANULATED SUGAR, indiscriminately taken from ten lots of about 150 barrels each. I have analyzed same and find them uniformly to contain:

99 $\frac{99}{100}$ to 100 percent of pure Cane Sugar, with no impurities whatever."

(Signed) JOHN BAKER EDWARDS, Ph. D., D.C.L.,
Prof. of Chemistry and Public Analyst, Montreal.

Reliable Seeds

FOR THE FARM AND GARDEN.

Our stock includes all that is best in
GARDEN AND GRASSES,
FIELD ROOTS, CLOVERS,
SEED GRAIN, FLOWER SEEDS,
AND FLOWERING PLANTS.
Illustrated Catalogues mailed free on application.

William Ewing & Co.,
Seed Merchants, 142 McGill Street,
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PURE SEED POTATOES.
PEARL OF SAVOY.—This variety has stood highest in late experiments at G.A.C. Our sample is good. Price, \$1.15 per bag of 90 lbs., F.O.B. cars Guelph—C.P.R. or G.T.R.—Bags free. Cash to accompany order. JAS. L. SIMPSON, West End Road, GUELPH.

GOSSIP.

Henry Stevens & Sons, in making change in their advertisement, now offer service bulls unsurpassed in breeding; also females. They will send you description upon application.

Mr. W. D. Flatt, Hamilton, Ont., breeder of Shorthorn cattle, in ordering a change in his advertisement, expresses hearty appreciation of the FARMER'S ADVOCATE as an advertising medium, and confesses that he could not so successfully conduct his business without the aid of this means of communication with the farmers and breeders of Canada and the U. S., which has brought him a very satisfactory share of patronage. The enquiry for good stock is increasing daily, and the Trout Creek herd of Shorthorns, numbering about seventy head, are coming through the winter in good condition. The young bulls and heifers are a very promising lot, and a number of them should make winners in any company.

J. E. MEYER'S INCUBATORS AND POULTRY, SHORTHORNS AND COTSWOLDS.

As Mr. J. E. Meyer, near Kossuth, Ont., has made a special study of the rearing and developing of fancy poultry, he has also given a corresponding amount of attention to the requirements of incubators, and is at present engaged in the manufacture of a machine which is the result of years of experimental work and practical use. While visiting the factory a short time ago we were shown the special points, which are claimed as superior to other incubators; and as Mr. Meyer guarantees his machine to give entire satisfaction, and to be perfectly automatic, we feel that he knows just what he is talking about. Among the strong arguments advanced we note that much stress is laid on the fact that it is perfectly self-regulating, requires no moisture added, or rather, furnishes its own, and when in full operation holds a uniform heat within a fraction of a degree of the proper temperature, and under test practically all eggs set have been hatched in different and inexperienced hands. Mr. Meyer's new egg-turning attachment is among its strong features, being very simple and positive in its action. The machine is made in different sizes—70, 100, 150, 240 and 360 egg size. They are also very substantially built, and every detail is personally looked after.

While Shorthorn cattle are not made the first consideration on this farm, a few very choice animals are kept. They are the descendants of three females personally imported in 1888 of the Kirklevington and Barrington families, on which have been employed Scotch-bred bulls. At present a young Nonpareil bull, bred by Arthur Johnston, heads the herd, a son of imp. King James, dam by imp. Indian Chief.

The Cotswolds are also in excellent form, and are descended from imported females. A few imported ewes are also in the flock. They are a good, well-covered bunch.

In poultry, Mr. Meyer is better known, and readers of the FARMER'S ADVOCATE will remember the illustration of his new poultry house on page 439, September 15th issue. Such breeds as Banded Plymouth Rocks, Silver Laced Wyandottes, Buff Rocks and Buff Wyandottes are among his specialties. And while much might be said of the individuality of each kind, we think that Mr. Meyer's prominence as a breeder and exhibitor is sufficient evidence of his standing, judgment and integrity, and as sires have been obtained from the most noted breeders both at home and abroad, at high prices, he is in a position to ship something fancy from his own pens. See his advertisements.

D. BENNING & SON'S GLENHURST AYRSHIRE HERD AT WILLIAMSTOWN, ONT.

It is interesting to watch from time to time the progress and development going on among the live stock breeders in the Dominion, and at the present time there is probably more steady, substantial advance being made along this line than in any corresponding period in the history of the country. It is true that better times and more demand for their particular breed spurs many people to greater effort. But the born breeder needs no spur; his heart is in his work. At Glenhurst, near Williamstown, the home of Messrs. David Benning & Son, the same ardent interest is taken, up hill and down, and the dairy cow is among their first and last thoughts, her imperfection lessened and her strongest features maintained. Mr. Benning's chief hobby along this line has been to associate strength of breeding with productiveness and constitution, and in so doing he has attained an enviable position in the ranks of Ayrshire breeders of the Dominion, so much so that Glenhurst-bred animals have won many of the highest honors in leading showyards, though not always in their breeders' hands, and the demand for young show stock has kept the herd lower in numbers than their owners frequently desire. In looking over the herd in January, the first question that occurred to us was, has Mr. Benning or any one else in this Dominion ever raised a better lot of young stock than those in the present herd? The unmistakable evidence of careful mating, and the proof of right development, is here demonstrated, and nature would step aside from her usual course if we found other conditions, for when we looked over a whole row of cows that have been descended from Floss 387, and her daughter, Pessara 5984, with their matured progeny, and then consider the strength of breeding and individual merit of the sire, Saladin 6639, a son of the noted Silver King, out of imported Doey 3224, it is not strange that the young things are good. Lately purchased to mate with Saladin's daughters is the grandly bred young Carrick Lad of St. Annes 8336, by Napoleon of Auchendrain, grandsire Baron Wallace of Bogwood, Sco land, and out of one of Mr. Reford's very best cows, Annie of Barcheskie, grandam Annie of Fenton. And here again Mr. Benning has made a wise selection, for when we saw the dam of the bull in Mr. Boden's care at St. Annes, we thought we never saw a finer type of a dairy cow. With such an udder and the desired constitution and feeding qualities to fill it, she must do very effectual work at the pail. In confirmation the young sire is worthy of the attention he has received, and is placed where he can not only do himself but his ancestors the greatest credit. Much preparation is being made for large and more elaborate buildings, and here again Mr. B. is exercising the greatest care, and considering everything for comfort, health and convenience.

A very nice bunch of registered Berkshires are also receiving their share of attention, and none but gilt-edged foundation stock has attracted attention at Glenhurst.

**WHITE'S
Locomotive Style
Traction Engine.....**



- Points of Excellence :**
- CUSHIONED SPRING WHEELS.
 - FLY WHEEL AND STEERING WHEEL ON SAME SIDE OF BOILER.
 - CENTER HUNG LINK, SUSPENDED FROM BOTH SIDES.
 - CORRECT DESIGN; HIGHLY FINISHED.
 - ONE-PIECE CAST STEEL CONNECTING ROD.
 - LOCOMOTIVE STYLE PORTABLE ENGINES: SAME PATTERN, WITHOUT TRACTION ATTACHMENTS.
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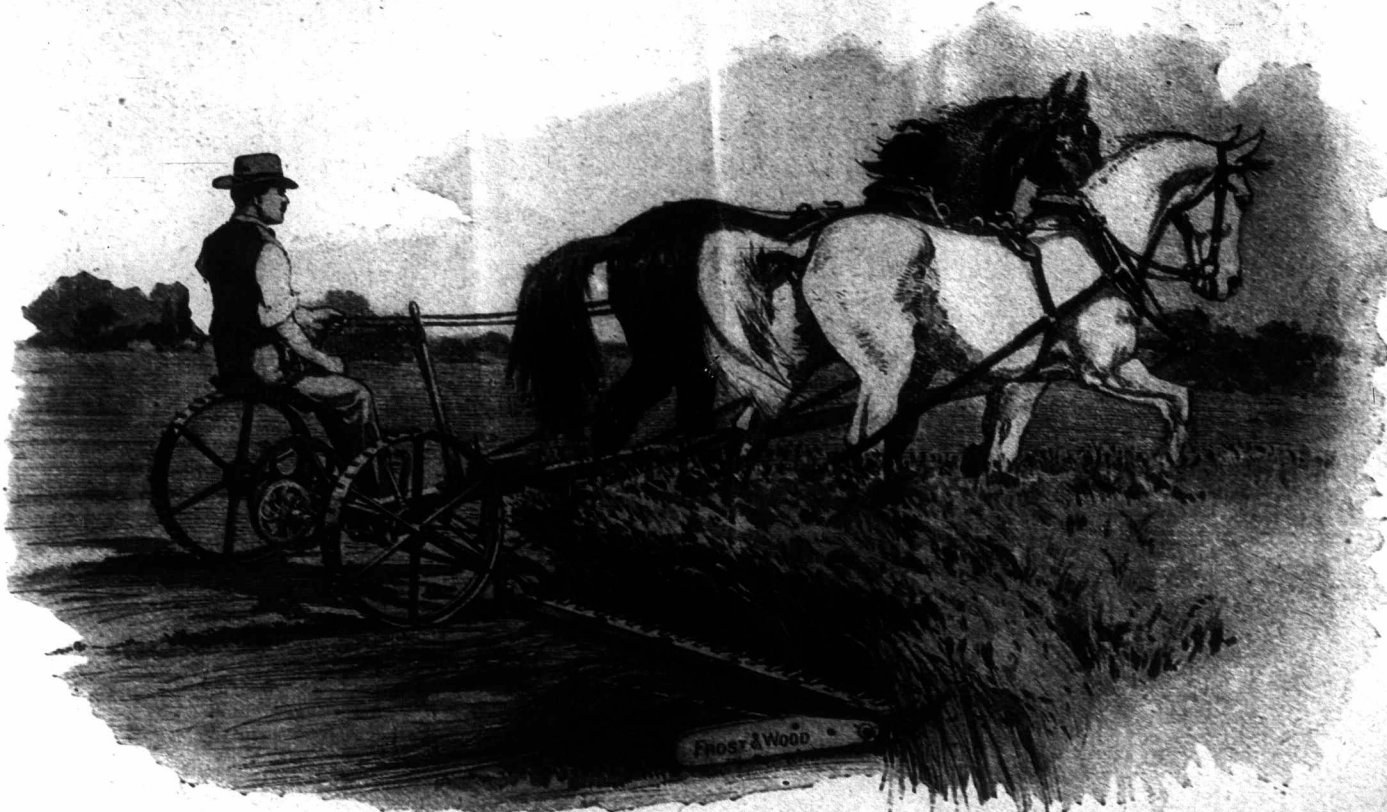
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**FIVE DIFFERENT STYLES OF ENGINES (PORTABLE AND TRACTION),
TWO STYLES OF SEPARATORS: "CHALLENGE" and "ADVANCE."**



See our new Self-oiling Cylinder Box, and other improvements. A full line of repairs for machines made by MacPherson & Co., of Fingal, always kept in stock. Write for new Repair Price List.

The GEORGE WHITE & SONS CO.
LONDON, ONTARIO. LIMITED.



4 1/2, 5 AND 6 FOOT CUT.

"O YES!" Our No. 8 Mower will start in heavy grass without backing the team, and will cut grass any other mower can cut. Will run as easy and last as long. We sell our machines on their merits, and build our reputation on the "quality," not the quantity, of goods we make.

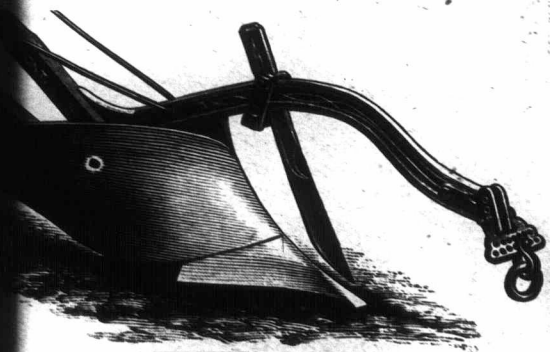
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THE BEST PLOW IN CANADA

We are the makers of the ORIGINAL No. 21 PLOW, which has been imitated by all large plow manufacturers in Canada.

All others are IMITATIONS and are INFERIOR. MEDAL and DIPLOMA, World's Fair, for PLOWS. We make a very LARGE and FULL line of:

PLOWS adapted to every condition of soil and character of work to be done.

GRAIN GRINDERS for windmill, horse power or engine.

ENSILAGE CUTTERS with the only successful SLOW-SPEED PNEUMATIC (OR BLOWER) ATTACHMENT. No necessity to tear the machine to pieces by dangerous speed or to waste power to get up sufficient wind.

Information on application.

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Conducted in all parts of the country. Pedigree stock a specialty. Write for terms. References: J. M. Snell, Edmonton; John I. Hobson, Guelph; Hon. M. H. Cochrane, Compton, P. Q.; or this office.

JOHN SMITH, BRAMPTON.



"RAPID-EASY" GRINDERS

do MORE WORK with SAME POWER than ANY OTHER.

Our Grinding Plates out-wear all others, and are used on almost all OTHER MAKES of Grinders.

GOSSIP.

In writing to advertisers, mention the "Farmer's Advocate."

At the sale of Shorthorns, the property of Messrs. Garne, Broadmoor, Gloucestershire, March 16th, fifty-three animals sold for an average of £43 13s. 4d. Lady Lucy brought 87 guineas; Monogram, 81 guineas; Broadmoor Lass, 61 guineas. The highest price for a bull was 67 guineas.

Mr. Alfred Mansell, of the firm of Alfred Mansell & Co., live stock agents and exporters, College Hill, Shrewsbury, England, has arranged to visit the United States and Canada, from the latter part of April to early in June. During that time he expects to make the personal acquaintance of as many farmers and breeders as time will allow, in order to make himself better acquainted with the wants and requirements of the stock breeders of this continent in British pedigreed live stock. It is the business of this firm to select and ship on commission all classes of stock, such as Shorthorn, Hereford, Polled Angus and other cattle; Shropshire, Southdown, Hampshire, Oxford, Cotswold and any other breeds of sheep; Shire, Clydesdale, Hackney and other horses, as well as the various breeds of swine and poultry. During the last few years a large quantity of high-class stock, especially Shropshire sheep, has been selected and shipped by this firm to many of the largest breeders and exporters on this side the ocean with invariably good satisfaction. From April 26th till June 30th Mr. Alfred Mansell's address will be, care of The White Star Line, 9 Broadway, New York.

Henry Stevens & Sons, Lacona, N. Y., breeders of Holstein cattle, write us:—"We notice an article in the ADVOCATE of a recent date, written by Mr. James Caskey, in which he refers to the young Korndyke cow which he recently sold to us at a long price. This is all very true. This cow is a half-sister to Korndyke Queen, one of our largest producers and best show cows. She was officially tested one week for butter in her four-year-old form by a representative of Cornell University, and made an equivalent butter record of 22 1/2 lbs. at full age. She won the butter test at Mt. Gretna, Pa., in 1897 competition open to all breeds. There were six or seven Guernseys in the test. Korndyke Queen made more butter than any other two cows in the test, except her stable companion, Helena Burke. Korndyke Queen averaged 4.22% fat during this test. She is a cow of much constitution, is beautifully formed, and has a wonderful milk-vein development. We do not think Korndyke Queen or her sister, which we recently purchased of Mr. Caskey, are chance animals, as their dam, Belle Korndyke, is as perfectly a formed dairy cow as we have in our herd, and is also a cow of much constitution and vigor. She was officially tested one week for butter by a representative of Cornell University, one of the coldest weeks we had last January, and made 25.77 lbs., her milk averaging over 4% fat for the week. We know of but two cows that have ever equaled this amount of butter in any official test. They are Netherland Hengerveld and DeKol 2nd, and are stable companions of Belle Korndyke, and are the dam and sire's dam of the sire of the young cow we recently purchased of Mr. Caskey. We think the readers of the ADVOCATE will not criticise us for going down deep in our pocket to purchase this young cow. It is very evident that both American and Canadian breeders and dairymen are waking up to the fact that there is a great difference in Holsteins. They now want animals not only giving a large amount of milk, but those producing milk rich in butter-fat. It has been demonstrated by our experimental stations and agricultural colleges, both in Canada and the States, that butter-fat in milk cannot be increased to any great extent by feeding. This must be done by breeding."

GOSSIP.

MESSES. COLWILL BROS., TAMWORTHS, YORKSHIRES AND BERKSHIRES.

Selected farming section of West Durham, the village of Newcastle, lies the stock of Messrs. Colwill Bros., whose attention is directed towards the up-to-date bacon pig, and who are the foundation of what should be the most important herds in this country in the future. Their judgment counts for anything in the Tamworths, Yorkshires and Berkshires, and since their introduction of the Tamworths have made much advance, especially the two former.

The Tamworth foundation was laid two years ago, and their pedigree shows that some of the most worthy and powerful families have been selected. Packers Ideal 1211, by Friery Banks Hugo 167, and out of their father's Princess 385, is a good type of a sow, possessing great length and depth and enough bone. She has been a regular breeder, and is again due to farrow on April 15th to Rob Roy (a Nichol-bred boar and winner of first in class under six months last fall at Toronto). Her yearling daughter, Thrifty Girl 1243, by Pride of Mauvers 473, is now suckling a litter to Rob Roy, four of which are nice straight boars.

Among the Yorkshires we saw the Brothour-bred boar, Oak Lodge Fabius 2695, by Oak Lodge Emigrant 1308, and out of Packers' Fancy 2106, a sire worthy of the noted herd from whence he came, and possessing the required length and quality. Among the females our attention was especially drawn to the young sow, Newcastle Lass 3131, by Duke 2594, and out of Duchess of Hermanville 2277, lately purchased from her breeder in P. E. I. She was farrowed March, 1898, and now carries her first litter to Oak Lodge Fabius due April. In conformation this young sow has much quality to recommend her, and as she is kept in quarters where she has abundance of room for exercise with the other brood sows we will feel disappointed if she does not produce some worthy stock.

Some good and well-bred Berkshire representatives are here to be found also. Oxford Maid 3228, by Varna Duke 3771, and out of Oxford Girl, has been a highly satisfactory matron, and from her the firm have a litter of four sows and two boars ready for shipment, sired by O. A. C. 238, out of a Teasdale-bred sow.

A few Shorthorn cattle are also given attention, and none but the best obtainable sires are employed. All stock are kept in strictly strong, healthy, though not fat form.

It Pays to Care for Your Horse

The Crystal Rosette is double the size of this cut.



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NATIONAL GALL CURE

Is wonder-working in its effects. No other preparation in the world can equal it. It is the only speedy and sure cure for GALLS, SORE BACK AND SHOULDERS, CORNS, SCRATCHES, MUD SCALDS, ETC. National Gall Cure does its Good Work while the Horse is Working! For Sore Teats on Cows it gives immediate relief and certain cure.

OUR SPECIAL OFFER!

On receipt of 25 cents we will send a full size box of National Gall Cure and a pair of handsome Crystal Rosettes, like illustration above, which are retailed at 50 cents a pair. Money refunded if not found satisfactory. National Gall Cure is for sale by all dealers. When ordering from us, please write name and address plainly, and enclose this advt.

English Embrocation Co.,

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CHAMPION EVAPORATOR

For MAPLE, SORGHUM, CIDER, and FRUIT JELLIES. Has a corrugated pan over firebox, doubling boiling capacity; small interchangeable syrup pans (connected by stopcocks), easily handled for cleansing and storing; and a perfect automatic regulator. The Champion is as great an improvement over the Cook pan as the latter was over the old iron kettle hung on a fence rail.



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TORONTO ENGRAVING CO. 92 BAY ST CUTS BY ALL PROCESSES LIVE STOCK A SPECIALTY.

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Our Goods and Prices, and gives you full instructions how to

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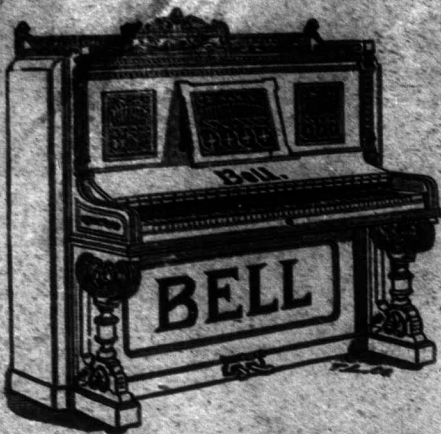
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The managers of Dr. Barnardo's Homes will be glad to receive applications from farmers or others for the boys who are arriving periodically from England to be placed in this country. All the young immigrants will have passed through a period of training in English Homes, and will be carefully selected with a view to their moral and physical suitability for Canadian life. Full particulars as to the terms and conditions upon which the boys are placed may be obtained on application to Mr. ALFRED H. OWEN, Agent, Dr. Barnardo's Homes, 214 Farley Ave., Toronto.

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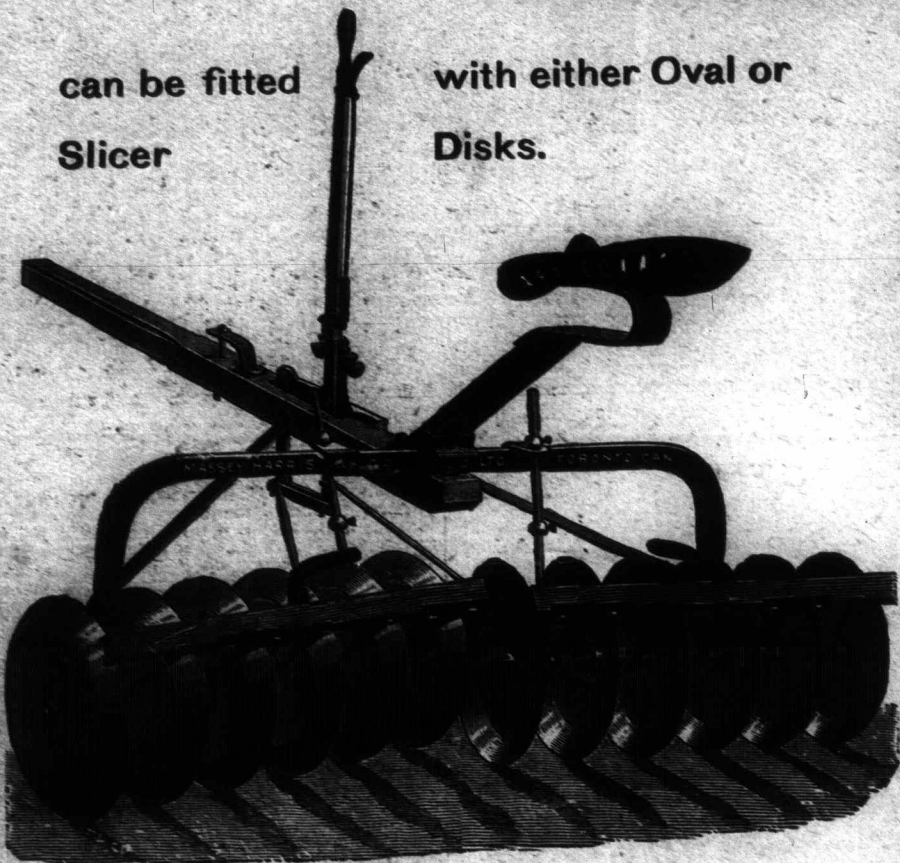
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Fleming's Lump Jaw Cure.

When this remedy was discovered no other real cure was known. No other positive cure is yet known. **FLEMING'S CURE** was first introduced in Saskatchewan, and from there its reputation has spread over the entire continent. It is the only remedy endorsed by leading ranchers, shippers, and stock journals. It is positively guaranteed; money is returned if it fails. One bottle usually cures one to five cases.

Like all other articles of exceptional merit, it is imitated in external respects, but these imitations wholly lack the distinctive qualities of the genuine.

GET FLEMING'S LUMP JAW CURE AND BE CERTAIN OF RESULTS.

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BUTTER, HONEY, JAM!

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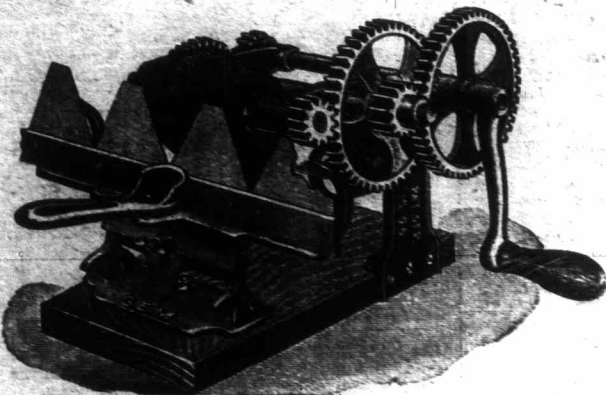
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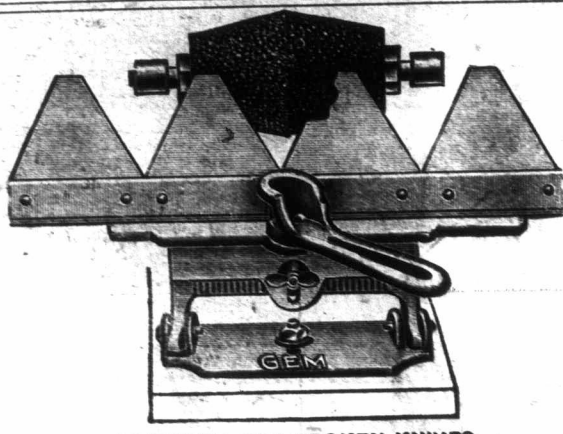


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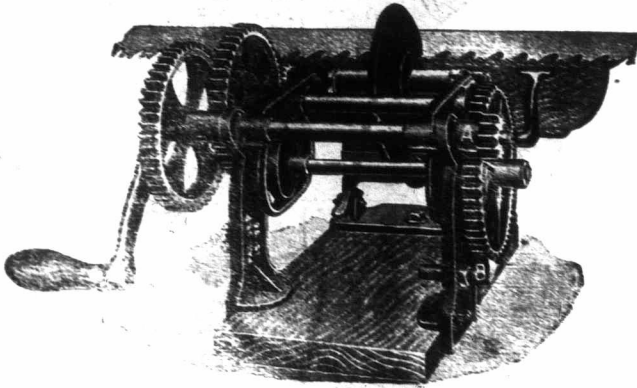
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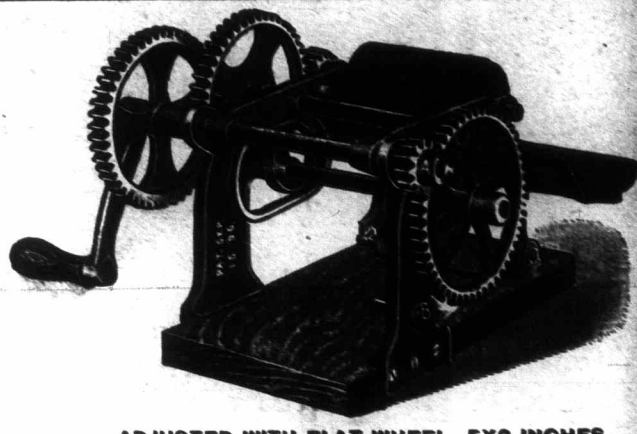
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will save its cost in your blacksmith bill in three months. Will grind plowpoints, cultivators, shovels, disks, axes, and all kinds of tools, quicker and better than any machine made. Send us \$7.50 for complete sample outfit consisting of 3 corundum wheels and all adjustments. These corundum wheels we manufacture, and we guarantee them to last five years with proper usage. Quick Sales and Good Profits. Send at once and secure our agency, as you will be able to sell all your neighbors from your sample outfit, as we will take their notes from you, providing they are good.

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