

J. H. Grisdale
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CANADIAN HORSE SHOW REPORT.

THE FARMER'S ADVOCATE

AND HOME MAGAZINE

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

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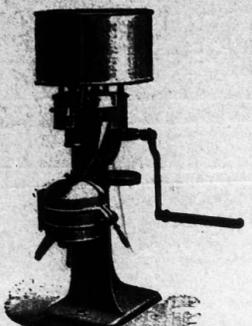
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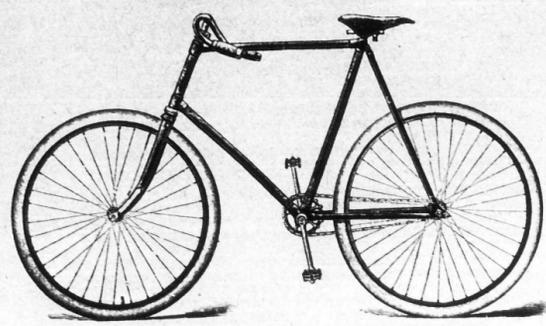
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VOL. XXXV.

LONDON, ONT., AND WINNIPEG, MAN., MAY 1, 1900.

No. 501

EDITORIAL.

Stealing Canada's Good Name.

The letter from Mr. D. C. Flatt, the well-known swine breeder, which appears in another column, brings before the attention of the public a matter of very serious importance in view of the immense strides of the hog-raising and bacon-curing industry in Canada. As a result of personal enquiries and observations made when in England recently, Mr. Flatt states that great quantities of thick, fat Western States hog products are being palmed off in the British markets as Canadian, to the prejudice of the latter, filching from this country the material benefits arising from the good name honestly earned for our bacon, which now ranks well up alongside that of Ireland and Denmark. In the past, unscrupulous Old Country dealers have not been loth to palm off choice cuts of Canadian beef as "Best Scotch," and toothsome Canadian cheese as British-made cheddars, and it was once not an uncommon thing for cheese made in the United States to be brought into Canada and then re-shipped to England with the name "Canada" placed upon the boxes. In order to stop this latter fraud, a Government Inspector was employed at Montreal, and the Dairy Act of 1897 made it compulsory to brand the word "Canada" or "Canadian," both upon the box and cheese, of all cheese intended for export. A similar regulation applying to butter also exists. In the opinion of one of Mr. Flatt's informants, unless the practice referred to were stopped, it would be futile for Canada to try to maintain her reputation as a producer of fine bacon. Mr. Flatt's suggestion looking toward a rigid inquiry and the application of prompt and effective measures on the part of the authorities to preserve the fruits of Canadian skill and enterprise to our own people is one that commends itself.

San Jose Scale Legislation.

At Toronto (Ontario) and Ottawa, Provincial and Dominion legislators have respectively been getting after the San José scale by Act of Parliament. In the former, the plan of campaign now is to encourage and stimulate the fruit-grower whose trees are infested to treat them by spraying, washing or fumigation on their own account, instead of the original drastic procedure tried last year of chopping down and burning trees in orchards found infested with scale by the Government Inspectors. Some of the latter still entertain the idea that had their hands not been stayed by the "powers that be" in Toronto, they could have stamped out the pest. Such is the strength of official optimism! Last year, however, the protests against this process and certain characteristics of the work of inspection grew so frequent and so loud that the Minister of Agriculture called a halt and sent out a Royal Commission to look into the whole trouble. They collected a mass of valuable testimony, and, as might be expected from the nature of the scale and the results of experiments at extermination tried elsewhere, they reported in favor of a modified procedure so far as the Government was concerned. What the latter proposes now is to furnish whale-oil soap at 50% of the cost, the fruit-grower performing the labor. The burden of responsibility is to be thrown where it ought to rest, viz., upon the particular persons interested.

Now, as to the remedy which fruit-growers are to be aided in using: whale-oil caustic potash soap is extensively used in Ohio, where it is thoroughly applied on peach trees as late as possible before the buds open (it is said not to injure the flower buds on other kinds of trees); the incidental advantage through the cleaning up and invigorating of the trees being sufficient to commend it, even if the scale were not there.

New York and Maryland fruit-growers favor the

20% mechanical mixture of kerosene oil and water, and they claim that it goes farther and actually costs less per gallon than crude petroleum, which, as Dr. Bethune pointed out in the FARMER'S ADVOCATE some months ago (see page 664, Dec. 1st, 1899, issue), proved so eminently successful in the series of experiments carried on in New Jersey, where it is now the favorite remedy, being remarkably efficacious. It is said to remain effective against scale life on the trees for a couple of months, but should not be applied after the foliage appears. Sprayed on as late as possible before the buds open, it is said to kill the cankerworm, tent caterpillars, aphids, psylla, and other insects appearing with the opening of the leaves, together with the oyster-shell bark louse, etc. So far as we can learn, the cost, including labor, of the whale-oil soap treatment, is some fifteen cents per full-grown peach tree for each application; 20% kerosene mixture, 9 cents per tree; and the crude-petroleum emulsion, 5 cents. We understand that further experiments with these remedies are under way in Ontario, and cannot see why the proposed Government aid should be in favor of the more expensive remedy. Anyhow, sooner or later the fruit-grower will have to work out his own salvation in this matter, and it will be a case of the survival of the fittest.

In the Province of Ontario, under the San José Scale Amendment Act of 1899 regulations were prescribed by the Lieut.-Governor-in-Council prohibiting the importation, sale or exchange of scale-infested plants, and it is imperative that all nursery stock, except evergreens, strawberry plants, bulbs and bedding plants, must be fumigated with hydrocyanic acid, in accordance with the regulations of the Inspector of Fumigation Work, Prof. Lochhead, of the Ontario Agricultural College, and every package of nursery stock sent out must be accompanied by a certificate to that effect. We understand this Act is being rigidly enforced this season at every nursery in the Province, no exception being made in favor of nurseries declared free from scale by the scale inspectors, for, while inspection is good so far as it goes, it does not furnish an absolute guarantee of the presence or absence of the pest. There is said to be no truth whatever in the statement that fumigation was the cause of many deaths to nursery stock. Many experiments go to show that if this operation is carried out according to the regulations, there is no such danger to the trees.

At Ottawa the original legislation took the form of an Act prohibiting nursery stock from the United States, Australia, Japan, and the Hawaiian Islands. Incidentally, this was a sweeping protective measure, from the standpoint of the Canadian nurserymen, some of whom profited immensely by it, we are told; while serious disappointment and losses fell upon some a year ago who had spent the winter getting orders in Canada for American-grown trees, shrubs, etc., as the Act was put in force in time to shut out importations for spring planting. In Manitoba and the Northwest it was found to be a grievous hardship, and there involved the absurdity of excluding the people from getting hardy fruit trees, etc., from Minnesota, where the scale is said not to exist; but allowing them to import from Ontario, where it does. After one year's experience with the Scale Act, Hon. Mr. Fisher, Dominion Minister of Agriculture, has introduced an amendment giving the Governor-in-Council the power to name certain ports at which "trees, shrubs, plants, vines, grafts, cuttings or buds, commonly called nursery stock," may be imported, and on April 7th an order was passed naming St. John, N. B., and St. Johns, P. Q.; Niagara Falls and Windsor, Ont., and Winnipeg, Man., at which points nursery stock coming in must be thoroughly fumigated with hydrocyanic acid gas by a competent Government official in accordance with the most approved methods. All shipments are entirely at risk of shippers or con-

signees. At the same time, the order states that as there is danger of serious injury to trees if fumigated in autumn before the buds are, thoroughly dormant or in spring after the buds have begun to unfold; all stock which when received is immature or too far advanced for safe treatment will be held at the risk of the shipper. This order-in-council opened the ports of entry from its date, April 7th, till May 1st only, so that unless in the case of some speculative nurseryman who had orders which he could supply at a profit by a prompt importation from the United States, it would be of little practical service to Canadians this season. An Ottawa dispatch states that the Minister of Agriculture announces that there will be an open season again next fall, when American nursery stock may be imported into Canada under similar restrictions. No port was opened this spring in British Columbia, there being no stock on the coast that had not started to grow, but one will be designated next fall. For the future, it seems to us that the people should have ample notice of the ports and periods of entry, the latter being of sufficient length of time so that they can take advantage, if they so desire, of the privilege of obtaining stock from across the lines.

For a Dominion Exhibition.

A large and influential deputation of representative officers of the various Dominion Live Stock Associations, Dairymen's Associations, and Manufacturers' Associations recently waited upon the Dominion Government at Ottawa, asking for a substantial money grant towards the holding of a Dominion Exhibition on the Toronto Exhibition grounds in 1901, under the direction of the Industrial Exhibition Association and representatives of the various other organizations above mentioned. It is held to be an opportune time to hold such an exposition of Canadian live stock, farm and dairy products, and manufactures, during the time of the holding of the Pan-American Exhibition at Buffalo next year. It is understood that the live stock will be required to remain at Buffalo only a week or ten days, and that Canadian exhibits in these classes will be free to return to Toronto at about the usual time for exhibition there. Such an arrangement, we feel sure, would meet the approval of the great majority of Canadian exhibitors of stock. Taking place at the time when the largest crowds will be visiting the Buffalo Exposition, it will be certain to attract large numbers of those visitors who will gladly make the pleasant trip across the lake or avail themselves of the excellent railway service to see the Queen City of Canada and its widely-celebrated exhibition, vastly extended because of its Dominion character, should the Government see its way to grant the subsidy, which there seems good reason to hope they will. An appropriation of \$100,000 is asked for, to be expended not on buildings, as it is understood the City of Toronto will provide the necessary extra accommodation, but solely in affording wide-spreading competition, in offering liberal Dominion prizes, in advertising the show, and paying freightage on exhibits from the distant provinces, in order to place these exhibitors on equal footing with Ontario exhibitors as to expense incurred. There is every probability that many European visitors will attend the Pan-American, and will gladly take in the Dominion Exhibition, which will afford an excellent opportunity to advertise Canada by means of a display of her products in many lines. The project is a worthy one, and we trust will meet with general and hearty approval.

It will be wisdom on the part of farmers who are engaged in dairying or the feeding of cattle for any purpose to plant an extra piece of corn for feeding green during the dry time when pasture fails. If it is not needed this summer, it will come useful in the coming winter.

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G. W. CLEMONS, Secretary Holstein-Friesian Association of Canada:—"Your beautiful premium picture, 'Canada's Ideal,' is admired by all who have seen it. Good as it is, it merely reflects the worth of the FARMER'S ADVOCATE, which is freely acknowledged to be the leading agricultural paper in the Dominion."

Faithful Portraits.

F. G. BOVYER, P. E. Island:—"Canada's Ideal" is of itself an education in stock-breeding, being a faithful portraiture of real living animals which are types of their fellows in many Canadian Shorthorn herds. Pity it is that such cattle are not the reality in all parts of Canada. The prepotency of the Shorthorn bull is so great that his use with common cows will, in one or two crosses, give results almost equal in looks to the sire."

A Perfect Library.

D. HILL, Perth Co., Ont.:—"Canada's Ideal" is perfection. It is a library in itself, and should have a place in every stockman's home. All inferior Shorthorn pictures should be thrown aside and 'Canada's Ideal' be the daily counsellor of all who desire the most reliable information. I would like to see it in the sitting or living room of all the homes in Canada, where it could be easily referred to by all members of the household, where its presence would say to all: "Come and consult me—my treasures are for you."

The active demand for horses, both for heavy draft and for saddle and carriage purposes, and the good prices being paid, with a good prospect of the trade continuing, should lead farmers to make careful selection of the sires they breed from, and to breed with a clearly-defined purpose in view. It costs as much to raise a "plug" as a "seller."

The Rising Tide of Prices.

The rapidly rising scale of prices made for pure-bred cattle at auction sales in the United States in the last three months reached a point which cool-headed Canadians would call fever heat at Chicago on April 17th, the occasion being the dispersion of the Hereford herd of Mr. F. A. Nave, of Attica, Indiana, when a bull is reported as selling for \$7,500, two cows for \$3,000 each, and 96 head of cattle at an average of \$671, as indicated in our Chicago market report and in the "Gossip" columns in this issue. In February, a draft of 50 Missouri Herefords were sold at Kansas City, making an average of \$454, one bull reaching \$5,100. In March, a Missouri herd of 72 Aberdeen-Angus cattle scored an average of \$579. On April 3rd, a new mark in prices of Shorthorns was set when a draft from an Iowa herd sold for an average of \$421. The week following came the announcement that a Shorthorn bull had been purchased in England for a United States citizen at \$6,000, and the Hereford men evidently felt bound to wipe out that score, as they did at the Nave sale at Chicago by putting theirs up to \$7,500 for a bull. Yet, we are gravely assured by leading United States stock papers that there is a total lack of anything like a boom in all these events, but that a perfectly healthy tone prevails. It would be interesting to know just where the line is drawn between a healthy tone and a boom, and let us hope it will not be passed, as there is, we believe, a general agreement that a boom is not the best thing for any industry, owing to the possibility of a reaction later on. Seven thousand five hundred dollars, or even \$5,000, is a big price for a bull, and for some bulls to some men either price would be a dangerous venture, as the men might not be able to manage them so as to avoid a loss. As someone has said, "It simply means that a boat should not try to carry more sail than its ballast justifies," or that men to make a success of large ventures must have judgment and means to match, and should be in such a position that to them such a contingency as the loss of one animal even at the record price would not mean disaster. It has also been said that "the bull is half the herd," and that "any breeder is justified in paying, if necessary, as much for such a bull as he has paid for all his females put together, less a reasonable reduction to cover the contingency of the death of the bull at any time." Whether this doctrine be sound or not doubtless depends largely on the character of the bull, as his impress for good or ill survives him, and the individuality he stamps on the herd, be it good or bad, lasts for many years. We are glad to know that in so far as Canada is concerned, the live-stock industry is in a healthy state, and that if sensational prices are not being obtained, a good, steady and safe business is being done at paying prices, some of the advertisers in the ADVOCATE having reported sales of from 50 to 70 head of pedigreed cattle by private contract from their herds in the last six months, and others, who make no pretensions to being large breeders, having sold from 20 to 40 head in that time.

If our breeders are not getting as high prices as those made under the excitement of the sale-ring on the other side of the line, there is good reason to believe that our prices in private sales average fully as good as theirs, and, as we know we have better cattle as a rule, there is no good reason why our breeders may not mark their best goods a trifle higher in view of the general prosperity prevailing all over this continent.

The Weather and the Crops.

The spring, though opening perhaps a little later than usual in Eastern Canada, has yet been exceedingly favorable to the fall wheat in the sections where it is grown, the crop having stood the winter remarkably well, while the absence of alternate freezing and thawing, and the generally warm and genial weather since the middle of April, has left the crop in very promising condition. Clover which withstood the extreme drought that prevailed over a considerable area in Ontario last summer has come through the winter in good condition. In those sections which were not affected by the dry season last year, its condition is very satisfactory. Manitoba and the Northwest had an unusually favorable winter and an early spring, considerable seeding being done in the last days in March, and the wheat seeding practically finished in the first two weeks of April. The land being in remarkably good condition and an immense area of plowing done last fall, with the continuance of such fine weather, seeding has been a very short business, and the prospects for the season are very promising. Seeding is progressing favorably in Ontario, the land generally working well and rapid progress being made.

STOCK.

Canada's Bacon Trade Imperilled.

SIR,—When recently in England, I visited a number of pork packing establishments, also scores of retail houses, and, to my astonishment, I found in a great many retail places Wiltshire sides with a very thick, fat back, and, in addition, the meat very soft and flabby. In a number of cases I asked the proprietor where this meat was put up, and in every case they said it was Canadian pea-fed. Since my return home I have been investigating the matter, and have every reason to believe that the Americans are shipping to England the product of their thick, fat, corn-fed hogs, and placing it on the market there as Canadian production. I should like to ask all Canadians who are interested in the production of the ideal bacon hog, what is the use of us trying to compete with the Irish and Danish people under such circumstances? I have no hesitancy in saying that all or nearly all of the packers in Canada are aware that the circumstances mentioned have been going on for some time, and in the face of all this they will preach to us the kind of hog to raise, and the way to feed it. When in conversation the other day with a representative of one of our leading packing houses, he admitted to me that if we could not get the English Government to put a stop to the Americans sending the Wiltshire sides abroad without being branded, there was little or no use of Canada trying to maintain the reputation she has already gained in the bacon line. It seemed to me that it would be only fair to ask our Government to pass a law prohibiting the exportation of Canadian bacon without its being well branded, not only on the boxes, but on the product itself. I found in nearly every retail store I visited in England the Irish Wiltshire side put up by Denny, and there was not a space large enough for your hand that had not his brand on.

Denny certainly puts up his goods in excellent shape, being well colored and quite firm. Upon close examination of the Irish Wiltshire, I am free to say that we as Canadian breeders are not in the least behind them in the production of the proper kind of hog. In no small number of cases were the Irish Wiltshire sides put up with a thick, uneven, fat back. D. C. FLATT.
Wentworth Co., Ont.

British Army Remounts from Canada.

As a result of communications between the British War Office and Mr. T. C. Patterson, Postmaster of Toronto, whose long and personal interest in Canadian live-stock matters is well known, it was proposed to the latter by cable that he should purchase 1,500 horses for remounts. That he could not undertake to do, and the next message informed him that Major Dent would be sent over, and he arrived by the steamer Campania about two weeks ago, and soon after made a contract with Mr. W. H. Smith, of Grand's Repository, Toronto, Ont., to look up the supply of horses. Mr. Patterson states that it is a matter of much congratulation that so thoroughly competent a man as Major Dent, who is not a stranger to Canada, should have been selected. He is a County Magistrate in Yorkshire, for many years Master of the Bedale Hunt, an ex-officer of Dragoons, and one of the best-known judges of horses at the principal English shows. He is accompanied by a Veterinary-Major who has had great experience in his profession, and Ontario is at last likely to have full justice done to her capabilities as a field for the advantageous purchase of horses for the English army. Seeding time is not by any means the most favorable for our farmers to be approached by Mr. Smith's emissaries; but, nevertheless, there is every confidence that he will be able to fulfill his contract. Major Dent will not be found unreasonable in the matter of rejections. Fanciful or capricious objections, applicable to the horsing of an army on a peace footing, as it was in General Ravenhill's case, are presumably less likely to prevail when that army is in the field.

Enquiries on Loose Feeding for Mr. Rennie.

SIR,—In reading Mr. Wm. Rennie's new book, "Successful Farming," which was recently advertised in your columns, I notice that on pages 229-30, in the chapter on "Breeds of Cattle," he states that "Steers dehorned and fed loose will gain more in five months than those tied will gain in six, and on the same feed." Now, I should be glad if the author of the excellent work in question would tell us through the FARMER'S ADVOCATE upon what experience he bases that important statement, because, if correct, those of us engaged in fattening cattle can effect very large savings by putting the plan in practice. I would like advice also as to the size of the stalls in which he states eight or ten cattle should be confined and the best arrangement of manger for feeding and watering. In your paper for April 16th, Mr. W. W. Sheppard states that the plan is all right if one has plenty of room and straw for bedding. In overhauling our old barns, as well as for the reasons above stated, others as well as myself will appreciate learning from Mr. Rennie on this question, or from others who have tried the plan of loose feeding to their satisfaction or otherwise. STALL FED.
Middlesex Co., Ont.

Col. Stoner on Maud S.

Since the death of the famous old Maud S., Captain George H. Stone, the man who bought her when she was an unbroken filly and saw her develop into the queen of the trotting turf, has been talking entertainingly of the idol of all old race followers.

One of his most interesting stories is of her fast mile on the old fair-grounds track here in 1878. Her work had attracted the attention of W. H. Vanderbilt, and he offered \$20,000 for her if she could show 2:30 in a trial.

"I accepted the terms," said Captain Stone, "and Maud S. was shipped to Lexington for the test. Harker and myself went along, and stayed there for ten days, upon all of which there was more or less rain. Harker finally went back to New York, first making arrangements with Colonel Strader, in case of a good day and track, to time the mare's work and report it to him. The day and track came good time, and it was announced that the trial would beat 2:19. I told Bair if he would beat 2:19 I would give him \$1,000. There was a large attendance of turfmen and Lexingtonians at the track to watch Bair jog Maud S. around and finally start her on her mile. She finished in 2:17 1/2, and the country went wild—it was the fastest mile up to that time that had ever been trotted by a four-year-old.

"Along in June Mr. Vanderbilt telegraphed me to go to New York. I called at his house upon arriving there, and he surprised me by saying: 'Stone, I guess I bought something that I don't want. I wanted a road horse. Maud S. doesn't seem to be a roadster. What will you give me for her back again?' 'Mr. Vanderbilt,' said I, 'Maud may have been spoiled. I can't afford to buy her, but I am interested to such an extent that if you'll send her back to Cincinnati I'll put her in Bair's hands and see if he can bring her back to her speed.'

"Mr. Vanderbilt agreed. He was going to Europe for a year, and told me to handle the mare exactly as though she were my own property.

"If we get her back to her speed," I said, "she'll beat the fastest time ever made."

"It became noised about that Maud S. was a wonder, and no one was anxious for a race, until Major McDowell, of Kentucky, who had Trinket at that time, issued a challenge. The race was arranged for Chicago, and there was a purse of which 60 per cent. was for the winner and 40 per cent. for the loser. There was a good day, a fast track, and a crowd of 30,000 spectators. I instructed Bair to be just fast enough to beat Trinket, and not let the mare out. Trinket was in bad temper and Maud won the first heat in 2:19 1/2. The second heat was won in 2:22. Mr. Connolly then came to me and said, in view of the disappointment of the crowd, he wished I would give Maud her head and let her show speed in the third heat. I agreed if the distance flag should be removed, for I was certain Maud could distance Trinket, and I did not wish Major McDowell to lose the loser's end of the purse. He, of course, protested against moving the distance flag, but after some argument I had my way. In that third heat Maud S. trotted past Trinket as though she was tied, and came down the stretch like a hurricane, finishing in 2:13 1/2, with Trinket far behind. It was the fastest time at that time that had ever been trotted in a race. St. Julian's record was made against time. I cabled the result to Mr. Vanderbilt, and here is the message I received in reply:

"Stone, Chicago: You have verified your promise and electrified the world. W. H. VANDERBILT."

Captain Stone also relates how he and Bair devoted forty days to fitting out Maud S. for defensive operations against the new turf wonder, J. I. C. This was in the following summer, and her record was 2:10 1/2 at that time; J. I. C. stepped a mile in 2:10 flat at Narragansett Park, but he only wore the crown twenty-four hours, for the next day at Cleveland Maud S., piloted by Bair, and pulling a thirty-six-pound, old-fashioned, high-wheeled sulky, reclaimed her title by going the mile in 2:09 1/2. That was the last time Captain Stone ever saw her.—*Kentucky Stock Farm.*

Bitting Hard-Pulling Horses.

Having been interested in breeding and handling horses for a good many years, I think the following, in regard to bitting, may interest some of your readers who have had a hard-pulling or lugging horse.

I had a mare a few years ago that had one of the hardest mouths I ever tried to handle. Every time I rode her she ran away with me. I bought every kind of bit, from J. I. C. to a double ring with nose piece, but it was just the same. So it finally occurred to me to wrap a straight steel bit with layer upon layer of rags, until it reached what I thought would be the proper size for my purpose. This not wearing well, though it had the desired result, I had a rubber bit covered with leather, one piece over another, until it was about six inches in circumference. She was ridden with this until she stopped lugging, which was in about ten days, when one layer was taken off and the bit made smaller; and this was continued until it was reduced to its original size. To-day she is ridden with a plain rubber bit, and anyone can hold her. Lots of horses are made pullers by their not being properly bitted. Most of these patented bits are too severe, as they fret and worry the animal. If anyone will try the above they will find it to work satisfactorily, as I have broken two or three horses with hard mouths with this method.—*T. A. B. Dukehart, in Rider and Driver.*

Lessons from the Lambing Season.

BY J. M'CAIG, ONTARIO.

At no time will the helplessness of the shepherd to meet all difficulties come home to him so strongly as at lambing time, and at no time will he have such opportunity for profitable observation for the direction of subsequent treatment and management of the flock.

It is a matter of common observation that the average number of lambs per ewe is greater at the beginning of the lambing season than at its close. Our first five Shropshire ewes last year dropped thirteen lambs, while the late ones dropped mostly singles. This is usually attributed to the condition of the ewes. The freshest and fattest ewes come first in season. It is not surprising that natural law should saddle the ewes in best condition with the heaviest burdens in maternity. Most people will require a physiological explanation on top of the philosophical one. They will want to know how it is. It would seem reasonable to suppose that the general healthy condition of the ewe means a healthy condition of the generative functions, and so the certain and rapid impregnation of the healthy ova discharged. It is to be expected that a healthy condition of the generative functions could not exist with a weak condition of general health. The contrary condition, viz., that the general condition might be fairly good, while the reproductive functions might not be any too good, might exist. It is evident that self-preservation comes first. It is an anterior condition to reproduction. It is a matter of common observation that the failure of the reproductive duties is one of the first signs of weakening in an animal, while the subject may continue to exist long after; so it may be inferred that the strengthening of the reproductive functions comes with the later features of improved condition in the animal. This idea must be taken guardedly. We cannot lose sight of the integrity of the animal organism and of the interdependence of parts. It would not be reason, for example, to say that an animal might improve in flesh considerably and yet not improve any in strength of the reproductive functions. All the argument amounts to is that, judging from the order of importance of animal functions, the improvement in breeding condition goes on more slowly than the improvement in stored-up flesh for self-support. The practice depending on the idea is that of fitting ewes for copulation by generous feeding and rest before mating time. If large numbers of lambs are not desired, as they would not be where large size and faster growing are desired, then high condition would not be so important. It is not to be considered good for any purpose to have the ewe poor at mating time, for pregnancy means a drain on the powers of support of the ewe, and so should begin with the ewe in healthy condition.

The question of sex is usually thought to be bound up with that of numbers. If by natural law it is good to increase numbers rapidly, as seems to be the case when ewes are in good condition, an extension of the principle would favor the production of ewes rather than rams, as it is through the number of ewes rather than rams that rapid multiplication is possible. (This question of sex is sometimes considered to be influenced by the age of the sire or dam, or both.) It will generally be noticed, however, that where the number of the offspring is large the proportion of ewe lambs is large.

Besides the question of the number and sex, the condition of lambs affords opportunity for study. The shepherd has a right to expect that the flock will multiply naturally and satisfactorily without meddling care on his part. Nevertheless, it is true that the species of artificial management to which sheep are subjected under domestication (to produce good saddles, loins, and gigots) has made breeding more complex and difficult than it would be where sheep run in a natural state, and the operation of the inclemencies of nature thins the flock naturally to those best fitted to survive and consequently to reproduce. Highly-bred sheep are the result of careful treatment, and their continuance naturally demands continued care and nurture. Injudicious feeding and housing, together with want of proper exercise, produce irregularities at lambing time. Too heavy feeding during pregnancy may produce an overgrown offspring, and the assistance of the shepherd is necessary. Over-assistance may cause injury to the ewe and induce inflammation. Ewes carrying dead lambs may let the period of lambing pass without showing acute labor pains, though the customary signs of lambing time are present. The taking away of the dead foetus in bad condition may bring septic poisoning, which generally proves fatal. A good preventive is ten parts of olive oil to one of carbolic acid, to be used to smear the passages and interior of the womb. Overfeeding near lambing time frequently causes too heavy a secretion of milk, and hence milk fever. A young lamb will not relieve an overfull or caked bag. The milk should be drawn frequently. The ewe should be given a dose of six ounces of Epsom salts, and the bag should be bathed frequently with warm water and should be kept free from damp, cold, hard floors.

The worst trial of the shepherd is with weak lambs. Too plentiful feeding of roots is frequently blamed for this. Roots of themselves, so far as their nutritive constituents are concerned, should not be bad in this respect, as their actual food constituents are slight. It is probable that the absence

of corresponding concentrated food with the turnips is responsible, and the effect of the low temperature of the roots in large quantities lying adjacent to the foetus. The first danger from a weak and watery lamb is that he may never get on his feet, but may be thrown in the absence of the shepherd and not have sufficient animation to sneeze the caul free of his nose, as he usually does, so dies from a species of asphyxiation. We have known of several cases of it this season, and blame the changeableness of the winter for some of it at least. The lambs come harder after a steady, dry, sharp, hard winter than after one of alternating hard and soft spells.

An old shepherd says he likes a lamb with a brown or yellow covered coat at birth. Paleness of the liquor amnion and consequent paleness of coat generally go with weakness. Excessive whiteness extending to the coloring of the skin about the nose, lips and natural openings of the body indicates a very weak and flaccid lamb and one that will be hard to pull through and will be of a washy texture afterwards. A common cause of this species of weakness is want of sufficient exercise in the open air.

A ewe will occasionally disown her lamb. This in most cases arises from inability on the part of the ewe to support the lamb. Her milk is scarce at lambing time, and she is naturally unmotherly. Frequent drawing on the udder and feeding on soft mash will bring the milk and the necessary desire to be relieved of it by the lamb. Such a ewe should have no company but her lamb. She should be tied up to keep her from injuring the lamb, and it should be allowed to suck at least a dozen times the first day, and generally it will be taken by the ewe on the second day. A ewe may sometimes be brought to give up opposition to the lamb by rough handling, but good feeding should be chiefly relied on. A weak lamb should be carefully treated if it has to be artificially fed. It should never be given milk until the lamb has been warmed and circulation has become active, as milk only curdles in a cold lamb. It should be warmed first and fed afterwards, and should be given small quantities often, rather than a larger feed at a single time.

Milk from Tuberculous Cows.

The last annual report of the Storrs (Conn.) Agricultural Experiment Station contains details of a trial of feeding calves with milk from tuberculous cows, begun in 1896, when four condemned Devon cows were obtained for the purpose from the State Cattle Commission. One object in view was to study the effect of the milk of slightly diseased cows when fed to healthy calves, and also the relative danger from the spread of the disease by association with diseased animals. The following deductions are given in the report:

"We know comparatively little regarding the conditions which favor the spread and development of tuberculosis among animals or man. Most of all are we lacking in a definite knowledge of the dangers of this disease to mankind from the bovine race. Many have claimed that the danger to mankind from the spread of the disease through the milk supply is very great. It has generally been thought that one great cause for the spread of the disease among our herds is the feeding of the milk of tuberculous cows to calves. The experiments made during the past two years at this Station do not substantiate this view. It must be borne in mind, however, that the number of experiments is comparatively few, and that the cows whose milk was used were probably in the earlier stages of the disease. These facts have been carefully considered, and it is, of course, unwise to attempt to draw any definite conclusions from the work, but the following deductions seem warranted:

"(1) Bovine tuberculosis is usually a disease of slow development, its progress depending quite largely upon the general vigor of the animal and its power to resist the action of the germs. In nearly two years and a half that the tuberculous cows have been at the Station, only one secondary case has appeared, and this was discovered about six months after the feeding period with milk had ended.

"(2) In the experiments here reported, eight calves have been fed upon the milk of tuberculous cows for periods varying from three months to sixteen months without developing the disease.

"(3) The results of these experiments coincide with the general results of European observations, and indicate that the danger from the spread of tuberculosis through the milk of cows to man or to other animals is not as great as has generally been supposed. In the earlier stages of the disease and at all times when the udder is not affected, the danger from the use of the milk is quite limited. Great stress, however, should be laid on the danger of using milk from cows which show any symptoms of udder affection."

Sheep and Lambs High.

The high-water mark of the season for both sheep and lambs was reached in Chicago April 9th. Western sheep in fleece sold at \$6.50, which is the highest price since May, 1892. Shorn sheep reached \$5.90, which is a very exceptional figure. Several thousand Colorado lambs sold at \$7.50, which, in point of number, is the highest ever reached by this class of lambs. There were 3,452 Colorado lambs sold at \$7.50, and 754 head at \$7.55, which is the highest of the year, and equals the record established in April, 1893.

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Bone in Pigs.

A correspondent of the *London Live Stock Journal* writes: The following extract from one of the American papers devoted to the interests of pig-breeders in the States has been submitted to me by a friend, with a request that I would furnish him with a solution of what he jocosely terms the riddle as contained in the paragraph forwarded to me, which runs as follows: "It is said that the 800-lb. boar, Right Kind, when sold, was driven into the ring was trotted around the circle six times on the jump to show his great action and good vitality, and that his eye was as clear as crystal, and no one came forward to claim the fifty dollars to be awarded to the person who had a hog of greater size of bone. He created merriment and admiration for the attending breeders."

I do not suppose that it is so much the peculiar style nor the somewhat mixed character of the par, which mystifies my friend, as the apparent offer of a bet of fifty dollars that none present could produce a boar which had more bone than Right Kind—presumably a boar of the Poland-China breed, a breed which its devotees rendered notorious some two years since by those extraordinary proceedings in connection with auctions, booms, etc., etc.

I am afraid that I am unable to assist my friend to any great extent, since I really do not know of any advantage in the possession by our pigs of this strong bone, of which so much is written and spoken on the other side of the Atlantic. The reiteration of the alleged fact that certain families and breeds of pigs owned by our American cousins have such so-called immense bone are almost sufficient to lead one to think that their system of breeding or management has been so unpractical that a very large proportion of the pigs sent to the large packing centers, such as Chicago, etc., arrive at their destination broken down or with fractured legs. I have often read of such a condition of affairs, of which the former appears to be due to neglect in selecting for breeders those pigs only which have good firm ankles and feet. Anyone who has attended our shows during the last few years will have noticed a considerable number of the pig exhibits to be what is termed "down on their joints"—i. e., their ankles are not strong and firm enough to bear the weight of the body; the feet also are so loosely put together that these spread out, the result being a wretched attempt to walk. These weaknesses are generally associated with that which our pig-men call strong bone, or bone of a round, soft, porous character, common to those pigs which have been tried for generations for fat rather than flesh and prolificacy. These big, soft-boned sows and boars are almost invariably slow breeders, and early become useless and barren for breeding purposes.

I am fearful that our American cousins are studying the size of the bone of their pigs rather than making a point of breeding only from pigs which possess quality of bone and joints, quite a different thing to mere size. The latter is, in my opinion, a thing to be avoided, as with it is invariably found a thickness and coarseness of skin and shoulder which does not betoken quality, and, unfortunately, both at home and abroad, not sufficiently appreciated by pig breeders.

Dominion Incorporation for Live Stock Record Association.

The Dominion Minister of Agriculture, Hon. Mr. Fisher, has introduced a bill at Ottawa, making provision for the incorporation as an association, under the authority of the Dominion Department of Agriculture, of any five or more persons so desiring, for the purpose of keeping a record of pure-bred live stock of any distinct breed, or several records of a distinct breed. Not more than one association for each distinct breed of horses, cattle, sheep, and swine shall be incorporated under the proposed Act. Provision is required for constitution, rules, by-laws, etc., governing registration, meetings, election of officers, etc. All alterations or amendments are subject to the approval of the Minister of Agriculture. The associations will consist of annual and life members; the membership fees to be fixed at the annual meeting, or a meeting called for the purpose.

The liability of each member shall be limited to the amount of his membership fees due. The penalty clause is as follows:

"Any person who signs a false pedigree intended for registration, or who presents or causes another person to present a false pedigree for registration by the association, shall, upon summary conviction, upon information laid within two years from the commission of the offence, be liable to a penalty not less than one hundred dollars and not exceeding five hundred dollars for each false pedigree so signed or presented, together with the costs of prosecution."

The pure-bred records of Canada were instituted under the old Agriculture and Arts Act of Ontario, and in that regard were provincial in character, though patronized by Canadian breeders generally, and having their head offices at Toronto, latterly in the new Ontario Parliament Buildings. In the matter of presenting false pedigrees for registration, incorporation under the new Act would doubtless facilitate prosecutions for offences occurring in any of the other Provinces of Canada.

Large or Small Pastures.

Every observant shepherd knows that his flock delights in frequent changes of pasture. Even though they are exchanged from a luxuriant to a more scanty lot, the sheep seem to respond favorably. With cattle this is not the case. Where pasture is to be entirely depended upon, it is well to allow cattle of any class the entire run of the land they are to have when first turned out in spring, or as soon afterwards as circumstances will allow. While the fresh, green growth is abundant the cattle will select their preference, leaving a fair quantity over the entire lot, which they will come back to during the dry season, whereas a closely-cropped surface would yield nothing for their support at that trying season. Prof. Henry, in his admirable work on "Feeds and Feeding," says:

"The subject of large or small pastures is frequently discussed. The majority of experienced American feeders favor a single large range rather than numerous small pastures. Grasses, both in variety and quality, are never quite the same over the whole of a large pasture, and cattle soon detect the slight differences and satisfy their desire for variety by ranging from one spot to another. In large pastures the habits of the animals become regular, and it is interesting to study their movements. The herd will be found in the morning on one side of the valley, feeding on the more abundant vegetation; later, as the sun's heat increases, they appear on the hillside, where there is a movement of air and where the grasses are shorter and more nutritious; while at noon they are to be seen resting in the shade at still another point. This regularity in grazing certainly conduces to comfort and quiet, and is of importance to profitable returns. Where the pastures are cut up into several lots, the fresh bite of rank herbage which comes with each change leads to irregularity and unrest, thus reducing the gains."

Selecting and Judging Dairy Bulls.

BY F. S. PEER.

In my last letter (page 221) I gave my reasons for not judging by signs. In this I shall simply call attention to the principal points or characteristics of a bull that decide me in his favor, and will attempt to give my reasons for each point.

The Head.—I want the head to be as near the ideal type of the breed as possible (Jersey, Guernsey or Ayrshire, as the case may be), because I want a Jersey bull to look like a Jersey and not like a Shorthorn or Brown Swiss. I like a beautiful head because there is no one feature of a Jersey cow that is so strikingly different from all other breeds, and because the style and beauty of the Jersey cow's head adds essentially to her market value.

Neck.—I like a bull to carry his head well up, because it is a common fault among Jersey cows to drop in front of the shoulders—ewe-necked. The Ayrshire breeders have paid considerable attention to this point, and have been well repaid for their pains. Nothing adds more to the grace and symmetry, and especially to the carriage of the animal—bull or cow—than a well-placed head on a level or slightly rising neck.

Masculinity.—I always want to see a thoroughly masculine bull—strong, vigorous, courageous, with neck large and full, but without coarseness and without being throaty. The latter point has never been criticised in America as it deserves. It is a useless appendage, and detracts very much from the beauty and symmetry of the head.

Shoulders.—I do not insist on too fine a shoulder in a bull; if he is a masculine bull he will have heavier shoulders and narrower hips in proportion than the female. This insisting on bulls being built as we like a cow—with flat, sharp withers and broad, prominent hips—is founded on a mistaken notion in animal economy, as is evident when we attempt to apply the same rulings to the human family.

We have carried fine shoulders too far. No one likes to see a fine shoulder and sharp wither on a cow better than I, but we must not sacrifice breadth through the heart—a point where too many Jerseys fail. I refer to lung capacity because milk is a product of the blood, and to produce a large amount of milk the cow must first manufacture a great quantity of blood; to do this she requires large lung capacity to purify the same. Therefore, I insist on great breadth through the body back of the elbow joints. For the same reason I like to see a large, open nostril, and as there must be a great amount of "milling" done by a cow in the mastication of a large quantity of food, I like a rather heavy, muscular jaw.

Barrel.—The barrel of a bull should be good size, with large, heavy ribs, well sprung, because his daughters must have capacity and strength of machinery for disposing of an enormous quantity of forage. I like a rather deep barrel on a bull unless the depth is made at the expense of width, as is sometimes the case in flat-ribbed, narrow-joined bulls. For this reason a bull should be better sprung than a cow, as he has not had the weight of feed and a calf to carry to bring him down.

Hips.—I like to see a bull long from the hips to the setting of the tail, because if a cow follows him in this respect she will have room for length of udder corresponding (usually) to length of hips. Cows with short hips, cows with sloping rumps (which generally amounts to the same thing), have short and deep udders instead of long udders running well forward. I like good breadth of hips,

although I do not look for a bull to be as wide in proportion as a cow. While I am not so particular about broad, pronounced hips in a bull, I like to see the hind legs so placed under them that there will be plenty of room for breadth of udder in the females.

Back.—I insist on a level top line from the horns to the setting of the tail, because nothing looks so much like a deformity, nothing so disfigures the symmetry and beauty of a cow or bull, as a sloping rump. That some great cows are thus formed has led some to think it a good sign, but it is entirely unnecessary and has nothing in fact to sustain the theory, as thousands of great cows are as straight as a line. To me it always looks like a case of in-and-inbreeding, where the animal has degenerated to its original type.

Breeding.—When I find a bull that comes the nearest to my ideas in conformation, style and beauty, I then look up his ancestors—not on his tabulated pedigree, but the individuals themselves, if living. I have ridden hundreds of miles to see the dam and grandams of a bull. If I am satisfied with these animals individually, then I look up the breeding of his sire, or the sire himself, if he is unknown to me. I would not buy the best-looking bull in the world for myself that had a dam with a rump like a mansard roof or no fore udder, if she had a record of 30 lbs. of butter a week. In general I prefer a fairly good all-round bull to one that is exceptionally good in most points, with one decided weakness or failure.

Turning Steers Out to Pasture.

Out in the Western States of America, where beef-raising is very generally engaged in, a great many steers are fed well during the winter and finished on grass. We find it is the general practice when making the change from dry feed to grass to make it gradually so as to prevent any setback by reason of an abrupt change. Especially where cattle have been heavily fed is this precaution necessary, or quite a loss to the feeder will result. One extensive feeder in Iowa, writing in the *Homestead*, has adopted the practice of putting the cattle out for an hour or two at first when a fairly good bite can be secured, keeping up the grain and other dry feed for considerable time, gradually reducing both until the animals have become thoroughly accustomed to the grass and appear satisfied. Some lower feeders allow their steers the freedom of a pasture field as soon as the grass makes a start, and continue full feeding for some time afterwards, reducing it as the pasture improves. In a few weeks the cattle are turned into fresh fields, and the first fields are allowed to grow up for later feeding. In any case it is well to bring the cattle up to the yard at nights for a short period, and give them a good feed of hay in the morning before turning them out. In this way scouring is largely prevented, and practically no setback will be experienced by the stock.

The Dog Law Again.

To the Editor FARMER'S ADVOCATE:

I have read with interest the communications on dogs worrying sheep and the remedies suggested, but do not think they go far enough. I would suggest the following:

Let each corporation supply to the assessor numbered tags when commencing his rounds, and every ratepayer or other person owning or having in his possession a dog shall pay to the assessor \$1, and for each bitch \$2. The assessor shall then give to such person tags, the numbers of which he shall enter on his roll book opposite the person's name.

The corporation shall pass a by-law granting a bounty of \$1 for dogs and \$2 for bitches to any person who shall shoot the same when found anywhere without tags; and a bounty of \$2 for each dog and \$3 for each bitch shot when in the act of worrying or killing sheep, when such dogs have tags on.

The owner of such dogs or bitches to pay the bounty and all damages. The names of the owners could be found by referring to the roll.

I think this would put a stop to so many escaping the dog tax as applied at the present time.

Lambton Co., Ont.

S. C. SMALE.

Ensilage Six Years Old.

Mr. R. W. Stevens, of Lambeth, near London, Ont., informs the FARMER'S ADVOCATE that he fed from his silo last month ensilage which was stored in 1883, and which had kept in as perfectly good condition as it was the first winter after being stored, and was relished by his cattle, although, being made from the Southern Sweet varieties of corn, imperfectly matured, it was not as nutritious food as that made from earlier varieties such as he has used in late years and which have been more nearly matured before being placed in the silo. This instance confirms the keeping quality of ensilage and its value as a food for stock which can be stored conveniently to the stables to be drawn upon if need be during the dry season in summer when pastures fail. The heavy loss sustained by dairymen in Ontario last summer in the shrinkage of milk owing to the drought should lead many to make provision against the possible recurrence of such a contingency. Indeed, there are few summers in which there is not a term of failing pastures when it would pay well to feed the cows something extra, and the silo presents the readiest and the cheapest solution of the problem.

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FARM.

Rotation of Crops.

BY GEO. J. M'CORMAC.

In addition to tillage and fertilizers as means of increasing the products of the soil, a proper rotation of crops is also very necessary. On account of the variation in the character of soils and the slope of lands, it is seldom practicable to bring the entire farm under one and the same rotation. Modifications to suit existing conditions must be made, and the more judgment exercised in making these modifications to suit the conditions, the better will be the results.

On the ordinary farm of one hundred and fifty to two hundred acres there may be two or three slightly different rotations to suit the particular soils of individual fields. In determining upon a rotation for any farm, it is always well to introduce as much regularity as possible; that is, have about the same number of acres devoted each year to the respective crops. If this rule be followed, the farmer will from year to year have about the same amount of fodder for his stock. Break up each year the same amount of pasture land, and as far as possible be regular in the number of acres seeded for hay. A proper rotation of crops systemizes the several departments of the farm. It secures a regularity of fertility over the whole farm and furnishes the same income each year. Why is a rotation of crops necessary? Why is it necessary not to allow crops of the same kind or crops having the same habits of growth to be grown year after year upon the same land? There are several reasons: (1) Some plants, such as barley and wheat, must not have too much plant food. They require a soil in high condition, but not too much plant food. If too much plant food be present, the yield of straw will be far greater than that of grain. (2) Some kinds of plants require more food than others. (3) Plants differ greatly in their power of collecting food from the same soil. It is a well-known fact that oats can collect more than wheat or barley. (4) A variety is less expensive on a soil than the same crop grown year after year. It is not an easy matter to account for these differences in plants, but they do exist, and rotations enable the farmer to provide for the peculiar characters and habits of growth.

Example of a six years' rotation: 1st year, roots or fodder corn; 2nd, wheat or barley; 3rd, hay; 4th, hay; 5th, pasture; 6th, oats.

For the 1st year's crop—roots or fodder corn—the land must necessarily be thoroughly tilled and manured. After the crop is gathered, a deep and thorough plowing cleans the land; and in spring a shallow cultivation will render the soil suitable for the wheat or barley crop and the hay crop of the following year. Hay and pasture tend greatly to improve the mechanical condition of the soil and to increase its fertility. The humus of the soil is increased and the soil is opened up by the accumulation of roots. With clover, a full set of roots is developed the first year, just as if it were an annual plant; and every following spring, after the store of food contained in the roots of the previous year's growth has thrown out new plants, there is in addition to the old roots a similar development of another full set of roots. But when the clover is cut for hay, the root growth is somewhat modified. After the plant is cut, instead of the roots sending up a new plant, there begins an energetic growth of rootlets, and afterwards a new plant grows up and a full set of roots is produced. It will be seen that clover roots penetrate the soil in every direction, and every succeeding year new roots come in contact with new particles of soil. Food is therefore collected from a greater area and depth by clover roots than by the roots of the cereal plants. This extensive growth of roots and the disposition to store up food in them must greatly improve the fertility of the soil. The action of all plants in growing is to increase upward capillary movement of soil water, and therefore the upward movement of all kinds of plant food. As grasses and clovers are plants that grow during the whole summer, pasture and hay fields are having their surface soil constantly increased during the entire summer. If the grass were allowed to decay where it grew, the effect would be to speedily increase the soil's fertility; but when the grass is cut for hay a great quantity of plant food is removed. If this hay be fed to the stock, it may largely replace in the soil those food substances that are necessarily parted with in selling wheat, live stock, and dairy produce. The effect of pasture in a rotation is also to improve the fertility of the soil. The grass being pastured off, the soil only loses about 18% of the ash constituents and nitrates if the animals are growing; and if the animals are simply fattening, the fertility is greatly increased. The pasture land, being plowed late in the fall or early in the spring, may be worked into a suitable condition for oats by simply sowing the oats on the plowed land and following it by at least three harrowings. If the condition of the land is such that a good seed-bed cannot be secured by repeated harrowing, the spring-tooth cultivator or disk harrow should be used. This rotation may be increased to a seven-year rotation by sowing peas after pasture and following the peas by oats. The yield of oats would be greater after peas than after sod, and the pea crop will leave the land richer and in better tilth than it was before the peas were grown.

Cultivation of Sugar Beets.

BY A. E. SHUTTLEWORTH, B. A. SC., PH. D., PROFESSOR OF CHEMISTRY.

Sugar beets for cattle feed can be grown probably in any part of Ontario; but owing to favorable climatic conditions, they can be grown for the production of sugar more profitably in certain portions or sections than in others. Experience in counties where the sugar beet is extensively grown shows that it attains its greatest perfection where the temperature for the months of May, June and July has a mean of 70° F.

A line running from Sarnia in a south-easterly direction to St. Thomas and then curving gradually in a north-easterly direction through the counties of Norfolk and Haldimand to the City of Hamilton would locate the northern boundary of the United States theoretical beet-sugar belt passing through Ontario. The section of Ontario to the south of this line, comprising Essex, Kent, Bothwell, Elgin, Welland, Lincoln and the southern portions of Lambton, Middlesex, Norfolk, Haldimand and Wentworth, possesses favorable climatic, and, for the most part, soil conditions for the highest development of the sugar beet. It is not to be understood, however, that there are no other sections in Ontario where sugar beets can be grown for sugar production. Temperature and length of season both north and east are more or less influenced by the lakes; consequently, in sections where land can be cultivated for planting by the 1st of May and where favorable beet-harvesting weather can be depended upon through October and the early part of November, beets may be produced as successfully as within the above named section.

To grow sugar beets with a high content of sugar and a paying tonnage, which are requisites of the beet-sugar industry, requires a high degree of agricultural skill. It is indeed a great mistake to suppose that because a farmer may be able to grow sugar beets for feed, he can also grow them for sugar production. The former means bulk, while the latter means quality and bulk. By a very little difference in the soil, in the cultivation, in the kinds and the quantity of manure, in the thinning, etc., a very great difference in the sugar content of the beets may result.

Past analyses of sugar beets grown in Ontario have shown that fully one-third of each year's crop contains less than 12 per cent. of sugar, a percentage too low for factory use. It would indeed be a serious matter to both the farmer and the factory should one-third of the total crop grown for a factory contain only 12 per cent. or less than 12 per cent. of sugar. To avoid such a misfortune, small plots of sugar beets should be grown according to definite instructions where a factory is likely to be established. Such an experiment would be an object lesson not alone to those growing the beets, but more or less to all farmers in the neighborhood, and by the analyses of the beets valuable data regarding the fertility and the requirements of the soil of different farms and sections would be collected. In this way the farmers would learn quickly and inexpensively to produce crops of beets of high tonnage and rich in sugar.

Restitution to the soil of the constituents removed has to be considered in good farming more or less for all crops, and especially for any root crop. The impression prevails that sugar beets are particularly hard upon soil and will in time impoverish land. This is not necessarily true with sugar beets any more than with other root crops.

Soil.—The kind of soil suitable for sugar beets is of less importance than cultivation. Almost any soil by proper cultivation in a suitable climate will grow sugar beets. This crop does not require a particular kind of soil. Good crops may be grown upon clay, loam, sand, or even prairie soil with proper cultivation. The beet does best in a warm moist soil having an open subsoil which is also naturally warm and moist. A soil capable of producing a good crop of potatoes will yield, with proper cultivation, paying crops of sugar beets.

Manure.—In proportion to a deficiency of nourishment in the soil and a consequent reduced growth, the quality of the sugar beet for factory purposes deteriorates; but in proportion to the degree to which proper and sufficient nourishment is available, the quantity and quality of the sugar beet improve. The best results, then, can be produced only when there are available to the plant in the right form and quantity, in the presence of other required conditions, the four most important constituents in the nourishment of beets, viz., nitrogen, phosphoric acid, potash, and lime.

It is only when all the other required elements of fertility are present that any manurial constituent or combination of constituents has any value; therefore, there can be no normal manure for sugar beets. An actual experiment alone will determine for a particular location or soil the constituent or combination of constituents that may be used to the best advantage in the cultivation of sugar beets.

In no case is it a safe practice to apply farmyard manure to sugar beets in the spring or early summer. If the early summer be dry, the manure will not decompose; consequently, the soil will remain too loose and open, and the young plants will suffer from drought. A wet period may follow the dry spell, which circumstance, owing to the late fermentation of the manure, develops leaf growth and produces a heavy crop, but of inferior quality. The later the second growth occurs the more the per-

centage of sugar is lowered. Unfermented manure further affords favorable conditions for the operation of insects that are enemies of the sugar beet, makes surface cultivation difficult, produces rooty beets, and predisposes the plants to disease. If a direct application of farmyard manure is to be made, early in the previous fall is the proper time, but even applied at that time the manure should be more or less decomposed. It is better, however, to apply farmyard manure to a preceding crop. The residue of this manure, supplemented by purchased fertilizers, will furnish the best fertility for the beets.

Spring Cultivation and Planting.—Plant as early as climate and soil will allow. In that area, previously mentioned, where sugar beets may be expected to do well, plant not later than May 1st. Early planted beets, as experience in other countries has shown, uniformly give both a greater yield and a higher content of sugar than those which are planted later.

Spring cultivation for planting must be shallow, the object being to prepare a seed-bed whose soil is reduced to the highest degree of tilth, resembling the surface soil of a well-prepared onion bed. The exact method of working the land to attain this object will vary in different locations and soils as soils themselves and weather vary. For every soil, however, loosening the surface to a depth of three inches is an essential operation, after which, by the proper use at the right time of the roller and harrow, a seed-bed which is mellow, firm, moist and warm can with little difficulty be prepared. The seed should be planted upon the same day, or as early after as possible, as the final preparation of the seed-bed. Before planting and while preparing the seed-bed, commercial fertilizers containing the constituents phosphoric acid and potash should be sown broadcast and worked into the soil of the seed-bed in its preparation. Hardwood ashes and superphosphate of lime (water-soluble phosphate) may be used to furnish the above constituents. The quantities required, since soils vary in fertility and fertilizers in composition, may differ for every soil. Fifteen tons of beets with their tops require 300 lbs. potash, 60 lbs. phosphoric acid, and 155 lbs. of nitrogen. These figures may form the best basis for calculating the required quantities of fertilizers to be used in addition to the manure or residue of manure already in the soil. Nitrogen, which may be needed over and above that in the manure, can to advantage be applied in the form of a soluble salt as a top dressing after the plants are thinned. Lime, which may be obtained from sugar-beet factories as a by-product free, is essential in soils growing sugar beets.

Seed.—The choice of seed is a matter of very great importance. Under no consideration should an inferior variety or quality of seed be sown. Owing to the many good varieties of sugar beets, arising chiefly from selection and culture, it is not easy to name all. The Vilmorin Improved and the Kleinwanzlebener have been the most widely grown in America. When the soil of the seed-bed has been reduced to a finely divided condition, it should be compressed by rolling, and upon the same day the seeds may be planted to a depth of one inch. Planting, therefore, is upon the flat, done either by hand or by drill at the rate of 16 pounds of seed per acre. The best results in root and sugar content are obtained by a distance of 21 inches between the drills, and seven inches between the plants in the drill. At these distances the ground becomes completely covered with the foliage, a condition which is very essential to a paying percentage of sugar. After planting, the land should be harrowed once lengthwise with the planting with light seed harrows, for the purpose chiefly of preserving the soil moisture. In from ten to fourteen days, with favorable weather, the plants will have germinated.

Cultivation of Beets Before Thinning.—As soon as the plants can be traced in the row, surface cultivation of the soil between the drills should be commenced, to clean the land and preserve moisture, to admit air more freely into the soil, and in every way to hasten the most rapid growth of the young plants. This cultivation may be accomplished by hand, but more quickly by a horse hoe. It should be remembered that the young plants are easily injured, either by a covering of earth or by being loosened; therefore, a strip of 2 inches on each side of the plants in the drill should not be disturbed by this early cultivation.

Thinning.—After the first cultivation, the young plants grow rapidly, when upon the development of the 3rd or 4th leaf thinning must be commenced, and should be finished as soon after as possible. Thinning is done chiefly with a narrow hoe, but the hands must be also freely used in singling out, for the reason that the young selected plants, unlike turnips, must not be roughly handled.

Cultivation After Thinning.—During thinning the beet will have grown considerably, and the time having arrived for a second cultivation, the hand or horse hoe may be run deeper than in the first cultivation, in order to open thoroughly and loosen the soil for the free admission of air. A second hand hoeing soon after finishing the first thinning is advisable, for the reason that two or more plants growing together injure one another both in size and quality. It has also the advantage of cleaning and loosening the ground in the drills between the plants. Even a third and a fourth horse hoeing may be done, depending, of course, upon circumstances. Every cultivation promotes growth, improving the chances for a profitable crop, but must never be done when the ground is wet.

Farm Drainage.

A sound knowledge of the fundamental principles of farm drainage is of the highest importance to the practical agriculturist. The chief necessity for land drainage is the removal of a superabundant supply of soluble salts. Too strong a solution of these salts is fatal to vegetation, and gives rise to alkali lands. A second benefit conferred by drainage is the prevention of the stagnation of soil water. A free circulation of water through the soil, carrying with it an abundant supply of free oxygen, is required by every plant. Then, drainage ventilates the soil. When ground water is lowered three or four feet, the plant roots can penetrate more deeply. By their death and decay, innumerable passages and channels are left, by which the air can enter. Again, the soil is warmed by drainage. A wet soil is colder than one that is well drained, and this is due to the cooling effect resulting from the rapid evaporation of the surface water. It is also evident that a large amount of the sun's heat is uselessly spent in drying up the damp, waterlogged soil, instead of warming the land. That a cold soil retards the germinating grain has been proved by every farmer. For ordinary farm crops, the depth to which water should be lowered by draining need seldom exceed four feet. Tiles placed 2 1/2 to 3 feet deep will usually be found sufficient; but in cold climates tiles must be placed as deep as 3 feet to prevent their destruction by frost. On loose, loamy soil, good drainage is generally secured with drains 100 feet apart and 3 1/2 feet deep. On heavy soil they should be closer. Drains are closed or open, according as they are covered or not. The open drain becomes easily clogged and is very unsatisfactory. In the cheap, open drain there is no economy. To drain thoroughly, the closed form, fitted with perfect joints, is absolutely essential.

WM. MACDONALD.

Tompkins Co., N. Y.

Prizes for Seed Grain Competition.

Mr. G. H. Clark, B. S. A., of the Ontario Agricultural College, has been appointed to take direct charge of the work in connection with the sum of ten thousand dollars, donated by Sir William C. Macdonald, to promote "progressive agriculture" by encouraging boys and girls to select seed grain on the farms on which they live. As has already been fully stated in the January 15th issue of the ADVOCATE, page 37, ten thousand dollars in cash is to be paid in prizes during the three years. One set of prizes is to be awarded for the largest yield per acre of oats, counting also the quality of the grain. The basis for awarding the prizes, is one mark for every pound in weight of grain of good quality per acre in the first year; two marks for every pound in weight of grain of good quality in the second year; and three marks for every pound in weight of grain of good quality in the third year. Other sets of prizes are to be awarded for wheat. Any acre of oats or wheat on the farm on which the competitor lives may be selected for 1900, and the particular acre need not be chosen until just before the grain is ready to harvest.

The competitor who obtains the largest number of marks in the total of the three years will receive the first prize in the Province; the competitor who obtains the second largest number of marks, the second prize; and so on for ten prizes in every Province.

The following show the prizes for each Province and the Northwest Territories:

	Oats.	Wheat.
1st prize	\$100	\$100
2nd "	75	75
3rd "	50	50
4th "	25	25
5th "	15	15
6th "	10	10
7th "	5	5
8th "	5	5
9th "	5	5
10th "	5	5
	\$295	\$295

There will be also sets of prizes annually for the hundred heads of grain which contain the largest number of seeds of the best quality picked out of those selected from the acre each year.

Any 100 heads from the acre entered for competition may be picked; one mark will be awarded for every seed on the 100 heads, and two marks for every grain (in weight) which those seeds weigh.

The competitor who receives the largest number of marks will receive the first prize in the Province; the competitor who obtains the second largest number of marks, the second prize; and so on for the ten prizes in every Province.

The following show the prizes for each Province and the N. W. T. for 1900, 1901 and 1902:

	Oats.	Wheat.
1st prize	\$25	\$25
2nd "	20	20
3rd "	15	15
4th "	12	12
5th "	10	10
6th "	8	8
7th "	5	5
8th "	5	5
9th "	5	5
10th "	5	5
	\$110	\$110

The seed grain for this competition is not supplied, and it is not necessary to choose any particular variety of seed for sowing this year, but whatever variety of seed is sown this year will be continued during the three years of the competition on each farm.

Teachers in rural districts are invited to join in

helping to forward this educational movement. Any teacher may send in a list of not more than six pupils in the school district for competition.

All those who desire to enter the competition should send their names and addresses to Professor Robertson, Ottawa, before the 1st June, 1900. These communications should contain only the words "Entry for seed grain competition," and the full name and address. They will be carried by mail free of postage.

It is particularly requested that no questions be asked on these entry applications. Full particulars will be mailed in good time to every one whose entry is received.

It will not be necessary for any of the boys or girls entering this competition to receive any further directions concerning this movement until some time in June, when full particulars will be sent to each competitor, intimating how to choose the particular acre and how to go about selecting the large heads from it for seed grain for sowing next year.

Corn Planting and its Early Cultivation.

Probably no other crop grown in Canada has shown greater improvement in yields and increase in acreage during the last few years than has corn. Where, a few years ago, a farmer grew probably three or four acres of Indian corn to husk for finishing his hogs in the fall, he now grows three or four times that area, to supply feed for his cows and young stock as well as his hogs. Years ago we heard of the immense yields of corn produced in the Western States, and believed the land out there was so adapted to that crop that we could not hope to approach them in yields. We now know that by selection of varieties and proper cultivation some of our farmers can make as good showing as can Western hog and steer farmers, who depend largely on corn for the support of their stock.

We find in Ohio, Iowa, Wisconsin, and other corn States, as well as in our own country, hill planters and drill planters about equally divided. Probably this question will never be settled, from the fact that there are so many diverse circumstances attending the general corn crop, owing mainly to the different dispositions of farmers and their ideas of handling the land. The aim of the careful corn-grower is to prepare the ground and plant the seed in such a manner as to admit of cultivation that is of most benefit to the growing crop and at the same time most convenient for himself and team. He also aims to distribute the seed so as to render the plant food in the soil of easy access to the plant, and always to secure the largest yield. While Ohio Experiment Station found in three years' experiments that corn drilled or step-dropped gave better returns than when planted in hills, the question is not thus settled for every farmer, as those who cannot attend regularly to cultivation, or who have the habit of doing thing in a slipshod manner, should plant in hills well apart each way, so that a sharp deep cultivator can be run either way to destroy the weeds without disturbing the corn plants. This is not the best manner of cultivating the crop even in hills, as careful, timely and thorough work will pay as well here as under any other circumstances; but the point we wish to make is that hill corn can be kept clean with less labor, and especially if a wet spell or busy time comes on, when it is difficult to drop everything else and attend to cultivation. If weeds once get the start in drilled corn, it is a difficult task to subdue them; while with the corn in hills it is possible to get on all sides of the weeds and with the horse hoe gradually exterminate them. Where one can manage his work so as to attend to the corn crop when it demands it, drilling is probably the preferable way to plant. Drill-planted corn will not suffer so much from a portion of the seed failing to come up, or a portion of the crop being pulled up by birds.

Corn for either silo or husking must be grown wide apart, in order to get a maximum of well-developed ears. In hills, three and one-half feet apart is not too wide, with an average of five to six kernels in each hill. In drills, the same width apart is not too far, with a stalk every fourteen inches. It is important to have the ground in fine condition to receive the seed, and after the seed is in, the harrow and roller should be used to compress the soil about the seed so as to insure quick germination. Harrowing before the plants are up and several times after, even until the corn is well up, is growing in favor. This is especially important after a heavy rain, which would cause a crust to be formed, as such a crust would delay, if not prevent, the young plants from coming through. Breaking the crust also preserves moisture, which is very important, as experiments have proven that it requires 300 pounds of water to produce one pound of dry matter in a corn crop. Nor is this the only advantage of repeated harrowings, as the numberless weeds that will be destroyed just as they are germinating will far more than repay the labor demanded. So that by keeping the harrow going occasionally from the time the corn is planted, we provide more plant food, provide the moisture to dissolve the plant food, and we destroy weeds in their weakest stage, when it is most easily and effectually done. It may be well to delay harrowing just while the corn plants are appearing, as then they are very tender, but in a few days a light harrow or weeder will do no harm, but much good to the crop. But if there has been a rainfall, and there is danger of the land baking and crusting, it will be better to start the harrows as soon as the ground is dry enough to bear the horses and work satisfactorily.

When the harrow has to stop and the cultivator commences, the latter may be run rather deeply at first before the roots of the plants have extended far from the rows, but as the season advances the roots will form a network throughout the soil, and to trim them off will, so far as it is done, destroy feeders that are gathering the food for the growing crop. It is therefore in the interest of the crop to run the cultivator probably four or five inches deep at the commencement, reduced to two inches deep when the crop is two feet high.

Cutting Straw from Thresher.

To the Editor FARMER'S ADVOCATE:

SIR,—I noticed in the ADVOCATE of April 16th a letter from D. W. Gingrich, entitled "A New Machine Wanted." I differ from him in his suggestion of putting a cutter in front of the thresher, as it is almost impossible to keep a large quantity of the cut straw from going into the grain. A much simpler and cheaper plan is to use the large-sized "Blower" cutting box, 14-in. throat and self-feeder, placed at the end of the long rakers. This machine will cut all the straw (after threshed) that an ordinary thresher will take through, and will mow the straw without any labor. Of course, an extra engine is required on the opposite side of the barn to run the cutting box. I cut all my straw last year with a Wilkinson "Climax A." Two men were required to pack the straw on the self-feeding table by merely patting down the straw with the hands. The blower delivered it at the peak of the barn, 38 feet, and when it was getting crowded the elbow of the pipe was changed a little so as to deliver it in another direction. The cost per day for taking care of the straw was: Engine and man, \$2.50; two men, \$2; total, \$4.50. It would have required seven men to have taken care of the uncut straw (and it would be still uncut), and the barn would not have held it. I agree with Mr. G. on the benefit of having the straw cut for feed, but there is another great benefit, and that is in the bedding. The cut straw will soak up all the liquid manure. My stables are water-tight, and when we used the long straw we had to take up the liquid and put it on the load with a scoop shovel. Much of it drained out before it got to the large heaps in the field, where it was left in the winter. In the case of the manure when we use the cut straw, it is all absorbed and drawn to the field and spread at once, where it is required. A good cultivator, spade or disk harrow will readily mix it with the surface soil, and the work is done, and done in the winter when there is plenty of time to do it, and not left till spring when there is a rush. JOS. E. GOULD.
Ontario Co., Ont.

Masonry Arch Under Approach to Barn.

Where basement barns are built on the level, it is now customary to occupy the space beneath the approach or driveway into barn with a box stall or root house. A difficulty met with has been to get a satisfactory roof or covering to the stall—one that will shed water and not soon decay. Mr. R. A. Penhale, of Elgin Co., Ont., during a call at our office described a plan that has been found quite satisfactory in his neighborhood. It is to construct an arch of brick parallel with the side of the barn and as wide as desired, usually about 9 feet. The arch forms a half circle built of bricks trimmed wedge shape and set on end. It is constructed similar to an arch over a stream beneath a railroad or other like situation. It is necessary to use a wooden arch to build the bricks on, which can be removed as soon as the mortar becomes firm. The doors from the basement into the stall or root house are also arched in the same manner. When commencing to construct the arch, a ledge about six or eight inches wide should be built up outside the wall of the basement, as high as where the arch commences, on which one side of the arch rests. This will require to be guided by the height of the barn floor from the basement level. The other side and ends are built up in the same manner, but of heavier wall. An arch 9 feet wide should be commenced five feet six inches below the barn floor. This allows for a rise of four and a half feet for the arch—being half its width—and one foot for soil above the arch. In the center of the top a large sewer pipe can be inserted to receive the roots, and windows can be placed in the ends, as desired.

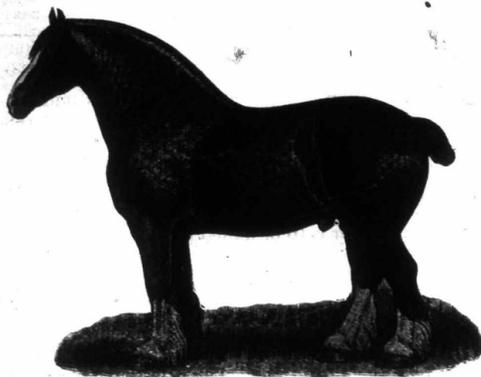
The Barberry Shrub Must Go.

Since it has been discovered by scientists at the Ontario Agricultural College farm and other institutions of agricultural investigation that the barberry shrub serves as a host plant in the life-history of rusts of wheat and other cereals, considerable agitation has arisen as to the best means of preserving our crops from rust from this source. We believe Mr. Rennie, Supt. of the College farm, had all barberry hedges and plants destroyed on that farm some years ago, and now it transpires that others will be required to treat this dangerous shrub in the same way. To this end an Act introduced into the Ontario Legislature by W. H. Taylor, member for North Middlesex, has passed its second reading. The Act provides that no person shall plant the shrub known as the barberry shrub upon any lands used for farming purposes in the Province of Ontario, nor upon any land situated within one hundred yards of any lands used for farming purposes, and every person guilty of the violation of this section shall be liable to a penalty not exceeding \$10, besides the costs of conviction.

HORSE SHOW.

The Canadian Horse Show.

The improved state of business in general, and of the horse trade in particular, had a telling effect on the Sixth Annual Horse Show, held at the Toronto Armories on April 26th, 27th and 28th. This popular annual function has been sarcastically dubbed a "clothes-horse" show, and there may be a fitness in the designation, but we fail to see how the combination detracts anything from the success of the very important event. Never have greater crowds attended the afternoon and evening sessions, nor were the morning competitions ever more keenly



IMP. DURWARD LELY [2661] (9900).
Second-prize Clydesdale stallion, over 4 years, sired by Sir Everard.
OWNED BY R. NESS & SONS, HOWICK, QUE.

watched. The managing committee, under the direction of the Canadian Horse Breeders' Association and the Toronto Hunt Club, have pretty well gotten hold of the idea of running a successful show, which they seem to conduct with more success each year. Considerable pains were gone to in preparing and decorating the commodious military quarters, the programme was exceedingly well arranged, both for exhibitors and spectators, and never before have we heard such general satisfaction with the judges' work.

CLYDESDALES.

In a class of eight entries, six grand representatives of the breed were forward to accept their relative positions at the hands of the judges, Messrs. Alex. Galbraith, Janesville, Wis., and James Henderson, Belton, Ont. The big, good horse, Lyon Macgregor, owned and so successfully shown year after year by Mr. Robt. Davies, Toronto, could now well retire from the showing, as he has gone repeatedly to the top among good ones and could well devote his energies to the perpetuation of his race, as we have too few of such good ones and also of the sons of his noted sire, Macgregor (1487). Lyon Macgregor's right to first place was not disputed. He also won male sweepstakes. His strongest rival was the nine-year-old Durward Lely, by Sir Everard (5353), a grand type and exceedingly fresh in his limbs. He is owned by Mr. Robt. Ness, Howick, P. Q., who imported him last year. He is a compact, nice going horse of typical Clydesdale pattern. His two stable companions followed next in order. Full of Fashion, by Prince of Kyle (7155), and Lord Chancellor, by Baron's Pride (9122), are worthy sons of famous sires, which only bears out the accepted truism, "Blood will tell." Full of Fashion is a high-class horse, possessing a desirable set of timber, which carries well a substantial body. He is a flash mover and catches and holds the eye while standing. The son of Baron's Pride needs size to make him a great one, but it would be difficult to find his superior up to the same weight. Alexander's Heir, by Prince Alexander (8899), imported by Dalgety Bros., London, and owned by T. H. Hassard, Millbrook, was quite a favorite for honors, as he has size, style, quality, and he moves well, but he drops just a trifle on his front pasterns. He is a safe horse to use just the same. Robt. Ness' Prince of Annick, by Prince Alexander (8899), was the remaining competitor. He is a showy, thick horse, a bit thick near the ground, but a good horse.

Three-year-olds had five competitors, from the studs of Messrs. J. M. Gardhouse, Highfield, Ont.; Robt. Ness, Howick, Que.; Robt. Davies; D. & O. Sorby; and John Bright, Myrtle, Ont. They were a good lot, well brought out. Gardhouse's King of Clydes, by Ringleader, was pronounced by all horsemen who saw him to be a wonderful colt. He weighs nearly a ton, has a grand set of timber, is nicely made, and a good goer. He was imported from Scotland by Dalgety Bros. Bravado, by Baron's Pride, and imported and owned by R. Ness, is on the way to be a useful horse, as he is of distinctly Clydesdale pattern, with flash legs, good feet, and goes well. Sorby's newcomer, Prince Delectable, by Cedric, and bred by Col. Halloway, was the greatest goer of the class and has a deal of quality as well, but he appears in need of more depth of body, which he will undoubtedly get with age. Robt. Davies' Prince of the Glen also put up a good show, and is a substantial colt. Three two-year-olds competed. Robt. Davies showed King

Lynedoch, by King's Own, and out of Nelly, a growthy colt of good type. He looks a bit raw yet, but his form is right and he goes well. He promises to mature into a big, good one. Prince Lynedoch, by Prince of Quality, is a more compact colt, but somewhat plainer than his stable mate. Sorby's Prince Grandeur stood 3rd. He is a tidy, deep-bodied colt, with good ends.

There was just one class for females of this breed, which accepted mares of any age. Of half a dozen entries, there were five forward—all mature. Messrs. D. & O. Sorby, Guelph, and Robt. Davies, Toronto, divided honors. Sorby's Princess Alexandra, by Prince Patrick, and out of Lily Macgregor, is big as well as good. She is no stranger to the Canadian showing, nor need she be afraid to come again, as her faults are few and insignificant. She has scale, width and sweetness, while her flat, hard limbs and substantial feet carry her to the front. Davies' Princess Maud, by Prince of Quality, is also of the massive type, and well furnished, but her action is somewhat stiff. Sorby's Sonsie Lass, by Second Choice, is a lower, thick mare, with striking action and a fine set of furnishings. She is approaching the foaling, and therefore not at her best for a contest of this kind. Rosie 2nd, by Bay Wallace, and exhibited by P. H. Petre, Stratford, is a square, substantial mare that should breed well. She came in for barren honors.

SHIRES.

While the exhibit of Shires was not large, it was excellent, there being ten entries in all shown on the line. The three mature stallions created considerable interest. Boro Conqueror, by Calwich Markham, and imported and exhibited by J. B. Hogate & Son, Toronto, made a show of action not looked for in such a massive breed. He is a big, square fellow, nice on his limbs, and goes like a Hackney. He is a horse of great quarters, and a thick, deep middle, with short, strong back. He won 1st over the chestnut Mawdsley, owned by Colborne Shire Horse Association. He is a big, showy horse of nice pattern, and good legs and feet. Compared with Boro, he wants middle and action, although he is not defective in these points. A black horse, Bahallion Vulcan, by Vulcan, and shown by Morris, Stone & Wellington, is of the real cart horse type, being stout and smooth, and goes well at the walk. He was placed 3rd.

Messrs. Morris, Stone & Wellington showed two of the three-year-olds. Their big bay, imported Mars, is a grand colt, with the best of feet and legs. Their colt, King, by Pride of Hatfield, is a fairly good sort, with good feet and legs. He won 3rd, being beaten by Messrs. Hogate's Groundslew Charming, by Revival, one of the old style of the breed, but a useful draft colt. Mars won 1st.

In mares, a pair of three-year-olds, bred by Morris, Stone and Wellington, and sired by Pride of Hatfield, won 1st and 2nd. The latter is owned by John Gardhouse, Highfield. They are useful mares, rather rangy than blocky. Wm. Hendrie & Co. showed a mature pair, massive and deep bodied, that are at home before a load. They won 3rd and 4th awards.

DRAFT HORSES.

Draft pairs, any breed, brought out three substantial pairs. Wm. Ewing, Petrolia, won 1st on a pair of Clydesdale grades, of thick, substantial pattern. John Gardhouse showed a beautiful pair of Shires, toppy, flash, and with grand legs, and won 2nd; and G. H. Petrie came third on a thick, well mated team of Clydes. Three pairs by Clydesdale sires included Messrs. Sorby's Princess Alexandra and Sonsie Lass, Robt. Davies' Nellie and Princess Beatrice, and a span of grand geldings sired by Macgregor and Joe Anderson, and shown by Wm. Hendrie, Toronto. They won in the order named.

HACKNEYS.

While all of the classes are of interest to some, Hackneys are enjoyed by all. They are not only beautiful horses, with superb action and well shown, but they display an intelligence lacking in other breeds of horses. This breed was judged by Messrs. Wm. West, Shelburne, Vt., and Richard Gibson, Delaware, Ont. In the classes for stallions foaled previous to Jan. 1st, 1897, Messrs. Beith and Crossley were the only contestants. The former had forward his much-admired, well-bred Squire Rickell, by Cadet, and the larger horse, Ganymede 3rd, by Ganymede, while Mr. Crossley showed the trappy, proud little roan, Rosseau Performer, by Enthorpe Performer. The three horses represent as many types, and each possesses excellencies of his own. Squire Rickell pleases them all while standing, as he is of peculiarly beautiful type, being full of quality as fine as a Thoroughbred. He was brought out in finished form and showed to good advantage. His action is rapid and graceful, but not as high as we have seen in the breed. His victory was not disputed. Ganymede 3rd excels in hock action, and also goes well in front. He is a big chestnut, and also goes well in front. He is a big chestnut, probably larger than the breed calls for, but the fault, if it be one, does not detract from his value as a sire, as it is the big, good ones we most lack. The roan from Rosseau is a familiar figure in Canadian horse shows, and he always wins applause by his peculiarly catchy knee action. He is of sweet contour, and has proved his excellence as a sire. Mr. Crossley's Royal Oak, by Royal Standard, had just one against him in Majestic 2nd, by Hayton Shales, from Hillhurst Farm, in the class for two-year-olds. The former, out of Lady Cocking, a rangy, flash black with white markings, fairly captivated the spectators as he went down the tanbark. He goes high, free, and with admirable confidence. When he thickens out he will do his

parents credit in any company. Majestic 2nd is of a heavier sort, well-grown, and promises well as a sire of big carriage stock. The male sweepstakes award was won by Squire Rickell.

A beautiful string of eight young females put up a graceful exhibition. The contributors were Messrs. Beith, Crossley, and Hillhurst Farm. There was much speculation as to the ultimate outcome, as the lot did not contain an inferior animal. Beith's two-year-old Hernia, by Royal Standard, and out of Cherry Ripe, bears a striking resemblance to her illustrious sire in conformation, color and way of going. She is high, true and rapid, and is well grown for a two-year-old. She won here, as well as female sweepstakes and for English medal. Queen Dagmar, from Hillhurst, sired by Barthorpe Performer, and out of Princess Dagmar, a three-year-old, won her way to 2nd place. She is a big mare, with lots of quality and free, high action. Rosseau Jewell, also a three-year-old, by Rosseau Performer, and out of Surefoot, is one of the fancy ones, fine and toppy, and rather graceful than rapid in her movements. A rangy roan two-year-old, Lady Minto, from Hillhurst, was a favorite because of her wonderful action, but she needs time to develop her. Hackney blood and Hackney type were much in evidence in harness classes, where the breed gave a good account of itself in several contests.

High-steppers in harness having Hackney sires made up a wonderful class. Of the twelve entries made, no less than seven were sired by Jubilee Chief and two by Lord Roseberry. A beautiful black mare, South Africa, by Jubilee Chief, and owned by Messrs. Crow & Murray, won 1st, while her chestnut stable mate, Right in It, by Lord Roseberry, won 3rd; Beith's Eva, by Jubilee Chief, a brown with white stockings, taking 2nd award.

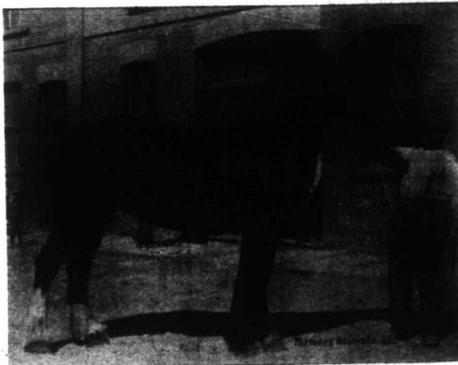
THOROUGHBREDS.

There were seven mature stallions entered, but only four responded to the bugle call. Wm. Hendries' Versatile, by Razon d'Or, has won repeatedly in this class, and this year he again beat his rivals in the regular class, besides winning the gold medal for best Thoroughbred, any age. He is a high-chested, breezy fellow, with a deal of substance. Terremont, by Dandy Dinmont, and owned by A. Frank & Sons, The Grange, Ont., stood 2nd. He is also a fine, breezy fellow, with a deal of character, but has hardly the substance of Versatile. A horse called Boy Orator, sired by Meddler, won 3rd. He is a flash, racy fellow, of good saddle type. The contest for first place in stallions designed to get saddle and hunter stock lay between S. B. Fuller's Wyndham and Geo. Robinson's Monotony, both good ones, considerably over the average in size. They are not new to the showing, and have each won 1st in good company. Wyndham is perhaps a bit more compact, which gave him the preference. Three 3-year-olds contested. The first award fell to a high-withered, notable-looking colt, Bastle, by Bassetlaw, owned by W. F. McLean, Toronto; Copper King, by Islington, won 2nd; and King Joshua, by King Arthur, 3rd.

There was a good string of half-breds by Thoroughbred sires. Of the six entries present, four were sired by the late Wiley Buckles. The 1st award fell to Gold Buckles, owned by Joseph Lawson, Brampton; a compact, useful filly. James N. Elliott, Streetsville, won 2nd on Billy, a black gelding of rare promise, being a model in form. His sire Wiley Buckles, dam a Cleveland mare.

CARRIAGE AND COACH.

There was an extra fine lot of stallions competed



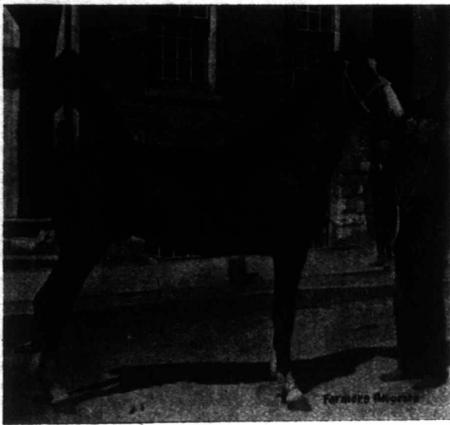
PRINCESS ALEXANDRA [2308].
First-prize Clydesdale mare, and one of first-prize pair with Sonsie Lass [2313].
OWNED BY D. & O. SORBY, GUELPH.

in this class. The former winner, the German Coach, Graf Bremer, owned by Jas. McCartney, Thamesford, was in his usual good form. He must be seen in action to be appreciated, as he goes with extraordinary flash, high and rapid both fore and aft. He is also a breezy horse, some 16.1 hands high, and as clean as a Thoroughbred. Young Royal George, a handsome horse by the German Picador, won 2nd. He is out of a Royal George mare, and proves the cross a good one. Standing he can hardly be beaten, and his gait is pleasing. He was shown by J. Gowland, Zimmerman. W. C. Brown's (Meadowvale) Prince George, by Prince Victor, went to the top a year ago, also at the In-

dustrial, but he had to stand 3rd here. He is a big fellow, fine in his make-up and a very good mover. Two three-year-olds and a two-year-old competed in the young stallion class. Lord Minto, by Candidate, and owned by Amos Agar, Nashville, won easily, and made a creditable fight for the sweepstakes award. He is a rangy, sweet horse, with good action. A flash two-year-old, Pat, by Shining Light, and owned by A. Hewson, Grahamsville, stood 2nd; the other colt being King Henry, by the imp. German, Adam, and exhibited by P. J. Thornton, Woodstock.

STANDARD-BRED ROADSTERS.

There were six mature stallions shown and two colts. The 12-year-old Dashwood, 2.20, by Sentinel Wilkes, might be taken for a much younger horse, as he is as fresh as a colt and a great goer. He is a handsome horse as well, and has substance. He won 1st for his owner, Jas. Wetherell, Blair, Ont.



ROSSEAU ROYAL OAK.

First-prize 3-year-old Hackney stallion, and reserve for sweepstakes.

BRED AND OWNED BY H. N. CROSSLEY, ROSSEAU, ONT.

The big, smooth Altoner, by Sphinx, and owned by Edmond Taylor, Toronto, is also a square, showy trotter, with useful qualities. He won 2nd, the third going to Alcyonium Boy, by Alcyonium. He is a level-going, substantial chestnut, of good road type. The old gray, high and rapid Postmaster was given the reserve award. He is now owned by Messrs. Crow & Murray, Toronto.

SADDLE HORSES AND HUNTERS.

The classes shown under the pigskin fill a large and important place in the show. The entries were large, running up to over a score in some instances, while all sections were well filled. These were judged by Dr. McEachren, Montreal; W. S. Elliott, New York, and J. N. Scatcherd, Buffalo. One of the most interesting classes called for combined harness and saddle horses, in which there were 24 entries, including animals ranging from Hackney to Thoroughbred in conformation and way of going. Neither of these types filled the bill, however, but a goodly number conformed to the happy medium. The winning entry was a beautiful chestnut mare, 16 hands, and with a good depth of body. She goes well at all the gaits, and exhibits some schooling. She is owned by Mr. L. Meredith, London, who succeeded in landing a similar victory last year with another horse. In all the saddle classes Thoroughbred blood predominated, and many of the winners appeared to contain little else. They, too, possessed deep chests, high withers, short, stout backs, deep, full quarters, and clean, cordy limbs, which are essential to high-class saddle horses. When these characteristics are coupled with a handsome, neat head and neck, together with good performance at the various gaits, their possessor may stand some chance of winning at the Canadian Horse Show of the present day. The hunter classes were well filled, the principal exhibitors being such successful horsemen as Messrs. Adam Beck, London; Geo. Pepper, Toronto; Yeager, of Simcoe, and others who make a specialty of this line of horses.

HORSES IN HARNESS.

The various classes of single and double harness horses were, without exception, well filled with a class of animals that would seem to put to ridicule the idea of their substitution by inanimate motor carriages for recreation purposes. The entries run up to over a score in some single classes, and the double sections were in every case well filled. The awards here were made by G. B. Hulme, New York; Harry Hamlin, Buffalo, and Gen. Field, Buffalo, who took great pains to place the ribbons where they belonged. Since the dissemination of Hackney blood throughout the country this class of stock has shown marked improvement, and it is to be regretted that suitable mares to breed from are so scarce. Messrs. Beith, of Bowmanville; Crow & Murray, Toronto; Yeager, of Simcoe, and Meredith, London, were among the most successful exhibitors. The success of Messrs. Crow & Murray in the various classes was phenomenal, winning as they did all the money in some big classes, and most of

it in others. They secure the right horses, and then fit and show them in perfection of finish.

MILITARY HORSES.

Artillery.—A new class, and one in which much interest was taken, was that for artillery purposes. It called for horses weighing from 1,100 to 1,350 pounds, bred and owned in Canada, four years old and upwards, 15.2 to 16 hands high, and able to carry 225 pounds. There were sixteen competitors, and with the exception of perhaps half a dozen rather short in rib and light in body, they seemed to fill the bill well. They were judged by J. G. Rutherford, M. P., Portage la Prairie, Man.; Major Dent, London, Eng., and Vet. Major Phillips, Woolwich, Eng. The type selected by these men was of the strong-ended, deep-girthed, active sort. The Hackney breed showed a new field for favor here, as the first winner was R. Beith's registered mare, Cassandra. She was sired by Jubilee Chief, and out of Mona's Queen, and, therefore, a full sister to the frequent winner, Jessica, and her lamented brother, Banquo. A brown mare, Jubilee Queen, exhibited by Willis Bros., was of much the same pattern, being substantial, active and appeared to be of the wearing sort. A big, handsome brown mare, owned by Doan Bros., Toronto, won the 3rd money.

Cavalry.—There were no less than 28 entries for cavalry purposes. They had to be four years old and upwards, 15.2 hands and over, be able to carry at least 225 pounds, and weigh 1,100 to 1,250 pounds. They came from all parts of the Province, and many of them were shown in saddle classes. The winning horses were smart, stout and active, with a deal of Thoroughbred blood and quality. What seems to be wanted is a strong, quick saddle horse, with a good middle as well as powerful ends.

Mounted Infantry.—Twenty-four entries in this section put up an interesting display. The class called for horses 14.2 to 15.2 hands up, carrying 200 pounds and weighing 950 to 1,200 pounds. They were, indeed, a fine lot, smart and well bred, similar in type to the foregoing, but not so large. Preference was given here to the stouter animals, but quality was of as great importance in the judges' eyes. There is a real dearth of this class, for which there is, and will be, a keen demand for years to come.

DAIRY.

Butter--From the Stable to the Table.

BY MISS LAURA ROSE.

ARTICLE IV.

THE CREAMING OF MILK.

During all the different stages in the manufacture of butter, in none is there so great a loss sustained as in the manner many people cream their milk, and it really does seem too bad that after rearing the cows, feeding and caring for them, milking them, then to set and skim the milk in such a way so as to lose all the profit.

The average per cent. of butter-fat in a large number of samples of skim milk collected from farmers was eight-tenths of one per cent.—a loss of nearly one-fourth of the entire butter-fat. I have heard it remarked that such skim milk was good for the calves and pigs. Granted; but looking at it from the standpoint of making the dairy pay, would it not be better to substitute for the butter-fat some kind of meal or oil cake?

There are two methods of creaming milk—the natural or gravity system, and the mechanical or centrifugal system. As the former is the older and more common method, we will consider it first. The milk of some cows creams far more readily than that of others, depending directly on the size of the fat globules. The Jersey and Guernsey cows have the largest fat globules in their milk, consequently it creams the fastest, while the Ayrshire cows' milk is just the opposite. The cream comes to the top because it is the lightest part of the milk, and if it met with no friction would rise to the top of shallow pans in a second or two, but what with the resistance caused by the motion of the fat globules and the different currents due to the cooling of the milk, the gravity process of creaming is slow.

I do not advocate the use of shallow pans only in cases where one or two cows are kept, or in the spring and fall when the ice supply has given out. Strain the milk into the pans as soon as possible after milking, using a fine wire strainer with two or three thicknesses of cheese cloth fastened over the bottom with a tin hoop, so as to be easily and quickly removed—for the cloth must be taken off and washed and scalded each time after using. Keep the milk in a cool, well-aired room, free from odors. The great objection to the pans is the large surface of milk exposed to the atmosphere; therefore, the air must be pure or the cream will be "off" in flavor. Nothing more readily absorbs odors than milk. Avoid having a draft directly over the pans, as it forms a hard, leathery crust on the cream, due to evaporation.

The milk should stand twenty-four hours in summer, and from thirty-six to forty-eight hours in winter—always skimming before the milk thickens. Do not use the old-fashioned perforated skimmer to remove the cream—the following method is by far the most economical: Run a thin-bladed knife around the edge of the cream, pressing well to the sides of the pan; set the pan on the edge of the cream can, tilt it sufficiently to allow a little of

the milk to run over, holding back the cream with the knife (this is done to wet the edge of the pan to prevent the cream from sticking), then, with the aid of the knife swiftly glide the cream into the can. Considerable milk may seem to go with it, but the cream is so thick the milk does no harm.

Where ice can be procured, or where there is a real cold spring, the deep pans are a great improvement over the shallow pans. You may use a cabinet creamer or an ordinary box or barrel. The only essentials are to keep it sweet and clean (avoid spilling milk in or around it), and use plenty of ice—it takes less by keeping the water always cold.

Strain the milk into the cans as soon as drawn, place the cans immediately in the water. To obtain the best results, the milk should be quickly cooled to 45 degrees or below. When the milk has cooled, it is well to cover the cans. Avoid disturbing the milk while the cream is rising. A can with a tap to draw off the skim milk should have a bottom with a three- or four-inch slant. This carries away any sediment and allows more skim milk to be drawn off. When there is no tap, use a funnel-shaped dipper, with no wire around the rim, and a long, straight handle. Wet the dipper in milk or water, lower it point first into the cream, allowing the cream to flow evenly into the dipper. Repeat until all the cream is removed.

There are on the market several kinds of creamers where water is to be added to the milk to assist in the creaming. I have tried some of these, and cannot recommend them, as the results were not at all satisfactory, the test of the skim milk showing a heavy loss of butter-fat.

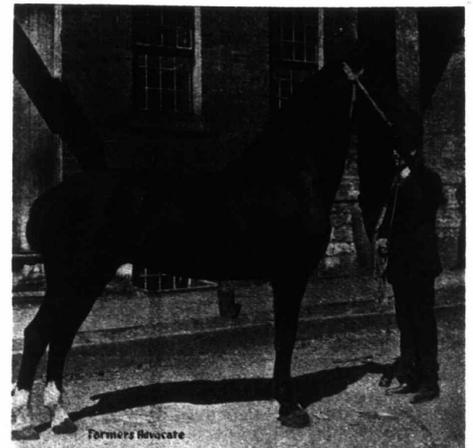
And now I have come to the ideal method of getting the cream from the milk—the cream separator. Before you have hardly read the words, I fancy you are saying, "Too expensive; can't afford one!" They are expensive—cost \$75.00 and upwards—but from my own observations and the testimony of many who have invested in a separator, a machine will pay for itself in a year's time where a herd of twelve cows is kept. So many farmers have told me they average one pound of butter more a week from each cow after getting a separator.

A separator, if properly handled, should mean more butter, better butter, more money, better young stock, and less labor, especially for the women. The skimming and washing of endless cans or pans, and the warming up of the milk for the calves is done away with—the cream only has to be cared for.

In buying a separator, get a good reliable make, one that is strong and simple in construction, will put through a fair amount of milk in a given time, and do close skimming, not hard to clean, and, above all, easy to run, especially if it be a hand machine.

Skill and care should be constantly exercised to avoid unsuspected losses in creaming. If possible, have the skim milk tested occasionally to see the kind of work you are doing, no matter if you are using the shallow pans, deep cans or separator.

Little leakages silently run away with the profits.



CASSANDRA.

Hackney mare. First prize as suitable for artillery purposes. BRED AND OWNED BY R. BEITH, M. P., BOWMANVILLE, ONT.

The Aquatic Cream Separator.

At a New York State Farmers' Institute meeting, in answer to a question as to whether the Aquatic (or dilution) separator was as good as centrifugal separators, Mr. Cook, one of the speakers, said: "As for the so-called 'Aquatic' separator, I am going to say that it is an unmitigated fraud and a deception of the first water. I have repeatedly tested the skim milk from them and have found from 4 per cent. to 1 per cent. fat. Prof. Wing, at Cornell, made exhaustive tests from a number of them and obtained just about the results I did. No, it is no separator at all, but to catch the dairyman who neither attends Institutes nor reads agricultural or dairy papers of respectability, the fakirs who make and sell them adopted the name of separator. The whole brood, with their aquatic humbug, ought to be piled up with the so-called 'airblast' churn 'and blown out of sight with dynamite.' Don't buy them."

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Cheesemaking.

(Continued from page 230.)

THE REMEDY FOR TOO MUCH ACIDITY.

The acid comes from the whey in the curd, not that outside of it. Where the milk is very ripe, use more rennet and cut finer. In this way we can get the moisture out of the curds faster. If we can get the whey out before the acid develops, the cheese will be all right, but the yield from the milk will not be so great. Draw the whey down early and add warm water. Do not cook the curd from over-ripe milk any higher, as there will be more tendency to mat, and the whey be prevented from getting away. Mr. Publow claimed to have made cheese from milk that actually tasted sour, and the quality was all right; but he did not care to handle such milk on account of the loss in yield. A sour curd should be allowed to mat early. Mill early and add water at 108° to 110° to bring the curd up to 100°. In this way he could take the curd from sour milk and sweeten it. Of course, this plan would not answer if the water was not good. In cases of the early matting and milling, do not let the curd mat again so as to need milling the second time. Cheese from "washed" curds should be salted a little higher on account of the moisture on the particles of curd.

PASTEURIZING.

Objectionable feed flavors could be remedied by pasteurizing. If such milk were taken in, it could be run into a small vat, pasteurized by heating to 100°, stirred for a time and cooled before putting in the vat with the rest of the milk to be made up into cheese. If the curd is well cooked, the objectionable food flavors might cure off. If the acid is developed early in them, there is no chance for the flavor to pass off, and the cheese would not improve with age, as they would do if allowed less acid.

On the whole, the worst fault in the eastern section with the cheese, in his opinion, was the off flavor. This might be caused by rennet, water, salt, or the starter used. If these were all right, it must either be in the milk or the surroundings of the factory, and the maker should trace the trouble to its source. To a fully educated maker, most milk would show some trace of objectionable flavor. To prevent this objectionable flavor developing, we should get the lactic acid fermentation well advanced. If a maker was troubled with tainted curd or pin-hole curd, a starter should invariably be used. This is better than ripening the milk, which some advocate. In ripening the milk, butter-fat was lost that might be retained in the cheese. The taints might increase faster than the lactic acid. He had noticed cases where milk had set for 2 or 3 hours at 86° and did not show any more lactic acid by the rennet test. If such milk had had a two per cent. lactic acid starter added it would have been far better. If a cheesemaker does not understand its nature, a starter is a dangerous thing to use, but it would prove invaluable to the judicious maker. To make a starter, take good clean fresh milk, pasteurize it at 160° and hold it at that temperature from one-half hour to an hour, air it by pouring or dipping, put it in a self-sealer at a temperature of 80°. In from 24 to 36 hours it should curdle. If it makes a nice smooth curd, has a pleasant smell and no gas bubbles are perceptible, it can be used to start a batch of pasteurized milk. Add one per cent. of the starter that has been ripened in the self-sealer, have the temperature of the pasteurized milk about 70 degrees. When it gets perceptibly sour, cool it to 60 degrees or below. Cooling it in this way would prevent the starter getting lumpy. Some makers dilute it with water, which answers the same purpose, but it is better to cool the starter. If water is added, its quality should be above suspicion, as otherwise it might taint the starter. In using this starter in cheesemaking, one to two per cent. would usually be necessary, but if the milk is very gassy it will be better to use as much as three or four per cent. Do not use enough to make the milk work very fast. Milk ripened with a starter would always show more acidity than where no starter is used; consequently, do not ripen it down so low. The lactic acid germs introduced in the medium of a good starter will overcome taints, as more than one fermentation does not usually take place in milk at one time. A bad starter will spoil the best milk. As soon as the starter begins to go off flavor make a new batch. If milk arrived at a factory over-ripe, it was a certain indication that it was kept at too high a temperature, and the patrons should be advised to cool their milk, either by means of cold water or ice. Keeping it in smaller quantities would help where the weather was cool, but if the temperature of the night air did not fall below 80 degrees, it would be necessary to cool the milk considerably below the temperature of the air. Kept at 60 degrees, the milk arrived at the factory in far better condition, the cheesemaker could then control the fermentation and could make a finer quality of cheese and larger quantity. Aeration of milk is of benefit to take off food taints and for cooling when the weather was cool.

SPECIFIC POINTS.

Patrons a long way from the factory were obliged to take better care of their milk than the average patron. To protect milk from rain, use a covered milk stand. Every sugarmaker knew a good quality of sugar could not be made from sap that had been diluted with rain water, and it is reasonable to suppose that the more delicate and highly organized milk would suffer greater injury

after the cans had been rained into. If the aeration of milk could not be carried on where the atmosphere was perfectly pure and where no dust could get into it, he would advise letting your milk go without aeration, and cooling it thoroughly by means of water or ice. In answer to a question about payment by test, Mr. Publow stated that seven factories in the district in which he inspected paid by test, and that the yield of cheese per hundred pounds of milk was higher in these factories than in the surrounding factories where the test was not used. Asked how long a composite sample could be kept in good condition, he stated that he had known of them being kept for three months. Factories paying by test, test once or twice a month. If only once a month, it is necessary to have a cool place in which to keep the samples. One factory that had undertaken the payment by test had abandoned it, but this season was going back to the payment by Babcock test.

Asked how much milk should be taken to make a pound of cheese, Mr. Publow answered that it depended on the richness of the milk, as well as the manner that it had been cared for, and the skill of the cheesemaker. In the factories visited by him it required about 10½ lbs. of milk to make a pound of cheese, taking the average of the whole season. It depended very much upon the condition in which the milk came to the factory, its richness in fat and the way the milk was treated. Time and time again in the Dairy School he had made the following experiment: In a small vat 700 lbs. of milk was placed, after the whey was off the curd was divided into two equal quantities, one-half was sheepskinned down and the other was milled early. He always found that he made from one-half to a pound more cheese out of the half that was "sheepskinned," or piled high, than where the curd was milled early. This might appear at first sight to be a small matter, but it made a difference of one-quarter of a cent per pound in the price of the cheese. The trouble was that too often the milk came in in such condition that it would not stand high piling, and it was necessary to handle it in such a way that the maximum amount of cheese could not be made.

into the center of the milk. After adding the acid, this is carefully mixed with the milk by giving the test bottle a rotatory motion. When once begun, the mixing should be continued until completed, and care should be taken not to allow particles of curd to enter the neck of the bottle. The chemical action causes the mixture to become hot. After the milk and the acid have been completely mixed, the test bottle is at once placed in the centrifugal machine, or tester, and whirled for four or five minutes at a speed of 600 to 1200 revolutions per minute, the proper speed being determined by the diameter of the tester. This will bring the fat to the surface of the liquid in the body of the bottle. Hot water is now added by means of a pipette or some special device until the bottles are filled up to the beginning of the neck. The bottles are then whirled again at full speed for one minute, and hot water added a second time until the lower part of the column of fat comes within the graduated scale on the neck of the bottle. A final whirling for one minute completes the separation of the fat. The amount of fat in the neck of the bottle is measured by the scale or graduations on the neck. Each division of the scale represents two-tenths of one per cent. of fat, and the space which the fat occupies shows the per cent. of butter-fat contained in the sample tested. The fat obtained should form a clear yellowish liquid distinctly separated from the acid solution beneath it. The bottles should be kept warm until the readings are made. We have given the general system of testing milk with the Babcock test. There are a number of conditions and details to be observed, and which will be acquired by practice. Full directions, with cuts of apparatus, etc., are given in "Testing Milk and its Products," by Farrington and Woll; price \$1 at this office. We supply the book for two new subscribers at \$1 each.]

GARDEN AND ORCHARD.

Hints for Intending Planters.

Those excellent farmers who have in the past set out a few fruit trees, vines and plants, have, as a rule, not done so with the commercial aspect as the primary object. Although they usually have a pleasing surplus in the way of yield, and the receipts from the sale of the same have been most satisfactory, still the object in the outset was to have an abundant supply of good fresh fruit to tempt the appetite and promote happiness and health of members of the family. And there is nothing that will go so far toward bringing about both as an abundance of our domestic fruits. Throughout our country there are thousands of farmers who have not as yet started this little fruit garden, and to those we would say, "Begin this spring." No doubt many will make their first plantings this season, and to those this short article is written.

In the outset, be very careful what you are buying and with whom you are dealing. This is an age of slick, glib-tongued nursery agents and of nursery frauds. Having spent some time in both nursery and nursery offices, I feel satisfied that there is much roguery in the nursery business. However, there are some honest nurserymen. This is the time of the year when nurserymen have a lot of surplus stock to work off their hands, and the agents are supposed to resort to all honest methods for doing it. Often a cash prize is given to the agent that can work off the most of it. This the proprietor will give besides the regular commission. In the majority of instances this surplus stock is made up of varieties with which the farmer who is planting lightly—simply for his own use—should have nothing to do. It will be found that they are either very poor bearers, that they do not come into bearing until they are "old enough to vote," or else, no matter how nice in appearance the fruit may be, it is of a decidedly poor flavor. These facts the fruit-grower has learned by dear experience, and orders lightly of them, and, as a consequence, the nurseryman must get rid of them where he can. Then there is that surplus stock of *frauds* pure and simple. Under this head comes the Russian apricot, mulberry, Prunus Simoni and curculio-proof plums, and curl-leaf-proof peaches. What glowing word-pictures nursery agents have painted of these in the past, and will again in the future, to unsuspecting purchasers. Then, again, there is always a stock to dispose of, made up of trees and plants of small growth. These, many agents will tell you, are just as good as a first-class tree, and that in two years no difference would be seen. If the agent is very anxious to dispose of these at a figure much below the cost of first-class stock, rest assured that you do not want them at any price, for they will prove to be worthless, stunted samples, having few or no roots and fit only for the brush-heap. There is a grade of trees sold as "seconds" by some nurserymen that I would as soon have as the "firsts," but these trees can be readily distinguished from the stunted stock, and, as a rule, agents do not try to almost give them away.

What the farmer wants is varieties that are from moderate to heavy bearers of fruit of fair to good size, of excellent quality, and that come into bearing at an early age. In small fruits: In currants we cannot beat Black Naples and Cherry (red). Raspberries—Cuthbert, Shaffer, Gregg, Souhegan and Kittatinny. Grapes—Morden, Rog. No. 9, Rog. No. 15, Concord and Niagara. In larger



IMP. MARS [275].

First-prize 3-year-old Shire stallion.

OWNED BY MORRIS, STONE & WELLINGTON, Fonthill, Ont.

Patrons would find that by taking better care of their milk a finer article of cheese could be made, and a much better yield secured.

The Babcock Test.

J. C. Huron Co., Ont.:—"Will you in the columns of your valuable paper publish full directions for using the Babcock milk tester?"

[The Babcock test is founded on the fact that the strong sulphuric acid will dissolve all non-fatty solid constituents of milk and other dairy products, and will set free the fat. To conduct the test, one requires a Babcock outfit, consisting of a graduated test bottle, a 17.6 cc. pipette, a 17.5 cc. acid cylinder, and the centrifugal machine. The sample to be tested is first mixed by pouring the milk from one vessel to another two or three times, so that every portion thereof will contain a uniform amount of butter-fat. The measuring pipette, which has a capacity of 17.6 cubic centimeters, is filled with milk by sucking the milk into it until it rises a little above the mark around the stem of the pipette; the forefinger is then quickly placed over the upper end before the milk runs down below the mark. By loosening a little the pressure of the finger on the end of the pipette, the milk is now allowed to run down until it just reaches the mark on the stem. The point of the pipette is now placed in the neck of a Babcock test bottle, and the milk is allowed to flow down the inside of the neck. Care must be taken not to lose any of the milk in the transfer. The test bottle and the pipette should each be held at an angle during the pouring, so as to avoid an overflow of milk from the pressure of air from inside the test bottle. The acid cylinder is now filled to the 17.5 cc. mark with sulphuric acid, of a specific gravity of 1.82-1.83. This amount of acid is carefully poured into the test bottle containing the milk. In adding the acid, the test bottle is conveniently held at an angle so that the acid will follow the wall of the bottle, and not run in a small stream

fruits: For cherries take Early Richmond, Elkhorn, Black Tartarian. Plums—Canada Orleans, Lombard, Washington, Reine Claude, Bradshaw and the Gages. In peaches—Yellow St. John, Barnard, Garfield, Elberta and Smock; one might plant a couple of trees of Alexander and Hates Early. For pears—Duchess, Louise Bonne, Bartlett, Anjou and Clapp's Favorite. Any of the named varieties of the different fruits would give satisfaction.

In planting stock, be sure and trim back the branches, cutting off at least two-thirds of the growth. It is a severe check on the roots to be torn from their union with the soil, and to meet this we must cut back the top growth. Then the roots and rootlets are always more or less broken. In selecting a situation, a fairly good soil should be chosen—and never set trees in a low, wet place. Wet, sour soil is death to any kind of fruit plants. Exercise care in planting, and give careful attention and cultivation thereafter, and your efforts will be met with success. JOHN B. PETTIT. Wentworth Co., Ont.

The Gladiolus.

BY FLORIST.

The average farmer does not, as a rule, believe in spending much time in propagating or cultivating the beautiful flowers. He looks upon them as a sort of luxury with which he cannot find time to meddle, and although he enjoys seeing a beautiful bouquet adorn his table, he does not appreciate them enough to take part in the labor necessary to bring them to perfection. As a consequence the work of preparing the flower beds and propagating and cultivating the plants falls to the lot of the wife or other female members of the family. Few are the farmers' wives who find any great amount of time for such labor, and as a rule they have to snatch every little opportunity to make use of the spade and rake; in fact, engage in work which is too heavy for them, and at times when they are already almost exhausted from their household tasks, and should be resting before starting other duties. Under such circumstances women generally try to select such flowers as will give the nicest bloom for the least amount of labor. There is nothing in Flora's kingdom so easy of culture as bulbous flowers. That round of planting tiny seeds, thinning out, transplanting and replanting does not have to be gone through with to bring about the desired results, but once carefully set and a little care after will bring satisfaction in the way of bloom.

Chief among the summer-flowering bulbs is the gladiolus. It is the summer flower for the masses. From its great richness and brilliancy of color, of almost every shade, it is one of the most beautiful and striking flowers in cultivation, and is every year becoming more popular, and as the newer varieties are better known, no lover of flowers will be without them. They embrace great variety, both early and late, and as a consequence the flowering season extends over a great part of the year, from June to November. They are easily grown, any fair soil will be suitable, and the conditions must be extremely unfavorable under which the gladiolus will not thrive. While the gladiolus will thrive in almost any soil and bloom under adverse conditions, it is like all other plants in that it will give the greater satisfaction for extra care given it. For best results, it should be planted in a sunny situation, in soil that is quite rich, and worked mellow as deep as can be done with the spade. The richer the soil the larger will be the spike, flowers and bulbs, and it also deepens the colors. Gladioli thrive best when kept well supplied with moisture, consequently should be well cultivated so as much moisture as possible may be kept in the soil.

Gladioli may be planted in clumps, in solid beds or in long rows, and the depth to be set depends upon the nature of the soil. If the soil be heavy, three inches from top of bulb to surface of soil is quite sufficient; while if the soil is very light, six inches is none too much. When planting in rows, open a trench the desired depth, place the bulbs root side down, about three inches apart, then carefully draw the soil back into the trench, covering up the bulbs. When doing this, care must be taken not to allow any lumps to rest upon the crown of the bulbs, as it would cause the stalk to shoot out to the side of the row in the way of cultivation. If to be planted irregularly, use a trowel and make a hole large enough to allow the bulb to go to the required depth, and be sure the bottom rests upon the soil under before covering, and never allow any manure to lie in contact with the bulb, as it is almost sure to cause it to rot. In this case plant from four to six inches apart. Gladioli may be planted as soon as the ground can be worked in the spring. They come into bloom between two and three months after planting, much depending upon the nature of the season. It is a good plan to make three or four plantings, at intervals of about two weeks.

If desired, the spikes may be cut as soon as the first flower at the bottom is fully expanded, and put in a pot of fresh water. In this way every bud will open out perfectly, and sometimes a single spike of bloom will last nearly two weeks. Change the water and break off withered flowers every second day. A very pleasing experiment is to place a spike of white bloom in a bottle of ink, or in a bowl in which has been dissolved a part of a package of dye of any shade. As intimated before, the gladiolus loves moisture, and where only a few are grown it would pay to water liberally, but keep the ground loose. Neat stakes might also be used where but a few are grown, to keep the spikes from being

blown over and ruined by the wind and rains. Before hard freezing in the fall the bulbs should be lifted, the soil shaken off the roots, and the top cut off close to the bulb. They should then be put in some open shed, away from frosts, to dry for a few weeks. Then pull off the roots and old corm and place in thin layers in any receptacle, and store in a cool, dry place where they are sure to be free from frost, and keep for replanting the next spring.

There are hundreds of named varieties of gladioli, many of which are extremely beautiful. There are also many mixtures sent out by reliable growers and dealers which give entire satisfaction. The general public would probably feel better satisfied with these mixtures than with the named varieties, which are often quite expensive. However, there is nothing like having the best.

Orchard Culture.

BY G. C. CASTON.

PRUNING.

The pruning of fruit trees is a subject about

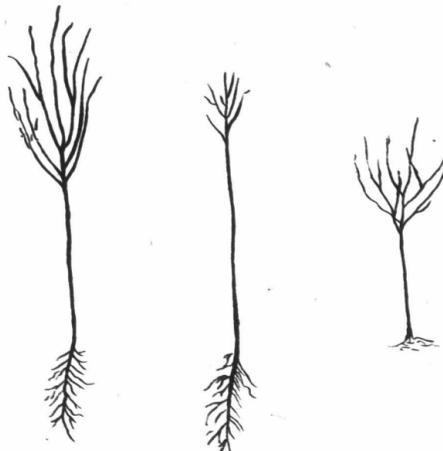


FIG. 1 Nursery tree. FIG. 2 Pruned ready for planting. FIG. 3 Form of head 1 or 2 years after planting

which there is some controversy and difference of opinion as to how to do it and when to do it? The main objects in pruning is to keep the tree in proper shape and symmetry, and keep the top open to the sun and air. The practice of shortening in, to form a compact head with strong limbs, is used mostly with plums, pears and peaches. This system is seldom used with apples. The proper way to prune a tree is to begin when the tree is planted, and follow it up every year as the tree grows, using good judgment in shaping the top, keeping it in proper shape, removing the surplus wood a little every year, so that there will be no need of cutting out large limbs as the tree grows older. As orchards require cultivation in order to do well, the heads of the trees should be kept well up, and the time to do this is when they are young, cutting out

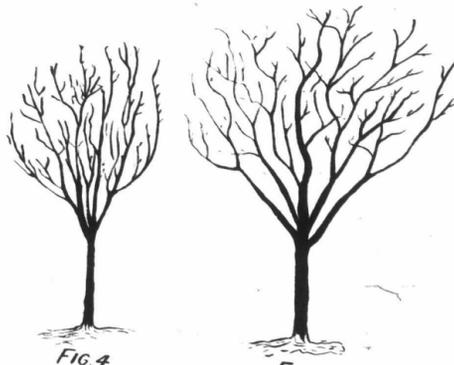


FIG. 4 As it should be 4 or 5 years after planting. FIG. 5 Bearing age of average tree.

limbs that are inclined to droop. There is little danger of getting the heads too high, as they will come down low enough when loaded with fruit. A tree should be pruned so that the fruit is distributed as evenly as possible all over the tree. Some of the so-called professional pruners begin at the base of the limb and strip it out nearly to the end, leaving only a wisp of brush at the outer end. The upper surface of the bark is exposed to the hot rays of the sun, and the limb resembles a cow's tail more than anything else. This is a detestable practice. It is not pruning, it is spoilation. As to the time of year, I prefer to prune after growth has started. I do not approve of pruning when the wood is frozen; that is positively injurious. Where a large amount of pruning has to be done, it is a difficult matter to get it all done just at the right time, but for my own satisfaction I have made experiments in pruning at different seasons of the year, and have found the

best results from pruning early in June. Wounds made by pruning at that time will never bleed, and will immediately begin to heal around the edges, and by the end of the season will have made considerable progress in healing. Wherever it is necessary to remove a good-sized limb, the wounds should be kept covered with grafting-wax to exclude the air and prevent exposure to the weather while the healing process is going on. With attention to annual pruning and the exercise of good judgment, it will seldom be necessary to remove large limbs. The cutting out of large limbs should be avoided as much as possible. Some varieties that are of an open, spreading habit of growth, such as Duchess or Talman Sweet, require very little pruning, while others, such as Spy and Russet, require considerable thinning. There is no more pleasing sight to the eye of the experienced fruit-grower than a symmetrical, well-pruned tree; and no one should undertake the work without a proper knowledge of the ideal aimed at, and the results sought to be obtained by the operation. In addition to a good pruning saw and pair of pruning shears, a folding stepladder should be provided, and most of the work should be done from the ladder. A man should not be allowed to get up in a tree with a pair of thick-soled boots on; he should have rubbers or shoe-packs for that purpose, more especially if summer pruning is done. And here, in closing the subject of pruning, let me summarize a few of the main points: Begin when planting the tree, and cut the top back sufficient to balance the roots; afterwards, a little every year. In spreading habits of growth, prune to direct an upward growth and keep the tops well up. Keep the tree in proper symmetry; keep the top open sufficiently to the sun and air, but don't cut out all the center and leave the limbs exposed to the sun. Have the foliage and fruit evenly distributed over the tree. Fruit will lack flavor if not well colored. To get full color and perfect flavor, it must have air and sunshine. Plums and other fruits that are inclined to load heavily, require to be shortened in to form a compact head and strong limbs to carry the load, but the tops should not be too close. Finally, get the right idea of the object in view, the why and wherefore, then use good judgment and do it right.

Scale Insects: Aphis.—Though the dreaded San José scale is believed to be confined as yet in this Province, to a limited area of Southern Ontario—and let us hope it may spread no farther—yet we have another scale insect common to the whole Province that does considerable injury to apple trees, often, where not attended to, stunting the growth of the trees. This is the *Oyster-shell Bark Louse*. The young lice may be seen coming from under the shell about the first week of June and spreading over the bark and up on the new growth of the terminal limbs. They insert their tiny bills and suck the juices of the bark; finally they form a scale-covering over their bodies, in shape like an oyster shell, and from this shell a large brood issues the following year. They differ from the San José scale, in that they are not nearly so prolific. The female lays eggs from which the young are produced, while the San José produces living young. The oyster-shell louse is found plentifully on the trunks of young trees, and on older trees they spread out on the smaller branches. A good strong alkali wash will remove them from the trunks and lower limbs wherever they can be reached with a broom. The best thing I have tried is lye made from hardwood ashes. Take lye that will float a potato, and dilute with water till the potato sinks. This will do for large trees; for young trees, dilute a little more. Use a birch broom and dip it in the lye and scrub the trunks and limbs. This gives the bark a smooth, healthy appearance, and removes the bark lice and other insects and prevents the borers from depositing their eggs in the bark. These usually deposit their eggs in the bark near the ground about the first week in June, and a timely application of the alkali wash is one of the best preventives of this troublesome insect. Prof. Macoun, of the Ottawa Experimental Farm, reports having been entirely successful in removing the oyster-shell louse from the branches and twigs of the apple trees, where they cannot be got at with the broom, by spraying the tree tops in early spring with whitewash.

The Aphides.—Small green and black lice that are found on the under surface of the leaves of the terminal growths about midsummer. They often do serious damage, more particularly to plums and cherries, but are often found plentifully on young apple trees. As they are suckling insects, they must be treated with something that will kill them by contact, such as whale-oil soap or kerosene emulsion applied with a spray-pump. The best time to deal with them is when they are hatching out in the early summer. The eggs are laid in the crotches of the small twigs, and it is easier to destroy them then than when they have spread to the leaves. The Spramotor Co., of London, Ont., have perfected an attachment to their pumps that mixes the kerosene with the water, makes the emulsion, and applies it at the same time. The percentage of kerosene can be controlled by means of a gauge. This apparatus simplifies the work of making and applying kerosene emulsion.

And now, in closing the subject of orchard culture, I hope I have not written in vain, but that what I have written will be useful to someone, and that to some extent, at least, it may result in better care, better cultivation, and if so, better results are sure to follow. I have endeavored to point out what I believe to be the chief causes of unproductive or-

MAY 1... chards, a... pose in a... packing... chard pr... Simcoe... The g... and is of... part of... bringing... pleasure... "truck... town, or... a myste... folks int... very ow... have a f... —a few... colored... that chil... crave, an... for maki... enough... flowers... helping... daughte... hoeing... hard wo... taking... send his... the gard... respond... no time... garden... radishes... planted... Beans, I... planted... oughly... beans, e... single-h... I plow t... makes a... way acr... path, w... about fi... rows, e... double... the Cha... fat, and... grades... scribed... one—an... from the... gro... used. V... that ev... narrow... (the po... cumbr... parsnip... turnips... toes ar... field... holder... to inter... sure to... Prof... Experi... results... varied... disease... scab... The... gations... seed f... germs... The... reached... Of... "Early... Scars... at leas... On... bushel... on an... of sca... The s... forme... severa... the p... correc... first... as in... tablis... inated... it wil... clean... Ex... made... limat... acid... sulph... creoli... the p... redu... suffi... venti... rolled... be ap... Th... in so...

chards, and indicated the proper treatment. I propose in a future issue to deal with the questions of packing, transportation and marketing of our orchard products.
Simcoe Co., Ont.

The Farm Garden.

BY GEORGE C. LLOYD.

The garden is the most valuable part of the farm and is often the most neglected. There is no other part of the farm that yields such quick returns, bringing such an abundance of good health and pleasure, and why a farmer should neglect his "truck patch" and buy his neighbor's or buy in town, or, too often, go without, has always been a mystery to me. By all means get the little folks interested in it, give them a bed for their very own and help them to arrange it. Let them have a few onion sets—the largest ones in the sack—a few peas, some radish seed, and a few bright-colored beans. Peas, onions and radishes are things that children—and old folks, too, for that matter—crave, and too often are the little darlings scolded for making a raid upon them before they are large enough to pull. Give the children a few bright flowers to tend, and they will lend you many a helping hand in return. The wife and grown-up daughters can do wonders in weeding and light hoeing. It won't hurt them a bit. If there is any hard work to do, instead of the man of the house taking a whole day off to go to town, let him send his wife or some of the young folks and give the garden a few extra licks, and the way it will respond will surely surprise you. There can be no time set down when to begin work in the garden, as localities and seasons differ. Peas, radishes, onions, lettuce, parsnips, etc., should be planted as soon as the ground can be worked. Beans, beets, and all tender plants should not be planted until the air and ground become thoroughly warm. I like to plant melons, cucumbers, beans, etc., in rows, so I can cultivate them with a single-horse double shovel. For onions, beets, etc., I plow the land into beds about six feet wide. This makes a handy bed to weed, as you can reach half way across on each side and throw the weeds in the path, where the sun soon finishes them. Plant rows about fifteen inches apart. I plant peas in double rows, eight inches apart, and five feet between double rows. I have long discarded all peas but the Champion of England, the Black-eyed Marrow-fat, and the Prize Taker. These are the three grandest peas planted. Plant them as above described and stick them with brush—two rows in one—and it is a pleasure to pick them. Stick them when from four to six inches high, after a rain while the ground is soft. Brush five feet long should be used. What the garden should contain is a question that every one must decide for himself. I have narrowed the list down to the following: Beans (the pole variety) I plant in corn, beets, cabbage, cucumbers, carrots, lettuce, melons, onions, peas, parsnips, peppers, radishes, salsify, tomatoes, and turnips. Sweet corn, pumpkins, squash, and potatoes are planted in patches by themselves in the field. A berry patch is indispensable to the freeholder, but it is almost a waste of time for a renter to interest himself in one, as someone else is pretty sure to reap the harvest.—*Homestead.*

Scab of Potatoes.

Prof. B. D. Halsted, Botanist at the New Jersey Experimental Station, has recently published the results of his six years' painstaking and ingeniously varied experiments on the destructive but obscure disease of potatoes, radish and beets known as scab.

The experiments covered a wide range of investigations, including susceptibility of different varieties, seed fungicides, soil fungicides, longevity of the germs, and methods of inoculation.

The following is a brief summary of the results reached:

Of seven standard varieties of potatoes tested, "Early Rose" was the most susceptible to scab.

Scab germs retain their vitality in the soil for at least six years.

On one experiment plot—11 by 16½ feet—one bushel of scabby potatoes was spaded into the soil; on another plot the manure from feeding a bushel of scabby potatoes to young cattle was spread. The scabiness was many times as great in the former plot as in the latter. These are typical of several experiments on soil infection; and while the particular results varied, it is not far from the correct to say that the scabiness in plots of the first class was eight to twelve times as serious as in those of the latter class. It was clearly established that uninfested soil can be readily contaminated by planting scabby potatoes in it, and that it will retain for years its liability to inoculate clean seed.

Experiments to kill the germs in the soil were made with lime, gas-lime, kainit, corrosive sublimate, sulphur, Bordeaux mixture, cupram, oxalic acid, sulphate of ammonium, bisulphide of carbon, sulphide of ammonium, sulphuric acid, coal oil, creolin, formal, and benzine. Lime seemed to make the potatoes more scabby; corrosive sublimate reduced the disease. Sulphur alone yielded results sufficient to warrant its recommendation as a preventive of scab. The freshly-cut seed should be rolled in sulphur powder, and 300 lbs. per acre may be applied in the open row.

The washing or soaking of scabby seed potatoes in solution of corrosive sublimate has been the

remedy advised of late years. Prof. Halsted reports that such treatment has not proved of much practical value when potatoes were planted in scab-infested fields.
J. D.

Why Not Improve Your Home Grounds This Spring?

BY THE SECRETARY MINN. STATE FORESTRY ASS'N.

There are few persons who do not appreciate the beauties of nature, more or less; few who can withstand the attractions of a good and beautiful home. As a duty of every citizen, not only to himself and family, but all who come in contact with his influence, he should endeavor to make his home what a true home should be, a place where contentment reigns supreme. In no way can a place be made more attractive in appearance or be enhanced more in value than by the expenditure of a little time (not always money) in endeavoring to beautify it by taking advantage of nature. Tastes differ; no two of us are alike. But by going at it with a little interest in the work, and possibly a good suggestion from some older or more enthusiastic head, you will count it a pleasure every time you have occasion to look upon the effort put forth. If a thing is worth doing it is worth doing well, and hence, before starting in a haphazard manner, study the question a little. What trees, vines, shrubs, etc., will do best here or there, and also give the most pleasing results? Figure on room enough, for they will be large some day. There are few places that cannot be touched up some, and many that will stand considerable, and now is the time to plan on it. Improvements of this nature have a great deal to do with the prosperity of any place. The value of surrounding trees, etc., effects not only their local position and neighborhood, but all who come in contact with their influence. Hence we might say they are public property, or should be regarded as such.

You cannot begin too soon to plan on decorating your home grounds. Try it and see if this does not increase the interest in your home, in your neighbor's home, in the welfare of the community in general. Having that spirit at heart, success cannot but favor your efforts, "for in unity there is strength."

Testing the Bordeaux Mixture.

SIR.—In the last issue of the ADVOCATE, Prof. Sears points out an error in my article on spraying, in reference to testing the Bordeaux mixture. It should have been ferrocyanide of potassium. It was an oversight on my part. As it is a pretty long name, I have been in the habit of referring to it as the cyanide test, to make it short. We might call it yellow prussiate of potash, which is the same thing, but does not make it any shorter. Perhaps the latter would be a better name to use, as there would be less danger of making a mistake. Cyanide of potassium is a combination of cyanogen and potassium, while ferrocyanide of potassium, or yellow prussiate of potash, is a combination of cyanogen, potassium and iron. I strongly advise using this test for Bordeaux mixture, and thank the Professor for calling attention to the mistake, or, rather, omission, in the article referred to.
Simcoe Co., Ont. G. C. CASTON.

ENTOMOLOGY

Entomology to the Agriculturist.

A meeting of Territorial farmers was held in Archer's Hall, Innisfail, Alta., on April 4th, for the purpose of exchanging experiences concerning insects that have been troublesome in 1899, and, by invitation of the Innisfail Agricultural Society, to hear an address from Percy B. Gregson, president of the Northwest Entomological Society, on "Pernicious Insects."

All injuries by insects conform with certain fixed rules, and depend upon the structure of the mouths of the insects, which are all made upon one or other of two plans. They are either in the shape of jaws which nip the food, or in the form of a hollow tube, by which the juice, or blood, is sucked up. If, therefore, we find our potato leaves have portions eaten away, we know that it has been attacked by some insect which nips the food off with jaws, and that some kind of poison must be applied to the food, which the insect will consume with the leaf. So where the attack is made by some insect that sucks, such as plant or animal lice or flies, which pierce their tube through the surface, we know that this requires some remedy which destroys them by contact with their bodies, because they would push their tube through any poison on the food plant without being harmed, and suck from beneath the surface. No insect breathes through its mouth, but through several minute holes, called spiracles, on each side of the abdomen. That is why we apply oil to kill lice on cattle. The oil spreads over and clogs up the breathing holes. Larvæ or grubs, with few exceptions (such as the maggots of bot flies), also breathe through spiracles at the sides.

TREATMENT FOR CUTWORMS.

Bearing these broad principles in mind, let us notice now some of our own familiar insect pests, and see how we ought to do in the way of discovering them, and of "active" and "preventive" remedies. We find one morning our young cabbages and parsnips or onions eaten off at the surface of the ground. The nature of the damage shows the enemy to be a nibbler, and a poison of some kind at once suggests itself to us as the proper thing to give him. Further investigation by scraping in the soil

just around the plant attacked will discover the enemy to be a "cutworm," of which there are several kinds, and as he evidently is very fond of young succulent plants, bundles of some succulent weed, such as "lamb's-quarters," dipped in a strong solution of Paris green (2 ounces to a pailful of water) and placed between the rows of the crop will lure many to their doom. The cutworm is very fond of sweetened bran, so a little Paris green mixed with sweetened bran and laid around or near the cabbages will attract the culprit and destroy him. (Take, say 50 lbs. of bran and slightly moisten it with water and sweeten with a little sugar; then mix well with it 1 lb. of Paris green.) Cutworms do not tunnel from plant to plant, but pass over the surface. They can nearly always in the morning be found just under the soil near the plant they have attacked overnight, and so can be dug out and destroyed. These are what are called "active" remedies—applicable where the damage is in actual progress. Prevention, however, is always better than cure, and so wherever possible we ought to adopt "preventive" measures. Moths are always attracted by vegetation, for they must have somewhere to lay their eggs, and as our common cutworm moth lays its eggs in the fall, the clearing away of all weeds, garden refuse, cabbage stalks, etc., will also clear away those cutworms which hatch in the fall, or else starve them; and will also prevent the late moths from laying their eggs in that locality. Gardens which are allowed to become weedy in the fall are almost certain to be troubled with cutworms in the spring. Our common or garden cutworm is not a climber, so wrapping a piece of paper round the stem of the young cabbage when it is planted out is another preventive measure.

RED TURNIP BEETLE.

Or perhaps on another morning, at the end of July or beginning of August, we find our turnip leaves being eaten by a beetle something like the Colorado potato beetle, but having only three stripes down its back. It is the red turnip beetle. It eats the leaves of our turnips, and therefore is a biter, and should be dealt with as such. Hence, for an active remedy we should place poison on its food by applying Paris green solution (1 lb. to 100 gals. of water), and stir in also 1 lb. of quicklime, or in smaller quantities of ½ ounce of Paris green, ½ ounce of quicklime, and a pailful of water. In mixing Paris green, Dr. Fletcher recommends in his valuable bulletin, No. 11, on "Noxious Insects," that it should just be made into a paste with a small quantity of warm water, and the paste afterwards mixed with the larger amount of water required, and if it does not adhere readily to the leaf, a little soap added to the water will overcome the difficulty. A little investigation around the base of the turnip, under clods, etc., soon after discovery of the beetle, will reveal to us where it lays its eggs, so that a good preventive remedy would be to grow a different crop on the place the next year. Rotation of crops is one of the surest preventive remedies that can be adopted in all cases, because very many insects lay their eggs in the fall in the vicinity of the recent food of the larvæ, and when the larvæ hatch in the early warm days of spring and find either no crop or a strange crop, they will starve.

HESSIAN FLY.

In the Territories, as yet, there is no serious trouble reported as caused by the Hessian fly, but it is an undeviating law that insect pests follow cultivation, so we must not be sure of always escaping. We notice among our ripening wheat, or barley it may be, many stems broken down at a joint, and examining a strand we shall find at the point where it has broken down (usually at the first or second joint), if the Hessian fly larva has been at work, one or two small objects looking like "flax-seeds." This is the chrysalis of the larva of the Hessian fly. In this latitude (with our September frosts) this chrysalis would probably not hatch till the following spring, when the fly would emerge to lay its eggs on the blades of young wheat or barley. The young larva, on hatching from the egg, works its way down the groove of the leaf to the stem, where it remains until the approach of harvest, sucking the juice. In warm climates this fly produces two, or even four, broods during the year. Although after the fly has once attacked the grain there is obviously no way of destroying the larvæ except by also destroying the crop, preventive measures—i. e., to prevent future injury—can at any rate be adopted. I wish to emphasize the great value of warding off an attack of injurious insects by preventing their breeding. There are various ways of doing it. In the case of the Hessian fly, for instance, by a proper attention to the date of sowing wheat or barley, by timing the sowing so that the young blade should not appear till a week or ten days after the fly hatches; for the fly, when it hatches, must soon lay its eggs, and not finding any crop, must go elsewhere. The careful burning of all screenings and other refuse from the threshing mill will destroy large quantities of the "flaxseeds." This refuse should always be burnt, whether there be Hessian fly or not, as it contains many weed seeds. The stubble should also be plowed under, and some crop other than a grain should be grown the following year. Any special wheat that has a natural tendency to stool or throw out lateral shoots is also less apt to be seriously injured by the fly. The fly is like a very small gnat or midge, and if we should notice it flying about our young crop, application of fertilizers so as to produce a strong, healthy growth will enable many a plant to survive and overcome an attack. (TO BE CONTINUED.)

Some Useful Beetles.

BY C. J. S. BETHUNE.

Most people are apt to regard all insects as injurious, or at any rate troublesome, and in consequence to condemn them all, wherever found, to a speedy death. There are really very few, out of the enormous number of species, that are serious enemies and deserving of ruthless destruction. The vast majority are either useful in their own sphere of life, or of no particular benefit or injury as far as the human race is concerned. In the world of nature there is a marvellous system of checks and counterchecks, and in this system insects play a very important part. Vegetation, for instance, if left undisturbed, would become a tangled mass that would choke itself by its own luxuriance, but as every plant has one or more insects that feed upon it, a constant pruning is being effected, and a thinning out is always going on that leaves room for light and air and moisture. To insects, again, is largely due the removal of all dead and decaying animal and vegetable matter, which but for them would accumulate to such a degree as to render life almost impossible. But the insects themselves which are performing these useful duties would increase to such an enormous extent, if let alone, that they would sweep away all vegetation from the face of the earth; accordingly we find that they in turn are restrained from too great a multiplication by birds and beasts which feed upon them, and especially by other insects whose vocation it is to reduce their numbers and keep them within due bounds; these, again, have others to prey upon them, and so it goes on in a wonderful system that maintains a fair balance among all created things.

The farmer and fruit-grower are chiefly concerned with the vegetable-feeding insects, and are not likely to bestow much consideration upon any kinds that do not directly affect their crops, and so it comes to pass that they know little or nothing about some of their best friends. Most of the parasitic insects—that is, those which feed in their maggot or grub state within the living bodies of injurious kinds, such as caterpillars—are very minute, and are not likely to be observed or interfered with, but there are other kinds large enough to be conspicuous which devour grubs, caterpillars or aphides, and help very materially in reducing the numbers of these serious pests. To a few of these we would now draw attention.

In spring and early summer, while the earth is still moist, if a loose stone or log, or bit of board, is turned over there are usually to be seen a number of beetles of different sizes, which rapidly scuttle off in different directions, and speedily get out of sight. Most of these belong to the family of Carnivorous

Ground Beetles (*Carabidae*), which includes an immense number of different species. The majority of them resemble the figure in the margin in shape and general appearance, though they differ much in size and details of structure. Most of them are black or brown in color, some polished and shining, others dull—some few are bright green, others metallic like burnished copper,—all of them may be regarded as useful insects, and friends who deserve our protection. They usually fly about at night in search of food, and devour great quantities of noxious insects; the larger species prey upon cutworms and other caterpillars, the grubs of potato-beetles, etc. In the daytime they hide away as already mentioned. Some kinds are attracted indoors by lights at night; they fly in through the open window or door, and when they drop on the table near the lamp, instantly start off to run with great rapidity in order to effect their escape. Beetles of this description should not be killed; even if they seem to be a nuisance by coming into the house, they will do no harm to either food or furniture, but may devour some really injurious creature. When seen in the fields or garden, or by the wayside, they should not be trodden under foot, as they too often are, but be allowed to go on their way unmolested.

Another beetle belonging to the same family, but differing somewhat in shape from those already referred to, is the large caterpillar-hunter, figured in the margin. It is black in color, with three rows of bright coppery impressed spots on each wing-cover. Its name is *Calosoma calidum*, which means the hot or glowing, beautiful body, so called from its elegant shape and apparently red-hot spots. If taken up in the fingers, it will be found to have a very strong, peculiar and by no means pleasant smell, which probably protects it from being devoured by birds. This insect is a special foe to cutworms and other caterpillars; it goes about at night seeking its food, and is most useful on the farm and in the garden. There are several other species of similar shape and size, but differing in markings; they are not, as a rule, so often met with as the one just referred to, but are equally useful. One very handsome species (*Calosoma scrutator*) is brilliant green in color, with broad coppery-red margin; it feeds upon caterpillars,



Ground Beetle.



Caterpillar Hunter.

climbing trees for the purpose, and is believed to be a special enemy to cutworms in wheat fields and among other crops. Being nocturnal in habits, it is not often seen, but is sometimes found in quantities on the lake shore, where it has been washed up by the waves after being blown off the land in a gale at night.

For these and other useful insects we plead protection, and hope that they will be spared from a pitiless destruction, which dooms to death both friend and foe without discrimination.

APIARY.

Swarming of Bees.

BY M. PETTIT.

One of the necessities of nature is that every living being shall have some power of reproducing its like, in order to preserve the species; and, especially in the insect world, there is a great diversity of ways of attaining this end. In the apiary the individual is the colony rather than the insect. Thus, "increase" signifies an addition to the number of colonies, while the population of each is spoken of as its "strength."

Increase is effected by "swarming." As soon as a colony becomes very strong, queen cells are started in various parts of the hive, and the majority of the inmates "swarm," accompanied by the old queen; this during the months of May, June and July, but chiefly in June.

If permanent increase is not desired, it is advisable to prevent swarming as much as possible, as it involves the loss of much valuable time and the risk of swarms issuing and escaping unobserved. To my knowledge, no method of absolute prevention in profitable beekeeping has been discovered. It may be greatly lessened, however, by studying the requirements of bees and adding as much as possible to their comfort in the hive. See that the workers have plenty of room for stores, that the queen is not crowded in the brood chamber, and that the hive is kept airy and cool. The wedges used in the comb-honey hive, described on page 97, assist much, and should be used on extracting hives also. Apple trees provide excellent shade for hives, as well as low branches for convenient access to swarms which do occur.

A swarm seldom absconds without first alighting on a neighboring tree, shrub or other object. As soon as it has clustered take it down and place in the new hive. A light pole with swarming device attached to the upper end may be held under the cluster, while an assistant gives the limb a sharp jar with another pole having a hook on the end. Continue to jar the limb to prevent the flying bees from relighting, and hold the swarm-taker in the air where the bees are thickest until they are nearly all clustered in it; then carry them to the new hive. Several hives should be kept in readiness for this purpose, with from 6 to 8 frames containing half-inch starters of foundation attached to top bars. The number used should depend on the strength of the swarm and size of frame, the hive being filled out with dummies (boards which take the place of combs). Transfer the sugar from the parent hive, and the new swarm will continue its unfinished work.

It is desirable to strengthen the new swarm at the expense of the parent stock to concentrate forces for work and avoid a second swarm. For this purpose set the new hive on the old stand, and the parent hive immediately behind it. Then the bees which were afield when the swarm issued will naturally enter the new hive on their return. On the 5th or 6th day, at a time of day when bees are flying about most vigorously, remove the parent hive to a new stand at some distance from the old, and clear away all signs of a hive from where it stood. The field bees, returning and finding their home gone, will join the new swarm also. About the 7th day the first queen hatches, and under ordinary circumstances would come out with a second swarm; but, if the parent stock is thus weakened, they will probably have given up all thoughts of swarming again, and she will be allowed to destroy the remaining queens in their cells, or contend in mortal combat with any that may have hatched simultaneously with her. Not much surplus can be expected from such hives; but, having young queens, they make the best colonies for next season. About 27 days after swarming, examine their combs for eggs or brood, to be sure they all have laying queens. This is a point that should not be neglected, as there are many dangers surrounding the young queen before she starts laying. (See F. A., Vol. XXXIV., p. 557.)

The bees understand perfectly that they cannot exist as a colony without a queen, and refuse to remain away from the parent hive unless one goes with them. They swarm and sometimes cluster, or even go straight to the woods, expecting their queen to accompany them; but unless she does so, or some other queen joins them, they always return. Taking advantage of this, many beekeepers obtain an easy method of hiving swarms by clipping one or more of the queen's wings, after she has had her mating flight, so that she cannot fly. A laying queen may be clipped at any time; but it is best to go through the hives in spring to find every queen, and be sure she is clipped. (See Apiary Dept., F. A., Vol. XXXV., p. 135.) It is advisable to clip on the earliest opportunity; i.e., when the day is still and sunny, thermometer at 70° F. in shade, and bees gathering a little pollen and honey. Although

many recommend it, if, where bees have been wintered well, one waited until fruit bloom, the hives would be so full of bees there would be difficulty in finding the queen.

When a colony having a clipped queen starts to swarm, watch for her until she is found either about the entrance or on the ground near by, and cage her. A cage may be made of wire cloth rolled into a cylinder 4 inches long and tacked about a wooden plug at one end. A stopper placed in the other end confines the occupant. Lay the caged queen in the shade of the next hive, and set the hive back immediately behind the old stand. Put the new hive in its place, lay the queen in front of the entrance, transfer the super and adjust cover and alighting board. All this is accomplished while the swarm is in the air. As soon as they discover their loss they come back, usually with a rush, and enter the new hive. When they are going in pretty freely liberate the queen, and she will go in with the rest.

If the swarm clusters on a tree and shows no inclination to return, it may be that a virgin queen has joined them, and they should be hived in the old way.

POULTRY.

Hatching and Rearing Chickens Naturally

At this season of the year the broody hen is welcomed by all poultry-raisers. April and May hatched pullets, if well reared, are almost sure to make good winter layers. After getting the hen, one of the perplexing problems is how best to set her so as to insure a good hatch and also avoid vermin. Wherever possible, set the hen in a pen by herself, or at least away from the other fowls, and avoid setting her anywhere in the henhouse. In this way one can usually keep the hen quiet, and at the same time avoid her becoming infested with vermin from the henhouse.

When it can be so arranged, set three or more hens at the same time. About the tenth day the eggs should be tested, the infertile ones removed. The fertile ones may be put under part of the hens, and the other hens can be either re-set with fresh eggs or broken up.

The nest should be a roomy one. Try to place an inverted sod in the bottom of the nest, hollowing it out a little in the center; then upon this place a few inches of straw, taking care to well fill the corners, or the hen may possibly roll some of the eggs into these places, which will materially injure the hatch. As a preventive of lice, dust the hen well with insect powder and place in the nest camphor balls, tobacco stems or tansy. Any of these substances are a good preventive of vermin. Place a liberal supply of grain in easy access to the hen, as well as good clean water, not omitting to supply some grit and a dust bath.

When hatching begins, it is well, if the hen is quiet, to remove the shells every few hours, taking care not to chill the chicks or the eggs. Do not be in a hurry to remove-biddy and her brood, or yet to give them a feed. It must be borne in mind that just before the chick is hatched the yolk is absorbed into the system and this acts as a food for some hours.

Arrange the coop so as to face the south, and have it well sheltered from cold winds, if possible. Be careful to have the coop airy, but not drafty, and at the same time waterproof. Early in the season a board bottom is a help in keeping the chicks dry and warm, but during the latter part of May or later the mother earth serves as a good bottom. The coop should have a small amount of chaff placed into it. Before removing the chicks from the nest, a portion of food should be put down, as well as a supply of water. Never fail to clean the coop at least twice a week, or if no bottom is in the coop, to move it to fresh land every day or so AFTER THE DEW IS OFF.

The first feed for the little chicks may be either equal proportions of hard-boiled eggs (chopped fine), onion (chopped fine), and bread crumbs, all in equal proportions, or johnnycake (finely crumbled). Usually the former ration gives best results. Feed the ration for the first few days, after which gradually wean to a ration composed of equal proportions of meat, vegetables and grain. Cooked livers (chopped fine) answer well for the meat supply; grain sprouts or root sprouts for the vegetable; and the grain may consist of equal proportions of bran, corn meal and oatmeal. Moisten all slightly with skim milk or boiling water. If grit is not easy of access, it is advisable to add a handful to about a gallon of the feed. Where the chicks have a nice fresh grass range and where there are plenty of insects, the meat and vegetables may be omitted. The water should be so supplied that the chicks cannot get into it. This can be easily accomplished by taking an old corn or tomato can, punching a few holes near the edge; then fill with water and place a saucer over the top. Turn the can over quickly and you have as good a fountain as one would wish. Cracked wheat or wheat screenings may be fed after the tenth day. Give five feeds daily until the chicks are four or five weeks old, when they may be gradually weaned to three feeds per day. Chicks usually thrive better upon ground grain than upon whole grain.

Keep a sharp look-out for lice. If any are seen, dust the chick and hen with insect powder.

When chicks show a greenish discoloration at the back of the abdomen, it may be taken as an indication that there is a lack of meat food.

Poultry Dept., O. A. C.

W. R. GRAHAM.

Planting Fruit Trees in the Poultry Yard.

There are many places on the farm where trees can be planted with advantage, and it is surprising how very slow some are to take advantage of the improvement that can be thus made. All sorts of stock appreciate shade in summer, and the cold blasts of winter are rendered less penetrable when the barns are protected by a substantial row of evergreens. Now that poultry-keeping is receiving increasing attention, the yards where the birds spend their days are, by the wide-awake keepers, made as comfortable as possible to the flocks. During a visit to Dentonia Park farm, near Toronto, where a very large poultry business is in operation, we noticed that the numerous long, narrow yards, extending down a southern incline from the range of houses, were planted with plum trees down the center of each, and grapevines along the wire-fence divisions. Besides plums, apples, cherries, quince, pears or peaches, and even bush fruits, will answer well in districts where they will do well. The shade the trees will provide will more than compensate for the outlay and labor, as the fowls will be healthier, lay more eggs, and the young birds will grow faster. Bushes and vines provide more green food than one would think, as the lower leaves as well as the fruit will be kept trimmed off, to say nothing of the bugs, worms, etc. Another thing, the fowls will get abundant exercise jumping for leaves and insects. An American poultryman, F. F. Davison, referring to this subject in the *Reliable Poultry Journal*, states that he has abundance of grapes and gooseberries in his yards, and it is remarkable the fruit he gets after the hens have taken the product of the lower branches. One grapevine yielded 60 pounds of fruit of superior quality. Mr. Davison gets fruit trees at from \$7.00 to \$12.00 per hundred, guaranteed to grow. Once started, they grow practically without more expense. Then look at the results: Abundance of shade, green food, insects and exercise for the fowls, all the fruit needed for the family and much to sell, besides the beauty of fruit trees laden with blossom and later with fruit.

Remember that a tree rightly started will grow right away from one poorly started. Dig the holes deep and broad, and get good loam soil to fill in around the roots. First put in some good dirt, and then, holding the tree in the center of the hole, put in some good fine dirt on the roots, at the same time shaking the tree or plant so that the dirt will settle around and between the little fine roots. Press the earth firmly around and over the roots, and fill up the hole until within six inches of the top, pressing it down firmly. The balance of the hole should be filled in loosely. In the chicken yard always plant deeper than the tree stood in the ground previously, as the chickens scratch out a basin around the trunk. These and other depressions underneath the trees should be levelled up in the fall to prevent ice forming around the trunks.

Feed and Care of Ducklings.

BY J. E. MEYER, WATERLOO CO., ONT.

The first food we give ducklings is stale bread soaked in sweet milk, together with any kind of table scraps, as cooked potatoes, oatmeal porridge. Feed them all they will eat up clean, every three or four hours for several days in this way, and after they are a week old they will need feeding only three or four times a day. Feed a mixture of cornmeal, crushed oats and middlings, moistened with milk, in any form, after the first week, until ten weeks old, when they will be feathered. The three kinds of meal need not be mixed together; any two of them will do, and the corn should be increased the last week if the ducklings are intended for market.

Keep clean fresh water constantly before the ducklings, arranged so that they cannot do more than put their heads into it. This can easily be done by driving sticks close together about the dish containing the water. The water should be placed in the shade and changed often in hot weather to keep it cool and fresh. This is very important. Ducklings should on no account be allowed to get to any water beyond what they drink. We prefer to confine ducklings to a well-shaded grass run, by using foot-wide boards or poultry netting, and moving them whenever the run becomes soiled, if it is not large enough to keep clean.

Besides the food and water, place a shallow box of sand, where they can at all times get at it. Sand is by some put into the soft food. We never feed ducklings whole grain, and when we do feed it to old ducks we put it into water. The old ducks will do very well if they can get to water, but it is not at all necessary that there should be water in order to be successful with ducks. This is especially true of the Pekins, the greatest of market ducks.

A Cure for Egg Eating.

Hens when kept in confined areas are likely to contract quite a number of troublesome habits—among others the annoying trick of eating their own eggs and the nasty habit of pulling one another's feathers. As a preventive of egg-eating many cures have been recommended from time to time. In our experience the most effective is that of filling a number of eggshells with a mixture of soft soap and carbolic acid, and placing these in the nest most frequented by the offending birds. After dosing themselves with two or three eggs so treated the birds will usually be found very chary of attacking even natural eggs subsequently.—*Farmers' Gazette*.

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.]

Veterinary.

BREEDING AN AGED MARE.

SUBSCRIBER, Grey Co., Ont.:—"I have a mare fourteen years of age. She has never raised a foal. Would it be safe to start her now, and would there be any danger of losing her when foaling on account of her being aged. She is a very sound little mare, with a very high neck and wide breast, lightlimbed, with a slight tuft of hair on fetlocks, well ribbed, heavy mane, very pretty head and large white nose and face, very gentle, with medium spirit, she being bred from a draft horse and common mare. Her weight is 1,050 pounds. To what class of horse would it be best to breed her for the best results?"

[Your mare, in my opinion, is not too old to start breeding. I started a favorite mare of my own at 17 years, and she bred four colts successfully, and then I did not breed her again. She is now 23, and apparently as young as she was at 5 years old. Of course, there is a danger of any female having difficulty at parturition at any age; but my experience has not taught me that the danger differs materially according to age. Therefore, I would not hesitate to breed a mare at 14 years. Your mare is evidently not a typical animal of any breed or class, simply a good stout little animal. She has not sufficient size to breed to a draft stallion, nor sufficient breeding or quality to breed to a carriage or hackney stallion with reasonable prospects of producing a desirable animal. The same difficulty exists, but not to such a marked extent, in regard to the roadster or Standard-bred. If an animal of this class with sufficient size and quality (hot blood) were selected, the results might be satisfactory. In my opinion, you should select a good big, strong, sound Thoroughbred stallion with good disposition. The cross in this case will not be too violent, and the prepotency of the stallion will overcome the cold-bloodedness of the dam, and you will in all probability get a colt with size, quality and action, of good disposition—one that will make a very serviceable animal in either harness or saddle. J. H. REED.]

COW WITH A COUGH.

SUBSCRIBER, Colchester Co., N. S.:—"I have a cow four year old, in calf, due tenth of May; took a cough about two months ago, and now she blows almost like a horse with the heaves. She is worse when eating dry hay; is in good condition. Please state cause and treatment."

[I presume, as you have not mentioned any, there are no symptoms presented but the cough, such as a discharge from the nostrils or eyes, decrease of appetite, etc. I infer that the cow is apparently in good health, eating and thriving well. The absence of such symptoms, and the fact that the cough does not seem to interfere with the animal's health, indicate tuberculosis. This disease cannot, except in advanced cases, be diagnosed without the tuberculin test. It is practically incurable. It would be well to isolate the animal; take good care of her, and watch the symptoms closely. When she calves, take the calf away from her at once, and feed it milk from cows known to be healthy. If this be a valuable cow, I would advise you to get your veterinarian to test her with tuberculin. J. H. REED, V. S.]

OBSTRUCTION IN THE PAROTID DUCT.

G. H. C., York Co., Ont.:—"I have a mare, in foal, running at straw stack in day time. She swells up quite large from the ears down to the throat. On tying her up the swelling goes down."

[Do not allow the mare to feed off the ground or floor. She had better be kept in the stable and fed from an elevated manger. Apply tincture of iodine along the course of the swelling every other day, and give her a small teaspoonful of saltpeter once a day, in a mash, for a week.]

LUXATION OF THE PATELLA.

H. N., Haldimand Co., Ont.:—"I have a three-year colt—its stifle slips out and goes back. It has been that way for a few months. Can you give me a remedy for it? I have taken your paper for a few years, and think there is no better."

[Rest, and repeated blistering, is the most successful treatment for this condition. Clip the hair off the stifle and rub in Gombault's Caustic Balsam freely every 10 to 15 days. Feed the horse well so as to increase his strength.]

LAME HORSES AND OTHER THINGS.

J. N. M., Pictou Co., N. S.:—"1. As I have a horse who, through heavy feeding, got some trouble in one of his hoofs, it binds in narrow and it is very hard; it pains him much on a hard road, or in hot weather.

"2. I have another whose front cords pain if you press them. He can hardly get out after being on a hard road the day before.

"3. Can you give me any remedy for keeping a horse from sinking in a soft place which cannot be dried when plowed? I have heard of snow or mud shoes on horses. Can you tell me about them?

"4. Can you give me an invention to run a dash churn by foot, like an old-fashioned spinning wheel?

"5. Give a perfect remedy for horse interfering behind."

[1. Your horse is suffering either from chronic founder or navicular disease. The cure cannot be effected, but the symptoms can be considerably re-

lieved. The better treatment would be a long rest and repeated blistering around the coronet. If this cannot be done, get him shod with bar shoes. Soften his feet by standing in water a few hours each day, or by poulticing with boiled turnips or linseed meal. Especially in dry weather do the feet require to be kept soft by moisture.

2. Bathe the affected tendons well with cold water, twice daily, and apply the following liniment, with smart friction: gum camphor, 2 drs.; alcohol, 6 ozs.; oil turpentine, 4 drs.; spirits ammonia, 6 drs.; water to make a pint. Bandage the leg about an hour after rubbing the liniment and leave the bandage on for two or three hours or longer.

3. I cannot advise you in this affair. It is possible pneumatic boots about 12 or 14 inches in diameter could be manufactured, or you might try a raft.

4. I cannot help you in this, either, but perhaps some reader can.

5. The only perfect remedy for a horse interfering behind, is to keep him tied up. Careful shoeing and the wearing of boots are the only known remedies. J. H. REED, V. S.]

CEDEMA IN MARE.

SUBSCRIBER, Wentworth Co.:—"I have a mare about twelve years old, which, although apparently in good health so far as eating and drinking goes, is far from being well. Some time in June, 1899, rough spots about the size of a ten-cent piece came on each side of the neck under the mane, on the shoulders, and a few around the breast. None of them were close together, but thinly scattered. I washed the parts thoroughly with rain water and soft soap mixed with a little carbolic acid; afterwards greased with a mixture of lard and sulphur. They disappeared, the hair grew; but the mare is not better. When on pasture in summer, she would come in at night swollen around the throat and jaws. Even the lips were thick. This would go away in stable and at work."

[Your mare has oedema (a tumefaction or swelling, arising from serous effusion into the cellular tissue). It is due to an impure condition of the blood, and eruptions, such as you mention, are liable to occur at any time, but especially in warm weather. The head, neck, shoulders and abdomen are the parts mostly affected, but they may appear any place. The swelling of the head when at pasture is not a symptom of the trouble. This condition will occur in an animal with an obliterated jugular vein if he be fed off the ground or turned to grass. Examine her for this, and if both jugulars be not active, do not turn her to grass nor feed out of a low manger. Whether or not the veins be pervious, if she should show the symptoms again while on grass, do not allow her to graze. Feed her on bran alone for ten or twelve hours, and then administer a purgative composed of 8 or 9 drams Barbadoes aloes and 2 drams ginger, given either as a ball or as a drench mixed with a pint of cold water. Allow nothing but bran for 24 hours after giving the purgative; after which time feed reasonable quantities of hay, and, if working, also of grain. Allow water in small quantities and often after giving the ball until the bowels have assumed a normal condition. Then give 4-dram doses of pulverized hyposulphite of soda in damp or boiled food twice daily for two weeks; then cease giving medicine for one week, and then give another course of the powders, etc. If any eruptions occur, dress twice daily with the following ointment: boracic acid, 4 drams; vaseline, 2 ounces; carbolic acid, 20 drops. A cure is likely to be tedious, as the disease has become chronic. J. H. REED.]

WASHY MARE.

SUBSCRIBER, Wentworth Co., Ont.:—"We have a hackney filly rising 3 years old which scours badly at times almost every day. She has not been worked yet, and has been fed clover hay and wheat straw, with a small allowance of oats; has a good appetite and is in good condition, shedding her hair freely. She seems to have a great desire to drink. If turned out for exercise, she will eat snow or drink water every little while, and does not seem to be satisfied."

"Please give the address of Prof. Thos. Shaw."

[Your mare is evidently what is called washy (predisposed to scouring), but altering conditions and careful feeding, with a little medicine, will probably help matters considerably. Have her mouth examined by someone who understands such things, as if the teeth are not in good shape treatment will be of little avail. Instead of clover hay and straw, feed good fresh, sweet timothy hay and a reasonable quantity of good clean oats. Do not feed any roots. Animals affected with diarrhoea are always very thirsty, and, of course, the large quantity of water taken tends to keep up the purging. Allow water in small quantity, say from one to two gallons at a time, and give it frequently. Feed a tablespoon of ground ginger in her oats night and morning to stimulate the secreting glands of the stomach and intestines and aid digestion. You might better commence with smaller doses, and she will soon take full doses, as it is not bad to take. In order to check the excessive thirst give 1½ drams iodine night and morning for 2 or 3 days. Give either in a ball mixed with linseed meal or dissolved in ½ pint cold water and given as a drench, and give about 2 hours after meals, else there is a danger of the drug uniting with the starch of the ingesta and forming the insoluble iodide of starch, and hence its actions would not be established. It is probable that after a few doses you will notice the thirst much diminished. Prof. Shaw's address is St. Anthony Park, Minnesota, U. S. J. H. REED.]

RETENTION OF PLACENTA.

D. H., Muskoka, Ont.:—"I have a cow that does not clean when she calves. It rots and comes away in pieces, and she fails in flesh. What would you advise me to do for her?"

[Occasionally cows under varying circumstances fail to expel the afterbirth. The retention is due to an abnormal adhesion between the womb and foetal membranes, or a rapid closing of the mouth of the womb after delivery. Old or poorly-fed cows are considered to be liable to the accident. If the placenta does not come away in eight or ten hours after delivery, the cow should be given the following drench: Epsom salts, 1 lb.; fluid extract of belladonna, 1 dram; and sweet spirits of nitre, 1 oz. Keep the cow comfortably bedded and blanketed, give chilled water to drink, and warm slops. If the membrane has not passed in about 30 hours it should be removed by hand. This is an unpleasant operation, but a very important one, because, when the placenta is not removed, it is absorbed in the system as it decays, to the injury of the cow's health, and it renders her milk unfit for human food. To perform the operation it is necessary to understand something of the structure of the parts, and to exercise caution. During the time of pregnancy, the placenta is attached to the womb by numerous button-like tubercles, called cotyledons. At the time of parturition these adhesions should dissolve, and it is when they do not that retention occurs. So that an important part of the operation of removing the placenta is to loosen with the fingers these attachments. The operator should have an assistant to help him. He should have beside him a pail of clean, warm water, in which has been dissolved a piece of good soap. It is well to remove the shirt or roll the sleeves up to the shoulders. Next oil the right hand and arm and pass it into the womb, while the extending placenta is grasped in the left hand. Draw gently on the membrane with the left hand while the right hand is engaged loosening the attachments. The operation is often a tiresome and tedious one, requiring patience on the part of the operator. There is sometimes advantage in relieving one hand with the other. It is well to mix a few drops of carbolic acid with the oil used to smear the hands and arms. After the operation is completed the womb should be washed out with warm soft water, using a large syringe, after which it should be plentifully injected with water 50 parts and creolin 1 part.

While the above is the proper treatment as given in veterinary books, we may say that we have operated in scores of such cases, and always with complete success, without any medicine or after-treatment, and we would not in any case delay longer than 24 hours before removing the placenta by hand.—Ed. F. A.]

MALIGNANT GROWTH ON COW'S EYELID.

M. C., Peterboro Co., Ont.:—"I have a cow eight years old. She has always been healthy and a good milker. Last September we noticed something like a small wart (about the size of a pea) coming on her left eyelid very near the center of the eye, or close to the edge under lid or winker. It grew slowly at first, but after a while it began to grow rapidly, and looked and smelled bad. I tied a silk thread tightly around it, which cut the ugly lump off (about the size of a small plum). I washed the lid with bluestone water twice a day (a strong solution), but the lump is growing big again, and will soon have her eye closed up. I find no bad smell since I began to use the bluestone water. If you can tell me what this ailment is, and advise me in the matter of a cure, I shall regard it as a great favor?"

[This cow has a malignant tumor. The only cure is to carefully dissect it out, being careful to remove all the unhealthy tissue, else it will grow again. If the eye itself has become involved it will have to be removed in order to save the other eye from disease. If the eyeball be not involved, the operator will need to be very careful in dissecting lest he injure or puncture the eye. After the operation, use, as a dressing, a solution of sulphate of zinc, say 10 grains to the ounce of water, in preference to the solution of bluestone. Growths of a malignant nature, such as this is, in any situation are troublesome to treat, but especially in such close proximity to the eye. If you are handy with the knife and used to operations, and not nervous, you may possibly be able to operate yourself, otherwise you had better employ a veterinarian. There is little use in applying any preparation to the growth with the hopes of removing it.

J. H. REED, V. S.]

CONTRACTED TENDON.

B. B. A., Victoria Co., Ont.:—"I have a horse coming two this spring. During the winter the cords in the back of her fore legs have become shrunken, and her fetlocks knuckle over till she can hardly walk. Will you please tell me what is the matter with her, and how she can be cured?"

[Contracted tendons may arise from different causes. Among the most prevalent are soreness in the region of the heels, standing on uneven floors where the front is higher than the back, want of exercise, rheumatism brought on by overfeeding, or allowing the toes to grow too long. Have the colt's hoofs put in a natural shape: see that the toes are not too long; give moderate work, and apply the following liniment along the course of the contracted tendons every night: Nitrate of potash, acetate of lead, oil turpentine and liquor ammonia fort., of each half an ounce; spirits camphor, 4 ounces; tr. cantharides, 2 ounces; water, 1 quart; shake well.]

ENLARGED LEG—WARBLES IN CATTLE.

G. D. Muskoka, Ont.:—"I have a mare 10 years old, which for a few years past has had an enlarged hind leg. It cracks in front of the hock joint about 2 inches long and half inch wide, which bleeds when working sometimes, and heals up altogether, then breaks out again. Leg enlarges when standing in stable, sometimes as large as an ordinary stovepipe down at fetlock joint, and swelling goes up to body. Leg is hot on inside close to body. If fed grain, it gets bigger than usual. What do you advise?"

"2. My cows have lumps on their backs in which after a while there will be worms come out. They had them last year. Is there any cure for them?"

[1. The lymphatic glands of the affected leg are practically ruined by the long standing of the case in question, which renders it impossible to affect a cure. The animal can be helped, however, by a course of physics, tonics, and external applications. Prepare the animal for a physic by feeding exclusively on bran mash for sixteen hours, and then give the following purgative ball: Barbadoes aloes, 7 drams; powdered ginger, 2 drams; syrup or soap, sufficient to form a ball. Continue the bran mash until the physic has ceased to operate. After this give, morning and evening, in food for two weeks: Iodide of potass., and nitrate of potass., of each 1 dram; powdered gentian, 2 drams. Paint the leg once daily for four days with strong tincture of iodine (iodine, 6 drams; iodide of potass., 5 drams; alcohol, 8 ozs.). Allow one week to elapse, and wash the leg thoroughly with warm water and castile soap, and then repeat the application of the tincture of iodine. Repeat this treatment for at least four times, observing the above directions.

2. The lumps on the backs of the cattle are due to the presence of warbles or larva of the ox bot fly. There is still some doubt regarding the life-history of this insect, but it is now generally believed by authorities on entomology that the eggs are laid by the fly on the hair of the animals in the summer season, and are taken into the stomach by the cattle licking themselves. In the stomach the eggs hatch, and from there bore their way upward to the skin. It is therefore difficult to prevent the animals, getting them in sections where the fly abounds. In the late fall or early winter, the larva commences to be apparent on the animals' backs, and at this time repeated applications of grease well rubbed into the backs of the cattle will destroy the grub. The same treatment applied any time before the grubs escape in spring will destroy them. By parting the hair over the enlargement a small opening can be observed. It is through this the grub breathes. The oil or grease closes this opening and smothers the insect. A needle pushed down through this opening will kill the insect.]

CAKED UDDER IN COW.

H. J. W., Cedar Co., Iowa.:—"I have a cow that dropped a calf some few days ago. I was careful to milk her after the calf had sucked, and did so for two or three days after the calf came, when it seemed to take it all, but it did not for some reason take the milk out of one teat. I believe the milk clogged in that one, for the calf sucked it the same as all the rest, but on examining the udder I found this teat, or the quarter of the udder above, very hard and fevered. I can't do much for it. There is just the least bit of watery milk comes from it. The calf sucks it the same as the rest. What do you think can be done for it? Can anything be done for it without drying the milk? She is a good cow. I have been feeding her nitrate of potash in the feed. I had been feeding shocked corn, but am feeding oats and oil meal now."

[The affected quarter is highly inflamed and congested, due to the milk not having been drawn off for an extended period. The treatment should be prompt and energetic in order to save the quarter. Give a purgative of 1½ pounds of Epsom salts, with a ½ ounce of ginger dissolved in warm water. Bathe the quarter twice daily for 30 or 40 minutes with warm water in which the hand can be borne; rub dry and apply belladonna liniment or goose oil well rubbed in. Continue giving nitrate of potash in teaspoonful doses twice a day. Reduce the grain diet to a simple warm bran mash, and give hay in place of corn stover. Milk out the quarter frequently. Keep the cow warm and away from drafts, and take the chill off all the water she drinks.]

SPRAIN OF THE BACK TENDONS.

J. N., Perth Co., Ont.:—"I have a mare about fifteen years old. She went lame last June. If travelled on the hard road, she is worse; it is in the cords of the front leg. Could you tell me what to do for her?"

[The mare is evidently suffering from sprain of the back tendons of the fore leg. Bathe the part well for one hour, twice a day, with cold water in which has been dissolved a few handfuls of salt, rub dry and apply the following liniment: water, half pint, two ounces of spirits of turpentine, one egg, two ounces of spirits of alcohol, two ounces of liquor ammonia, and add enough water to make one quart. In making this liniment, the mixture should be vigorously shaken for four or five minutes after the addition of each ingredient. One hour after applying the liniment, bandage firmly and leave for three hours. Continue this treatment till the lameness is well gone, then blister with cantharides, two drs., well mixed with vaseline or lard. After clipping the hair, rub in well for twenty minutes. Tie the mare's head so that she cannot reach the blistered part with her mouth, and oil on the third day.]

ENLARGED LEG.

W. E. S., Gloucester, N. B.:—"I have a mare five years old which sprained her hind leg while working in the snow this winter. Before she was perfectly well she was put to work again, but after a few days became so lame that work with her could be done no longer. She is now a great deal better in regard to lameness, but the chord of her leg is quite swollen from fetlock to the body, especially near the body on the inside of thigh, where there is a big lump. What treatment should be followed?"

[It is possible that the lump you mention inside of thigh contains pus. If so, it will be sore and will become soft and fluctuating at some point. If this occurs, it must be opened and the pus allowed to escape, and the cavity cleaned out twice daily by injecting into it warm water, after which a little carbolic lotion—1 part carbolic acid to 60 parts water—be injected into it. It is probable it will be hard to remove the enlargement of the limb. Give her a purgative of 1 oz. Barbadoes aloes and 2 drs. ginger. Feed nothing but bran for 10 hours before and 24 hours after giving the purgative. (The purgative can be given either as a ball by moistening with water and rolling in tissue paper, or as a drench shaken up with a pint of cold water.) After the bowels become normal, give her regular, gentle exercise, and rub the enlarged parts well twice daily with the following liniment: Iodide of ammonium, 1 oz.; tincture iodine, 2 oz.; alcohol, 10 oz.; water enough to make a pint. Apply the liniment with smart friction, and continue the treatment. Recovery will probably be slow, but continued application of the liniment will eventually lessen the enlargement and possibly remove it entirely.

J. H. REED, V. S.]

Miscellaneous.

HAULING MANURE INTO LARGE PILES.

RAY C. HOYT, State Maine, U. S. A.:—"Does manure lose any of its value by being moved into the field in large heaps about a month before it is to be spread on the surface? My manure is quite coarse, and I thought handling it would make it in better shape for the harrow."

[In reducing coarse manure to a finer condition by piling it in heaps in the field, a certain amount of decomposition must necessarily take place. During this change, nitrogen, a valuable constituent, is given off in the form of ammonia. This can be partially prevented by an application of gypsum to the surface of the heap, or even a few inches of soil. Would it not be a better plan to turn over six or eight inches of the surface of the manure where it now lies, and tramp it well with stock? In this condition, it would lose practically nothing, while the coarser portion would become reduced without the extra work of hauling to a heap.]

REMEDY FOR OYSTER-SHELL BARK LOUSE—A WORD OF COMMENTATION.

J. M. P., Stormont Co., Ont.:—"Will you or some of your able correspondents give me a remedy for the oyster-shell bark louse? I must say that your paper is getting better every number. I don't see how any farmer can get along without it. It is full of good information."

[During the winter the trees should be washed with a solution of caustic potash, as recommended by Prof. F. C. Sears in the Orchard and Garden Dept. of last issue. In June, when the insects can be seen moving on the limbs, spray with kerosene emulsion, prepared as recommended in the spraying calendar in last issue.]

TRAINING A BULL'S HORNS.

SUBSCRIBER, Waterloo Co., Ont.:—"Will you please let me know whether it is possible to make the horns of a yearling bull grow in a position desired. I have one whose horns grow too far backward. Would scraping help them?"

[Scraping them thin on the front side will probably cause them to incline forward to some extent, but it will be a slow process. To make it quickly effectual a contrivance with a screw, on the principle of that used in tightening a bucksaw, might be adopted. The bull's horns will no doubt come forward satisfactorily, as he grows older, without treatment.]

GEESE TO ONE GANDER.

J. C., Ridgeville, Man.:—"How many geese ought to be kept for one gander?"

[In Toulouse geese, the gander mates with one goose, and will accompany that goose to the nest while laying, and during setting will sit near and watch and protect it from any threatened danger. It will allow one or two other geese to accompany it, and will serve them, but does not sit with them or protect them. To insure fertile eggs, ganders should be mated with geese several months before laying time, but if there are no other ganders near, he may take to the geese at once.

M. MAW, Winnipeg.]

CURBING A WELL IN QUICKSAND.

In reply to a request of your subscriber as to how to dig a well in quicksand: We had the same difficulty a few years ago. We took a curb 12 feet long and placed it tight in the well so it would sink straight, and sharpened the boards at the bottom, and then we laid bricks on the ring till it had pressure enough. Take pine or hemlock, and be sure to have it waterproof. We are very much pleased with the ADVOCATE. CONRAD WAGNER. Waterloo Co., Ont.

AS SHIRES AND CLYDES DIFFER.

W. H. P., Frontenac Co., Ont.—"I am interested in draft horses, and would ask you to tell me, through the columns of your valuable paper, the difference between Shire and Clyde horses. What is the breeding of the English Shire, and how does it differ from that of the Clyde? What, if any, advantage has the Shire horse over the Clyde for farm or draft work? Has the Clyde any advantage over the Shire, or wherein lies the difference?"

[We invite W. H. P.'s attention to Mr. Innes' letter in our issue of April 16th, page 220. The Shire horse derives his name from the Shire counties in the heart of England. For a long time prior to the eighteenth century he was known as the large "Black old English Horse." The Shire horses of today trace to the "Old English War-horse," which ancient writers tell us excited the admiration of the Romans when they first invaded England some two thousand years ago. They were powerful horses, of great weight and activity. It is claimed by authorities that during later centuries Shire men aimed largely at the production of a horse of great bulk, capable of shifting great loads in crowded streets, and starting the same on the level from a dead halt. With this end in view the body was more looked after than the limbs, which caused the latter to lose something in quality and flexibility. For the last few decades, however, more attention has been paid to the pasterns and action of the animals, until we find the better specimens of the breed to-day possessing the desirable quality of bone and action, while the body has lost nothing of its substance and symmetry.]

Clydesdales are claimed to have been descended from a race of tough, shaggy, pony-built horses, appreciated by the inhabitants of Scotland because of their ability to move heavy loads, to carry heavy weights in the saddle at a fair pace, to pull the plow on hillsides or level ground, and to be in readiness for service in the fields of war. Such services demanded horses of stamina and vigor. As time went on these horses of 1,000 or 1,200 pounds were gradually increased in weight in order to meet the changing conditions in agriculture and draft work. More liberal food, with better shelter and slower work, did their share, with selection, in increasing the size. This is how the pure Clydesdale is still a big pony, with shaggy hair, square quarters, sound, hard legs, and tough, well-shaped hoofs. The typical Shire has somewhat greater weight than the Clydesdale, but lacks to some extent in quality of bone and activity.]

COWS CHEWING BONES - BLUESTONE FOR SMUT.

SUBSCRIBER, Wentworth Co.:"1. Two of my cows have a mania for chewing bones. What is the cause and remedy? 2. How long should oats be soaked in the bluestone solution in order to kill the smut spores?"

[When cows chew bones, it indicates an abnormal appetite due to a demand in the system for earthy matter that is deficient in the food given. We have found a speedy and sure remedy in mixing wood ashes with their salt in the proportion of one of ashes to two of salt.]

2. Mr. S. A. Bedford, Experimental Farm, Brandon, after considerable experimenting, recommends steeping smutty oats for 24 hours in sulphide of potassium, 1 1/2 lbs. to 25 gallons of water. When bluestone liquid, 1 pound to 8 gallons of water, is used, the oats should steep for five minutes. A longer treatment tends to delay germination of the grain.]

SHEEP-DIPPING TANK.

J. B., Norfolk Co., Ont.:"Will you or some reader give instructions how to build a tank for dipping sheep, giving size and shape, and any other information that would enable a carpenter to build one? Also the amount of dip repaid for forty sheep?"

[Tank should be of matched plank 1 1/2 or 2 inches thick, and made same as a water trough for stock, about 5 feet long, 2 feet 6 inches high, one foot wide at bottom, flanging out to 2 feet or 2 feet 6 inches at top, the ends also flanging in same proportion. These dimensions are roughly approximate and are given from memory. Perhaps some reader will kindly give more definite instructions.]

Directions are given on cans or packages of sheep dip on the market stating quantity required for a given number of sheep. We judge one half gallon of the advertised dips would be quite sufficient for forty sheep if mixed according to directions. It is well, however, to order at least one gallon, as it is better to have too much than too little, and it is useful as a disinfectant and for other purposes.]

BULL SLOW IN SERVING.

SUBSCRIBER, Middlesex Co., Ont.:"I have a Shorthorn bull about 14 months old, in good health and condition, but is very slow in serving cows. Is there any reason why he should be so, and what would you do for him?"

[Feed him liberally with ground oats and bran, and roots and clover hay, and give him plenty of exercise. Turn him out in the barnyard with quiet cows or young cattle, half an hour at first on fine days, and an hour or two later on. Turn him loose with the cow in season, and let him romp with her. A run on pasture with other cows for a few weeks may do him good if he is taken up once or twice a day and fed.]

TRAINING A PUP - CARE OF DUCKS.

FATHER'S BOY, York Co., Ont. - "My father takes the FARMER'S ADVOCATE, and it is a very good paper. I have a few questions to ask: 1st, I have a pup. Would you please give me your best instructions to make a first-class dog of him?"

"2nd, How would you prefer feeding and taking care of ducks? Should they have a pond or not?"

[We presume that the puppy is of the collie breed, as in our opinion that is the only sort of dog that is worth keeping on a farm, and unless these are naturally bright and well trained they are liable to give more trouble than their services are worth. Puppies, like children, must be dealt with so as to create mutual affection. Talk with him, praise him, and teach him a few little tricks, being careful to be systematic, and do not misplace the pup's confidence. Give him a box, a bed or a blanket always in the same place. He should receive his two meals a day regularly, so as to form in him habits of regularity. In teaching tricks use the same words each time for the same thing, and in this way the puppy will soon learn what you mean. If the puppy is to be a stock driver begin with him when about five months old. At first just keep him at your side while you drive the stock. Take plenty of time and do the work carefully. Always go quietly around to the rear of the stock, then wave your arm and make some noise about the work. The dog will then understand what you are about. A dog should not be expected to do his work alone until he is a year old, and not then unless he has had considerable schooling in the field. A collie generally takes naturally to driving, but sometimes they incline to go to the head. It is, therefore, well from the very first to lead him with a cord or light rope, by which he can be taught to come quickly when called back. He should know to stop driving at once with the words "that will do" or "here" from his master. Then if he goes to the head he may be called or pulled back. These bad habits will not prevail if the start is made right. Above all things, remember a collie must know but one master. If every man, boy or child about a place undertakes the training, you will have a dog which will prove only a disappointment and a vexation. Never whip a collie; he will not forget it if you do, and will constantly be in fear of you. A good scolding is enough. It is always well to reward an act well done with a morsel of something that he likes.]

2. During and before the laying season give a warm breakfast. The mash need not be mixed as stiff as for chickens. Once a week place powdered charcoal in their mash, a gill to a quart, and have it around their house in sizable pieces all the time. Treat them about as you do your hens, only they do not need a dust bath and as warm a house. They need more to eat than hens, head for head, but it may be made more of bulk with advantage to the ducks' and to the cost of feed. During the heavy laying time they need feed in the proportion of three hens' rations to two ducks. To do their best at laying they should have fresh lean meat twice per week, all they want after you have them broken into it. Procure one drake for each five ducks, and get nice ones. Don't keep their craws full all the time if you are to get many eggs. For ducks to lay well, and above all, their eggs to hatch well and produce good strong ducklings, they must exercise a great deal, and for this there is nothing better than a pond to swim in. It is not necessary to have a duck pond in order to be a successful duck-raiser, but it helps lots. The eggs seem to be all fertile, and such great, strong ducklings kick out of them. After the ducklings are thirty-six hours old give them a drink of water and feed, composed of equal parts of bread soaked in sweet milk, gluten meal and corn meal, to which has been added two per cent. of beef scraps and a little grit. Give this food during the first five days. After this give equal parts of bran, corn meal and gluten meal, with five per cent. beef scraps and a little grit. Keep grit and clean drinking water before them all the time. Feed five times at first, reduce to three times at four weeks old. As they grow older replace part of the bran with middlings, and increase the beef scraps. When five or six weeks old they should have access to a large run, and a stream of water if convenient. At nine weeks old, fed in this way, they should commence to be ready for market, dressing four and a half to five pounds each.]

SUGAR BEETS OR MANGELS.

J. M., Grenville Co., Ont.:"I have half acre which was once an old ashery, which grows corn, but will not grow potatoes. Will it grow sugar beets or mangels for cattle?"

[Provided the soil is free and loamy, the superabundance of potash that will be present on the site of the old ashery should not prevent a good yield of mangels or sugar beets, if a good dressing of yard manure is given. The ground should be worked up in good shape, and the seed planted as early as possible after May 1st.]

A SUBSTITUTE FOR GLASS IN HOTBED.

"I notice an enquiry in your recent issue by J. D., New Westminster, B. C., as to whether you could recommend a substitute for glass in making a hotbed. I have covered my frames with ordinary factory cotton, with a coating of two of boiled oil, for some years, and I may say that the scheme works perfectly satisfactorily and has saved me a great deal of expense in replacing broken panes, which, with the high winds in the Calgary district, was a matter of frequent occurrence."

CHAS. W. PETERSON.

TO PREVENT CROWS PULLING UP CORN.

W. J. B., Perth Co., Ont.:"Could you give me any satisfactory instructions through your valuable ADVOCATE in regard to a method of preparing corn for sowing, so that crows and blackbirds may not dig it out and eat it? We had about three acres of new land sown with corn last spring, and when it was out nicely, so that one could see the drills, there were not so many crows, but flocks of blackbirds on it until scarcely a stalk of corn remained."

[Among the many preventives for crows pulling corn, perhaps deep planting is, as a general rule, the most effective. Last year, owing to the fact that the young birds were somewhat later than usual in hatching, there was no trouble experienced in this locality from the crows. Poison is no doubt a very effective means, but in addition to being contrary to law, it is a direct injury to the farmer, as the bird is certainly of great advantage to him in destroying pests which prey on his crops. There is a treatment for the seed which we have used successfully which makes the corn distasteful to the birds. This is by stirring a stick which has been dipped in coal tar in the corn until it has a very light coating, which makes it a dull brown color. Care must be taken not to use too much; if a proper quantity is used it does not hinder sowing. Land plaster will make it dry if by chance it should be sticky. The birds have a distinct dislike to the corn so treated. Binder twine stretched on small stakes in the part of field infested has given good results in many cases.]

JOS. MOUNTAIN.

Perth Co., Ont.]

COST OF CEMENT WALL - RATION FOR BULL.

T. C., Grenville, Ont.:"Please tell me through your valuable paper what will be the cost of putting a cement wall under a barn, 45x75x9 feet high, 15 inches thick, labor and all, with 5 doors 6 x 8 feet on an average, and 8 windows 3 x 6 feet. Would it be better than stone or brick?"

"2. What is a good ration for a bull with plenty of work, to make him sure?"

[1. The concrete walls (15 in. thick) for barn 45x75x9 feet would require about 90 barrels cement and 100 yards gravel. If field stone can be had, about one-third could be used. We do not know the rate of wages paid in section mentioned. The above work would require about 50 days' labor. Would say that the walls for any barn need not be more than 12 in. thick. We know of many of above size that are only 10 in. thick. Concrete is better and cheaper than brick or stone. ISAAC USHER & SON.]

2. See reply to Subscriber, Lanark Co., top of page 236, April 16th FARMER'S ADVOCATE.]

INSECTS ON HOP VINES - MANITOBA WASHER.

HARVIE DOAK:"Last season our hop vines were infested with numbers of little grubs, which ate the leaves and rendered them useless. Please prescribe through the ADVOCATE what will prevent these pests, and much oblige."

"2. Where is the Manitoba Washer manufactured?"

[1. Since the infesting grubs take their food by eating the leaves, an application of poison to their diet at once suggests itself. At the first appearance of the intruders the vines should be carefully sprayed with Paris green, 1 ounce in 10 gallons of water. Repeat as often as appears necessary at intervals of a week or ten days.]

2. The manufacturers of the Manitoba Washer, or dealers in that machine, could increase their business by advertising in our columns, which are closely read because they are reliable.]

PLAN OF CORN MARKER WANTED.

A. M. F., Elgin Co., Ont.:"I would like if you could give a good cut of a corn marker. I have seen a good many, but none amount to much. I have been watching the ADVOCATE for one, but haven't seen it."

[We published cuts and descriptions of various styles of corn markers some months ago, the best of which was repeated in May 1st issue, 1899. Since then we have seen no improvements on those already given. We therefore ask readers who have good corn markers to send us drawings and descriptions of them for publication. The simplest and best marker we have seen consisted of six plank runners 18 inches long and 6 inches deep. These were fastened 3 feet apart with a 10-inch plank nailed along the top edges. In the centre and between the end pairs of runners the plank was sawed, and strap hinges were fastened so as to allow the marker to adapt itself to uneven surfaces. The tongue or shafts can be attached by looped straps screwed to the top plank.]

SUGAR-CURING HAMS AND BACON.

GRAIN FARMER, Waterloo Co., Ont.:"Can you give me a recipe, either by mail or through the columns of your valuable journal, for preparing sugar-cured hams and bacon?"

[To each 100 pounds of ham or shoulder use seven and one-half pounds of fine salt, one and one-half pounds of granulated sugar, and four ounces of saltpetre. Weigh the meat and the ingredients in the above proportions, rub the meat thoroughly with this mixture, and pack closely in a tierce or cask. Fill the tierce with water and roll every seven days until cured, which, in a temperature of 40 or 50 degrees, would require about fifty days for a medium ham. Large hams take about ten days more for curing. When wanted for smoking, wash the hams in water, or soak for twelve hours. Hang in the smoke-house, and smoke slowly 48 hours.]

ROOT HOUSE.

P. C., New Brunswick:—"Please let me know how to construct a root house holding 2,000 bushels, to be outside of other buildings. Would you prefer sawdust for packing, and how thick?"

[A few years ago the writer aided in constructing a frame root house above ground which gave satisfaction for a number of years. To hold 2,000 bushels, the building should be 30 by 20 feet and about 7½ feet deep, so that the roots could be 7 feet deep. Stone foundation walls should be built, coming about a foot above the ground. Two- or three-inch plank should be laid flat on soft mortar on top of the wall and studding set on top of the planks. The studding should be fully six inches wide, between which should be firmly packed dry sawdust. Above the root house should be a double floor, which may be thickly covered with straw or sawdust. The spaces at the sides, which are filled with sawdust, should extend into the loft above so that it may be packed down and refilled each fall. All windows and doors should be double, and as far as possible the building should be draft proof. It is necessary to allow for ventilation, which may be done by a 3-inch channel (which may be closed) through the wall near the ground, connected with a bottomless box 8 inches square and extending diagonally through the house on the floor. The top of the box should be 2-inch slats three inches apart. The far end of the box should meet an upright air shaft reaching near the ceiling. There should also be a ventilator up through the roof, which could be closed if desired. It is well to have windows on two sides of the building for easy filling. The walls should be double inside and battened outside.]

RECIPE FOR TANNING DEER SKINS.

To the Editor FARMER'S ADVOCATE:

SIR,—“Enclosed please find sample of tanned deer skin, also the recipe for same that my father has used for years with good success. The skins give the best of wear. First soak the skins from two to three days to remove the hair and grain. Take a half round block made very smooth, use a square instrument for removing the grain. For the liquor make a strong brine of soft water and salt, put in oxalic acid enough to make it white or a sharp sour, just enough to cover the hides. Put in liquor from thirty-six to forty-eight hours, according to thickness of hides. Rub hides frequently and keep liquor a little warm, then run them through a wringer to take out liquor, wash well and wring again. Make a suds of soft soap and a little salt, just enough to cover hides, with about an ounce of lard for each hide. Leave in this form twenty-four to thirty hours, rub the same as in first liquor, then wring again, dry over a slow fire, stretching and rubbing frequently. If you wish to buff them, spread the skins out, sprinkle on a little ochre and brush it in with a common brush. Hides tanned by this recipe will outwear the old Indian tanning.

E. W. BROOKS.

BUILDING SILO.

SUBSCRIBER, Elgin Co., Ont.:—"Please give your opinion as to building silo. Would you build inside or outside? I have plenty of room inside, and could build it 25 feet high. If inside, would you build round or square?"

[Provided the silo can be placed as near the feed room outside as inside the barn, we would not think of using indoor space, especially in a district as southern as Elgin County. It is much better to have extra barn room than to need more, and we see no advantage in putting the silo inside, so far as the effect upon the silage is concerned. If the silo is to be permanent, we would recommend constructing it of cement concrete, either eight-sided or square with the corners cut off. If the silo is to be of wood, we recommend the round stave structure, either inside or outside of building, carefully put up and the hoops tightened each year in spring after being emptied, and slackened in the fall as occasion demands. We will be glad to receive suggestions as to the best silo to build.]

EXPRESS RATE ON POULTRY.

R. S., Lambton Co., Ont.:—"I received a Bronze turkey hen from Gencoe (a distance of 20 or 30 miles); the express was 70 cents. When I objected to the high rate the express agent informed me all thoroughbred or fancy poultry was charged double rate, common or dressed going at single rate. The parcel weighed 30 pounds. Who is right, and if he charged me double rate wrongly, where shall I look to to have this thing stopped?"

[The Canadian Express Co. officers at London advise us that there is no difference in the rates on pure-bred and common-bred birds unless valued at over \$50, when there are valuation charges. When in a secure slatted coop the ordinary merchandise rate is charged, and the amount will vary with the distance; if the bird is in a canvas coop, so that no other package could rest upon it, then double merchandise rate is charged. If a mistake was made the local office should rectify it for you.]

POLLED DURHAMS.

If S. H. B., Simcoe Co., Ont., will correspond with the undersigned, I can give him all the necessary information he requires in regard to Polled Durhams. I can furnish him with printed matter which I received from the President of the Polled Durham Association, who is Dr. William Crane, of Tippencanoe City, Ohio.

ANDREW GILMORE, Athelstan, Que.

SOFT EGGS—HENS LOSING HEAD FEATHERS.

W. BROS., Ontario Co., Ont.:—"For the past week many of our hens have been laying soft-shelled eggs. Is the cause due to the lack of something they do not get that helps to form the shell? They have been getting all the small gravel and old plaster they require, and frequently oyster shells. Is it necessary to keep some kind of sharp grit, such as oyster shells, where they can have free access to it at all times? We give a warm feed every morning, composed of boiled vegetables and roots; with water, oats and barley (chopped), and clover heads and leaves (steamed). At noon we give them turnips to pick at. Do you think turnips as good for them as mangels? They don't appear to relish the turnips like they did a month ago. At night we give them a grain feed—oats or barley, with wheat mixed through occasionally. We try to keep them as active as possible by scattering a little grain through the litter. There are several of our hens with the feathers all off the head. The feathers come off gradually until the head is bare. Is this a disease? What is the cause and remedy?"

[Soft eggs are generally caused by overfeeding the hens, and the remedy is self-evident. It may, however, occur from want of lime, which is supplied in best form in the slaked powder condition, and smashed oyster shells. The fowls should have access to these at all times, and a handful of lime thrown in the drinking water will also hasten a remedy.]

We are inclined to attribute the loss of head feathers to feather-eating, which becomes a real vice with fowls rather closely confined, and whose diet is lacking in animal food. The vice grows and spreads in a flock in which it gets a start. Any bird known to have it should be isolated, as it tempts the others. Give the flock more liberty, and feed two or three times a week a fresh liver, crushed green bone, or meat scraps. Occasional cooling doses of Epsom salts, say 10 grains each in soft food, will tend to correct an abnormal appetite for feathers.]

PERMANENT PASTURE ON LOW LAND.

G. M., Hastings Co., Ont.:—"I have some heavy black clay land, which, for the present, I find it impossible to drain. I have therefore decided to pasture it for some years. Will you kindly let me know, through your columns, what grasses are best suited for such land? Are Orchard and Red-top grasses suitable for a permanent pasture, and if so, in what proportion per acre would you mix them with other grasses? Would it be a sufficient covering for Orchard grass seed or Red-top to merely pass the roller over it? If not, what is the best way to cover the seed?"

[Orchard grass will perhaps furnish the earliest feed in spring, but it has the objection of growing in bunches, and becoming coarse if not kept eaten down. Red-top is suitable for pasture, but does not yield heavily. Blue grass should, we believe, form the bulk of the seeding. As a mixture we recommend Blue grass, 6 pounds; Red-top, 4 pounds; timothy, 3 pounds; and a pound to the acre of white Dutch clover will do good on the spots where it gets a hold. After sowing the seeds, either alone or with a light seeding of grain, the ground should be harrowed with a light harrow and then rolled. The seed of Blue grass and Orchard grass is light and chaffy, and hence not easily covered.]

BARK LICE ON APPLE TREES.

G. G., Wellington Co., Ont.:—"I have a fine apple orchard, but it is infested with bark lice. Some fine trees are nearly dead. Would like to know through the columns of your paper the best remedy. Have been advised to spray with lye and whale-oil soap while the buds are dormant. Would this be effective?"

[If the bark lice are of the oyster-shell sort, spraying with kerosene emulsion before the buds start, and again in June when the eggs hatch and the minute insects are seen moving on the limbs, will destroy most of the insects. It is also a help to scrape off the rough bark with a dull hoe, which will not only remove many scales, but clean the limbs so that the spray can reach the insects. We repeat the directions for making the emulsion: Dissolve half a pound of soap by boiling in two gallons of water. Take from the fire, and while hot turn in one gallon of coal oil and churn briskly for five minutes, or until a creamy emulsion is formed. Dilute with nine parts of soft water for use. Whale-oil soap, two pounds to one gallon of water, is recommended for spraying trees in winter when infested with San José scale. For June spraying, the soap should be dissolved one pound in five gallons of water. See article on caustic potash for fruit trees in last issue.]

MARKETS.

FARM GOSSIP.

At an international agricultural congress to be held in Paris, July 9th to 16th, a plan will be proposed to ask the farmers of the world to reduce their wheat output by 20 per cent., and not sell a bushel for less than a dollar. J. Chanley, of St. Paul, executive agent of the Farmers' Alliance and Industrial Union, the National Cotton Growers' Association, the Farmers' Federation of the Mississippi Valley, and the National Grain Growers' Association, is the chief promoter of the international agricultural trust in America. Prof. G. Ruhland, of the University of Erlangen, Switzerland, is the chief promoter of the plan in Europe.

Suitable Seed for P. E. Island.

In P. E. I. the farm fields are only getting clear of their winter covering. In the western part the snow lay earlier and more constantly on the ground, consequently clover and other grass seeds appear well preserved. Elsewhere, on fields exposed by frequent thaws and frozen over on bare ground and ice, a large portion of the grass seeds perished, and even old pasture fields suffered, but from present appearance, if warm, showery weather prevails during the opening spring, the meadows will at least give an average return. Formerly, Island red clover seed used to be imported from Great Britain that would hold in the ground for several years and produce a heavy crop. Several farmers are raising the seed of it yet, and it is in more demand and selling higher than any of the seeds imported from Ontario or U. S.; the latter cannot be depended upon more than one season. Our Island farmers are generally too careless about raising their own grass seeds. Both Island timothy and clover seed sells higher and are preferred to the imported, and those that pay attention to it succeed well. There is a heavy outlay of money annually from the Province in the purchasing of seeds. We do not consider it a loss to import good seed grain that will suit the climate. A few years past most of the wheat imported was the "White Chaff," which suited our soil and yielded well for a few years, but in 1888 it rusted badly and became almost a total failure. Imported wheat that suits this climate generally yields a good percentage over Island-grown wheat. At present the varieties mostly looked for are "White Russian and White and Red Fyfe," which produces from 16 to 25 bushels an acre on an average. On account of the dampness of the atmosphere, wheat is not always a profitable crop.

Farmers are now paying more attention to dairying; it gave them a profitable return last year. They have plenty of feed this spring for cattle, and if the summer grazing proves good there will be more cheese manufactured in this Island than ever before. J. E. S.

Perth County, Ont.

Spring is here, but very backward and wet, making it hard for those dilatory ones who left their plowing undone last fall. It is also making matters serious for the many who are scarce of feed and cannot sell their cattle on account of the demoralization of the market; but one redeeming feature in the situation is the temporary puff in hogs. Some have even commenced feeding a low grade of flour. It sells at \$21 per ton, and some claim exceptional gains from its use. It is considered much superior to corn for finishing at \$19. Horses are in brisk demand for export, and this is even taking effect on the second-class stock and light drivers. Sheep are "out of sight"; in fact, mutton is not in the local market. Eggs are down to 10c., and butter about the same. Cheese factories have commenced operation with excellent prospects for prices. Laborers are scarce, wages ruling at about \$30 a month, for seven months, for average men. This in part is due to the great exodus westward. At the last meeting of the Blanchard Township Council, in reference to road management under the new system, it was decided to retain the pathmasters, subject to control of a commissioner, but it not being expedient at present to appoint the latter, the Council, as a whole, resolved itself into a board of control and assumed the responsibility. It is hoped they will see their way to the introduction of wide tires. Work on the land has just commenced, but it is very tough and much of it still wet. However, most of those in this section are well ahead with the plowing, and as very little gang-plowing is done, the crop is soon put in. Common operation with excellent prospects for prices. Laborers are scarce, wages ruling at about \$30 a month, for seven months, for average men. This in part is due to the great exodus westward. 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The Outlook for Wheat and Clover.

WATERLOO. The fall wheat and clover, generally speaking from present appearances, has wintered in very good condition. Very little wheat winter-killed. Very much better than last year. JOHN TAYLOR, JR.

MIDDLESEX NORTH. Wheat that got only a slight dressing of manure has stood the winter—the way it does nine cases out of ten—very well, while that which got no manure looks very backward. Clover bids fair to be a very light crop on account of the dry summer last year. R. NICHOLSON.

MIDDLESEX EAST. Fall wheat is a good average. Young clover does not look so well, some of it very thin. A. B. SCOTT.

EAST YORK. The fall wheat is looking well. I have not seen any that is injured in the least, and every one I have asked say it is good. Clover was not a good catch last year, but where there was a catch it is good. JOHN MILLER.

WENTWORTH. The fall wheat looks very well in this district. No clover. It was all killed last summer by the dry weather. Our dependence for grass and hay is all in the timothy. COWIE BROS.

WENTWORTH SOUTH. I am pleased to say that fall wheat in this section is in fine condition. It is very seldom that it looks so well at this season of the year. Clover was a poor stand in the fall, but what there is, is in fine condition also. JOHN JACKSON.

NORTH WENTWORTH. Wheat and clover are both in good condition in this vicinity. R. S. STEVENSON.

PRINCE EDWARD COUNTY. Fall wheat and clover wintered well, both in fine condition; present prospects good. W. C. HUFF.

EAST NORTHUMBERLAND. I am pleased to say that the fall wheat, clover, and rye are looking excellent in this county. J. B. STONE.

NORTHUMBERLAND. Fall wheat and clover never looked better in this vicinity. The fields of clover and wheat are quite green; prospects never better. F. BONNYCASTLE.

DURHAM, N. S. Clover fields have suffered this winter from want of snow; considerably thrown out by frost; it is a little too early to say definitely. C. R. B. B. April 21st, 1900.

WELLINGTON. Fall wheat in this vicinity looks well. I think the clover that stood the dry weather of last summer is all right now, but it is not as promising as the fall wheat.

SUSSEX, N. B. I can only speak for myself, and would say that after an extremely hard winter on grass land, clover on wheat and barley ground has wintered splendidly; on oat ground not quite so well. H. T. HAYES.

OXFORD. In reply to yours, will say that fall wheat never before looked as promising. Not a plant is missing, and with fair, warm weather it should be a great crop. Clover there was none to injure, as the drought of last season killed it all, and I expect a scarcity of hay, as many of the old meadows were plowed and sown to fall wheat. H. BOLLERT.

The fall wheat is looking splendid here. It is as green and even as it was last November, not spotted as it sometimes is. It has neither smothered nor frozen out. Clover that was all right last fall is all right now, but owing to the drought of last summer, a great deal of seed sown did not make a stand. GEO. RICE.

ESSEX SOUTH. The outlook for fall wheat is not encouraging on the light lands; is badly killed also on heavy land. On medium lands and sandy loam, better, but no fields without injury, more or less; but there is a good object lesson: The wheat on poorest land is killed worst, whilst a richer spot alongside is all right. Clover is not hurt where it was not killed by drought last summer. W. G. BALDWIN.

DRYDEN, ALGOMA. Clover and fall wheat came through the winter well, especially the wheat, but have been considerably damaged by hot and extremely dry weather for two months. A. E. ANNIS.

PETERBORO EAST. Fall wheat crop and clover look exceedingly well. Weather being favorable, the crop will excel other years greatly. JOSH. SMITHSON.

PEEL CO. Some fields of fall wheat look promising, but a great many damaged considerably by frost. Would say promises about two-thirds of an average crop. Clover very poor; mostly killed last summer by drought; not half a crop. R. P. SNELL.

EAST BRUCE. Fall wheat and clover are looking well in this district, and we are also having very favorable weather at present. THOS. A. CHISHOLM.

NORTH BRUCE. Most of the fall wheat has wintered unusually well this year, and the past few days of warm weather is making it look nice and green. The wireworm has injured some fields considerably, though the percentage of wheat injured by them is not great. Should the spring weather prove favorable, there is a promise of a good even crop. Clover has generally wintered well, but there are many fields of a very thin, uneven catch, owing to the dry season last summer. JAS. B. MUIR.

BRANT. The wheat in this section does not look very well, large spots of it being completely killed where the water and ice lay, and other places are thinned by exposure. The clover has come through the winter very well, but owing to the severe drought last summer, very little of it survived. TELFER BROS.

PRINCE COUNTY, P. E. I. To the surprise of farmers in this section, the clover fields seeded last year are looking fairly well. There are no places that are killed completely. A great many of the plants are badly thrown up, but will probably grow. The ground has been bare nearly all winter, freezing and thawing alternately. CHAS. CRAIG.

Legislation Re Salt Packages.

Mr. Robt. Holmes, M.P. of Huron Co., Ont., has introduced at Ottawa a bill amending the Weights and Measures Act, and providing that hereafter every barrel of salt packed in bulk, sold, or offered for sale, shall contain 280 lbs. of salt, and every such barrel or sack of salt shall have the correct gross weight thereof, and in case of a barrel the net weight also marked upon it in a plain and permanent manner. The name or the registered trade-mark of the packer of the salt, if packed in Canada, or the name and address of the importer, if it is packed elsewhere than in Canada, shall be marked, stamped or branded upon every barrel or sack of salt sold or offered for sale in Canada.

Huron County.

The snow left us in a hurry, though we have had considerable cold west winds off the lake, and even now, the last week of April, the prevailing wind is cool. The wheat looks well as a rule; there are a few patches, but we cannot complain as to its appearance. The grass is making good headway.

Sugarmaking, though not a general industry here, was good, but short. The syrup sells at \$1 per gallon. Seeding is well under way, though owing perhaps to lack of frosts since the snow left us, the heavy lands work none too easy, and the long, open season of last fall has made especially the light lands considerably grassy, thus necessitating extra working.

Horses are selling higher than ever; as high as \$200 was paid for a working mare the other day. At auction sales horses brought good figures, as also cows and sheep. Butchers cannot get fat sheep enough. Hogs are under 6c. live weight. Potatoes at 25c. per bush. Oats, 30c. Wheat, 64c. Bran, \$16 per ton. Short corn, 30c.

There was some talk of Huron having a canning factory a while ago, but we have heard nothing about it lately. It would be a good section for a cannery, and we hope the project has not fallen through. F. C. E.

Chatty Stock Letter from Chicago.

FROM OUR OWN CORRESPONDENT. Following table shows current and comparative live stock prices:

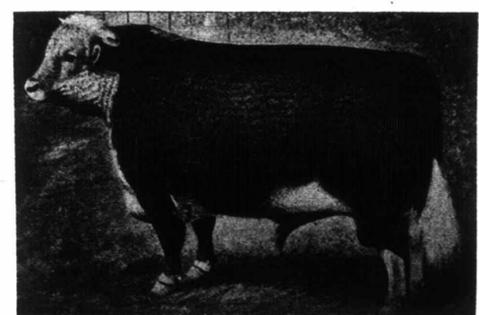
Table with columns: Live Stock, Extreme prices now, Top Prices (Two weeks ago, 1899, 1898). Rows include Beef cattle, Hogs, Sheep, and various lamb types.

The situation in the fat cattle market is fairly satisfactory to producers. It is a noteworthy fact that the choice light-weights and big heavy cattle are getting closer together. Some 915-lb. steers of choice quality sold at \$5.20, with 1,576 to 1,581 lb. cattle at \$5.20.

The hog market has been very high, being the highest since 1896, but just lately the tendency has been toward a sharp reaction. The wild speculation in pork products has been at the bottom of the recent sharp changes in hog prices.

The April cattle receipts at leading market points are the largest in the past ten years. The increase is entirely in "native" or corn-belt cattle, as the number of Texans is very small just now.

A GREAT SALE OF HEREFORDS.



DALE 66481.

[Hereford bull sold for \$7,500 by auction at Chicago, April 17th.]

The great event of the past fortnight was the dispersion sale at Dexter Park Amphitheatre, Chicago, of the Nave herd of Hereford cattle:

- 96 lots sold for \$61,415; an average of \$671.00.
20 bulls sold for \$19,085; an average of \$954.25.
76 cows sold for \$45,330; an average of \$596.45.
Highest price bull, Dale 66481, \$7,500.00.
Highest price cows, Theresa 92896, and Russet 73664, each \$3,000.00.
77 domestic-bred sold for \$49,755; an average of \$646.17.
18 domestic-bred bulls sold for \$14,915; an average of \$828.56.
59 domestic-bred cows sold for \$34,840; an average of \$590.51.
Highest price domestic-bred bull, Dale, \$7,500.
Highest price domestic-bred cows, Theresa and Russet, each \$3,000.
19 imported Herefords sold for \$14,990; an average of \$789.00.
2 imported Hereford bulls sold for \$4,502; an average of \$2,250.00.
17 imported Hereford cows sold for \$10,490; an average of \$617.00.
Highest price imported bull, Viscount Rupert, \$3,100.
Highest price imported cow, Lady Help, \$2,900.

The \$7,500 bull was bought by the man who raised him, and who sold him as a youngster at \$1,000.

Someone says that some breeders can make big money out of \$500 to \$750 bulls, while others might have such animals at \$500 to \$700 and not be able to manage them so as to avoid a loss. It simply means that a boat should not try to carry more sail than its ballast justifies, or that people to make a success of large ventures must have ideas and fittings to match.

Some 40 head of fine trotting-bred carriage horses, fitted up here for about a year, sold in the East at an average of over \$1,000 per head.

There is justification for high sheep and lamb prices in the fact that the receipts at four leading markets for the second week in April are the smallest for the season since 1895, being 33,000 smaller than in 1897. There has been a mighty growth in the demand for lamb and sheep meat, and as the demand grows better the quality improves and thereby causes a still increasing demand.

About 11,000 Colorado-fed lambs sold one week recently at \$7.20 to \$7.65, being 10c. to 15c. below the recent top, but still \$1.50 higher than a year ago.

Dock and Castrate Ram Lambs.

The importance of docking and castrating grade ram lambs intended for the butcher, cannot at this time be too strongly emphasized. Great numbers of ram lambs are shipped to the markets in Oct. and Nov. every year, which sell for much less than wether lambs. They fret and worry themselves and the other lambs or sheep they are with, and do not feed and gain weight or allow others to do so, and their flesh is liable to go off flavor when the breeding season is on. The proper time to attend to the operation is when the lambs are two or three weeks old, when it is attended with very little risk, but with reasonable care it can be safely done at two or three months old. Do not delay it, however, beyond a month from the birth of the lambs.

Toronto Markets.

The market seems governed a good deal by the lack of facilities to ship cattle. Space on the ocean steamships is scarce and unreliable. The quality of fat cattle was very fair, a few extra choice exporters being offered. The best selling cattle were stockers. Owing to the tight run, trade was brisk in the early part, but slackened off towards the close.

Export Cattle.—The supply of export cattle is light, but the demand is also very poor. A large number of cattle are left over each market day. This causes heavy shrinkage and extra expenses for feed. Only very few sales are reported, so the prices paid must be low. Choice export cattle sold at \$4.50 to \$4.75 per cwt. Light export cattle sold at \$4.25 to \$4.50.

Butchers' Cattle.—Choice butchers' cattle, equal in quality to export, weighing from 1,000 to 1,100 lbs., sold at \$4.40. Good butchers' cattle sold at \$3.65 to \$4.25. Common butchers' cattle sold from \$2.60 to \$3.00. Messrs. Jones & Rowat, of Sudbury, Ont., bought one load of butchers' cattle, 1,000 lbs. average, at \$3.50 per cwt. Messrs. Cook & Atkinson, Stouffville, Ont., sold four steers, 1,050 lbs. average, at \$4.00. Mr. W. I. Collins bought for the Montreal market 22 heavy cattle at \$4.00, average 1,050 lbs. each.

Bulls.—Heavy export bulls sold at \$4.00; light export bulls at \$3.60. Bulls for the byres sold at \$2.75 to \$3.25. One extra choice bull, weighing 2,190 lbs., was sold at \$4.50, bought by James Harris.

Feeders.—Choice, well-bred steers for feeding purposes are scarce. Well-bred steers, weighing from 1,050 lbs. to 1,200 lbs., are worth \$4.00. Mr. John Sheridan bought 11 short-keep steers, 1,170 lbs. average, at \$4.70, to finish at the byres. A number of cattle averaging 1,100 to 1,200 lbs. each, not suitable for butchers' cattle, and unsuitable for export, were bought up to-day by farmers as short-keep feeders at from \$4.25 to \$4.35. Mr. Daly, the well-known police magistrate of Napanee, Ont., bought a load of short-keep feeders averaging from 1,100 lbs. to 1,200 lbs. each, at \$3.35.

Stockers.—Yearling steers from 500 to 800 lbs. in weight, sold at \$3.25 to \$4.00. Heifers, black and white, sold at \$2.75 to \$3.25 for choice.

Sheep.—Sheep and lambs sold at higher prices; the market firm. Fairly choice sheep fetched \$4.25, and butchers' sheep at \$4.00 per cwt. Top price \$4.50 for ewes, and \$3.00 to \$3.50 per cwt. for bucks.

Lambs.—The market for spring lambs was good; prices firm and well maintained. Picked lots of ewes and wethers sold at \$6.00 to \$6.50 per cwt. Yearling lambs were quoted at \$5.00 to \$5.00 per cwt. Some were at from \$2.50 to \$5.00 per head.

Calves.—The demand not keen. Calves of good quality range from \$5.00 to \$10.00 per head; inferior small scrubs from \$2.00 upwards.

Milk Cows.—The supply very poor. Good milk cows for dairies wanted at from \$30 to \$50 per head.

Hogs.—Owing to the large number of light hogs, those under 150 lbs., the price was shaded to \$5.37. The best select, those weighing over 180 up to 200 lbs., are firmer, with a slight disposition to advance. The price quoted this week is again \$6.25, but there was considerable shading down to \$6.12 for the last two weeks on the various market days.

There seems to be a general disposition on the part of farmers to hold for certain days, when an over supply enables the packers to discriminate very closely on undesirable weights and quality. Outside packing-houses wait on this market and do not give the upward turn until this market has fallen. This, in a great measure, is the reason for the constant fluctuations. Thick fats, \$5.75 per cwt.; light fats, \$5.50; sows, \$3; stags, \$2 per cwt.

Mr. F. McKay, Creemore, Ont., sold 80 hogs, best singers, \$6.25 per cwt.

Our opinion has been asked by a well-known shipper as to what are the prospects for the ensuing month? We are inclined to the opinion that hogs will go slightly better until June.

The Wm. Davies Co. have issued a letter complaining that during the last few weeks, since prices have advanced, there has been an alarming increase of soft and tender sides in the bacon coming out of the salt. These are chiefly of the lighter and from hogs not sufficiently finished. It is suggested that the trouble may possibly be owing to the feeding of roots and other soft feed, and it is intimated that if this class continues to come they will be discriminated against severely in prices.

Dressed Hogs.—Very few dressed hogs coming forward in farmers' loads; choice bring from \$7.25 to \$7.50 per cwt.

Wheat.—One load of Red wheat sold at 69c. per bushel; 200 bushels of Goose wheat at 74c. per bushel; 100 bushels of spring wheat at 70c. per bushel.

Oats were unchanged at 33c. per bushel. Barley.—200 bushels sold lower at 44c. per bushel. Hay.—Fifteen loads of hay sold at \$10.75 to \$11. Straw.—Very little on offer, \$8 to \$10 per ton. Bran is quoted at \$16 to \$17 per ton.

Butter.—The recent return from the Manchester butter market reports that the market is in better condition. On this market deliveries free; small dairy pound prints from farmers at 14c. to 15c. per pound.

Cheese.—The market in a very unsettled condition; no stocks held. Very little coming on the market, yet sales are made in small lots at easier prices, at from 12c. to 13c. per lb.

Hides and Wool.—Hides, No. 1 green, per lb., 9c.; hides, No. 1 steers, 9c.; hides, cured, 9c.; calfskins, 10c.; sheepskins, each, \$1.20; wool, fleeces, lb., 19c.; wool, unwashed, 11c.; wool, pulled, 22c. The shortage in fine wool in Australia does not at first sight appear to have any effect on Canadian wools, but recently another source of supply has been cut off. Owing to the war in South Africa very little cape wool has been seen on the English market. The probability is that wools of all sorts will in the future be more valuable than at present.

Seeds.—Red clover, per bushel, \$5; Alsike, \$7; Alsike, good, \$6; White clover, \$8; timothy, \$1.35.

Horse Market Notes.

The horses wanted by Major Dent, remount officer of the British Army, and Veterinary Major Phillips, M. R. C. V. S., are for cavalry, artillery, transports and ponies. The latter must be strong, wiry, short-backed, good bone, and from 14 hands to 15 hands 1 inch high; cobs, strong, well-built, active animals, 15.11 to 15.3 hands high. They must be between the ages of 5 and 9 years old; must be sound in wind, limb and eyesight; must not be footsore, nor have sprained legs, with neither splint, spavin nor ringbones.

Small compact animals that show a little breeding are desired, but grays and light roans are not wanted. Prices offered are from \$50 to \$150 per head, according to quality, but it is doubtful if this contract can be filled, for at the present time there is the nearest a horse famine that this country has witnessed for many years, and the greatest demand for good horses that we ever had. There are more enquiries from England than ever before.

At the sale of Clydesdale stallions at the farm of the late John Bell, of Amber, Ont., the following were some of the prices realized, with the purchasers:

Stallion Janitor, \$1,425, sold to Mr. D. Watson, of Maple. Sherlock Holmes, \$750, to Mr. R. Crake, of Sharon, Ont. "Corsewell's Grandson," \$600, to Mr. R. Cox, of Amber, Ont. "Royal Huntley," \$900, to Mr. J. Ireland.

Bladwick, \$900, to Mr. J. Coulter, of Brantford, Ont.; also Hazelside, for \$600.

Messrs. Graham Bros., of Claremont, Ont., purchased "Earl of Aberdeen" and "Chiropodist" for \$100 each. Fresh milk cows realized slightly over \$50 per head.



The Mutiny of the "Helen Gray."

BY GEORGE MANVILLE FENN.

(Continued from page 237.)

I could hardly keep down an exclamation as all this now stood out clear as day, and a horrible sensation of misery came over me as I thought that I ought to have spoken to the captain.

The captain—his wife—that little child! "No, no," I said the next moment, "they would not—they could not do that!" And feeling it was impossible that the most savage human being could injure that little child, I began thinking of what I could do.

The first thing was to get hold of some weapon, but I could think of nothing but a captain's bar, and to get that I must go by the hatch, where I could still hear the clinking of the chain-cable.

I was creeping on all-fours to the side, so as to keep under the shelter of the bulwarks, and try to get to the poop-deck, when from that direction I heard a faint sound, and something seemed to tell me that it was the captain coming on deck, to see why the ship's course had been altered, and try to trap any of the watch not attending to his duty.

I could not see, but I felt sure that he would turn short round to the right and ascend the steps to the poop-deck, so as to pounce on the man at the wheel.

I did not finish my thought, but sprang forward to help him, but as I took my first step I heard a sound, a faint cry—a gasp or two—a groan, a quick rustling sound, and a splash.

By that time, with a cry of rage, I had reached the spot, making a bound amongst the Malays.

"Mr. Denson, Jamieson, Stacey," I yelled, and then my feet glided on something slippery and wet on the deck, and I fell.

Before I could recover myself and spring up, I was seized by the arms, a lithe figure was on my chest, and two hands were at my throat.

"It's all over," I thought, "God forgive me, and protect that poor woman and her child."

But at that moment there was a quick authoritative whispering, a face was bent down over mine, hot breath was on my cheek, and while I felt that these people could almost see, cat-like, in the dark, a voice I knew as Ismael's said something in Malay, and to my intense surprise I felt myself turned over on my breast, while my wrists were rapidly and tightly bound behind me by one man, and another secured my ankles and then my knees.

Then there was another order, and I was rolled over close under the bulwark, and lay there in the darkness trying to make out what was to follow, and trembling horribly for the fate of Mrs. Barton and her child, for I felt no doubt now that it was the captain who had been killed.

But though I lay listening, the only sound I could hear was the soft pat of a bare foot now and then, and the low guttural talking of the Malays.

Still, that told me a great deal, for they had ceased to whisper, and by that I knew that they felt no more fear of discovery.

"Great heavens," I thought, "where are the rest of the crew? They can't all be murdered."

We were twenty all told on board, without the captain's wife and child, and as I lay there in agony I tried to reckon up what might have been.

There were, of course, fourteen without the Malays; and counting the captain, I seemed in a confused way to be able to account for four murdered and thrown over the side. Then as I was left lying there I left nine to account for, including Joe Stacey, who must have gone on deck; and I shuddered as I felt that perhaps the poor fellow who had always been friendly to me might have been one of the unfortunate four.

CHAPTER V.

If ever poor wretch prayed fervently for morning, I did, as I lay there, but daylight, always long in coming near the equator, seemed to lag more heavily than ever then. But all at once, when I felt as if I could bear my position no longer, it suddenly seemed as if I was looking up at a dim mist, which grew more and more grey, and from out of it the masts, sails and rigging began to loom. Then the long-boat, lying on its chocks over by the galley, began to appear, and as I lay there something on its edge moved.

I stared at it hard and it disappeared. Then as it grew lighter it rose again, and I was sure that one of the Malays was in the boat watching me, but the next moment a sob rose up in my throat, and I felt as if I was going to cry like a child, for I had seen a faint gleam as the head moved, and I knew it was the bald patch on Joe Stacey's grizzled crown.

I had not long to wait for relief. There were footfalls just beyond my head, and directly after Ismael, Dullah, and two others of the Malays stood about me, but quite transformed in appearance, for though they still retained their sailor's shirt and trousers, each had put on a sarong, a plaid cotton kilt, three of them had little natty checkered caps of the make worn by our cavalry, and Ismael had a red silk handkerchief twisted about his black head.

But there was something else which took my attention. Each man had an ugly-looking kris stuck in the folds of the sarong, and as I wondered how they had been able to make this change, I remembered that we had put in at Penang, and that they might have got them there.

I tried to be firm as Ismael drew his kris, for it seemed to me that my time had come.

But I was not kept long in doubt, and my determination was thrown away, for Ismael cut the cord about my wrists, Dullah did the same by my legs, and they sheathed their weapons.

Ismael made a sign to me to rise, and I tried to obey, but my legs were perfectly numb, and I sank back, looking up at him with a feeling of horror that I could not conceal.

"Not kill you," he said, quietly, as he laid his hand on my shoulder, and I could not help wincing, for there was a mark of blood on his shirt-sleeve. He then turned away from me, gave some orders to his companions, one of whom went to the wheel, for a breeze was springing up, and the vessel careened slightly over, and began to glide along about half a mile from what was evidently a densely wooded shore, back from which, some miles to the south, stood up a rounded hill, which looked like an extinct volcano. The mist melted away before the sun, and the filmy clouds soon disappeared, leaving all bright and clear.

"What does it all mean—what are they going to do?" I said to myself, and then fell a wondering as to the fate of my companions, and stood there listening for some sound from the cabin.

This was not long in coming, for I heard the rattling of a handle, then a banging on the door of the inner cabin, and Ismael walked swiftly by my turned, and came back to put his face close to mine.

"You stop," he said. "I am captain now."

His words were very few, but full of meaning to me, and I

felt my heart sink as I thought of my helplessness, and watched him go into the captain's cabin.

"Yes," I heard him say sharply. "You want?"

"Why is this door fastened?" I heard Mrs. Barton say.

"Where is the captain?"

"He is gone. You make no noise," was all the answer she had, but the tone of Ismael's voice was so imperative that Mrs. Barton said no more. Then giving me a sharp look as he passed me, the Malay called to a couple of his men in his own tongue, gave them an order, pointing upward to the rigging, and they made an angry reply, which I soon interpreted to mean that they could not do what he wanted alone, and the three went forward together.

Now was my opportunity, and leaving the bulwark I crossed over and stood with my back to the mainmast, and then seated myself as if weary, bending forward, and resting my chin on my hand so as to cover the side of my mouth.

"Joe," I whispered, but there was no reply.

I tried again a little louder.

"Hullo! What cheer?"

"Hut! Don't speak; only listen. Tell me first; are you hurt?"

"No. That you, Jack Roberts?"

"Yes. Can you cover yourself? I think they're coming aloft."

"Ay. All right."

"Can you hear me?" I said after a pause during which I had gazed forward, trembling lest our voices should have been noticed.

"Ay, lad."

"Where are the others?"

"Don't yer know, lad?" came back, and then after a pause, "dead, overboard, all but us."

I had heard a step off to my left, and with my head hanging down uttered a low sigh. "Oh, dear me!" I muttered aloud, and as I rested my head on one hand I began to rub my ankle softly with the other.

The next moment Ismael was alongside and he looked at me searchingly, but seemed satisfied, turned, and called to his companions, and four of them went aloft and began to shorten sail.

I soon had evidence of what this meant and that the Malays were well acquainted with the coast, for somewhere about mid-day I saw Ismael join the man at the wheel, and stand with his hand sheltering his eyes, gazing out to sea. Then the wheel was rapidly turned, and the vessel careened over more and more as she curved round and began sailing straight for the low forest-covered shore, now a mile away, as if the object were to run her aground opposite to the wooded mount whose summit rose beyond the trees.

But I was wrong. From where I stood, for I had risen, I made out at last that there was an opening hidden by a mangrove-covered spit, and towards this we were gliding fast; and at last, just as I was saying to myself that we had made good sailors of these men to some purpose, the vessel glided in by an oblique opening, passing for some hundred yards between a long narrow spit of mangrove-covered, muddy land and the forest, so that we seemed to be sailing right in among the trees till we passed round a wooded bluff which quite shut us off from the sea.

I could see now that we had entered the estuary of a muddy river, up which, as it wound in and out, we glided pretty swiftly, for a strong tide was running, which carried us with it for quite a couple of hours before it began to slacken, when Ismael gave the word, one of the anchors was let go, and the vessel swung round.

As soon as the vessel was moored the Malays began to busy themselves at the galley, and as I looked about me I could see how hopeless our condition had become. That these people would at the turn of the tide take the barque higher up the stream I had no doubt, and as I noted how completely we were cut off from the sea, and evidently in a part never visited by Europeans, I asked myself what was to be the fate of that poor woman in the cabin and her helpless child.

I was leaning against the bulwark watching the river, which was slowly beginning to run down, when I shuddered and felt as if here before me was an utter denial of the possibility of an escape, for not fifty feet away there were two muddy-looking knobs just above the surface of the water, and as I stared at them I could see that in each of these knobs there was a hideous-looking eye; fifteen inches or so in front was the end of a horrible snout slowly turning from right to left as if the eyes were on the look-out for prey.

I could see no more, but in imagination there, beneath the muddy water, was the great bulky body and powerful tail of an eighteen-foot-long crocodile, and as I turned shuddering away I could see the heads of six more, and another muddy-looking monster slowly crawling out of the river on to a mud bank on the other side.

Escape was impossible by the river, I felt, and what, I asked myself, would be the fate of a man who tried to force his way through a thick jungle, a place, for aught I could tell, haunted by tigers.

My musings were ended by the coming of Dullah, who brought me some of the food one of their number had prepared, and he smiled and showed his teeth as he handed me a bottle of wine, one just taken from the captain's cabin.

"Look here," I said, for we were out of hearing of the others; "what are you going to do?"

"You will see," he said, laughing and nodding his head.

"Our ship now."

"But look here, Dullah," I whispered; "your people won't hurt that poor woman and the child?"

He gave me a curious look.

"Eat," he said; "going to take her some."

He went away forward to the galley, and after making sure that I was not observed, I whispered:

"Joe, lad—look out!" and threw a couple of biscuits and part of the meat Dullah had brought into the boat.

Then I stood listening and making belief to eat, but I could hardly swallow a morsel.

"He must have some drink," I said to myself. "What can I do?"

I hesitated for a few minutes, and then, feeling that I was to a certain extent free to act, I walked forward to where the breaker stood nearly full of water, but before I was there two of the Malays, headed by Ismael, came running to intercept me. I did not stop though, but went on, picked up the pannikin, dipped it full of water and drank heartily, every draught seeming to send a thrill of new life through my body. Then, with the Malays watching me, I dipped the tin full again, and walked back with it to where I had left the bottle and the food.

"Force is no good here," I said to myself, as I began to munch one of the biscuits. "One can't play lion, so I must play fox."

I could not keep my eyes off that bottle, for it seemed to me to offer a way of escape—one way, for other ideas were buzzing in my brain.

I emptied the pannikin of water into the bottle, gave it a shake, filled the pannikin again, this time with wine and water, and then thrust the cork back into the neck.

I was seated on the deck, but I now rose up, bottle in hand, and stood it just above my head, beneath the boat, eating the while, and glancing carelessly about to make sure that I was not watched.

All seemed safe. So hesitating no longer, I raised my hand quickly, took the bottle and pitched it over the side of the boat, stooping down the next moment to pick up the pannikin to drink.

As I was in the act of raising it, a side glance showed me that I was observed, for Ismael came round from the other way, and the perspiration oozed from every pore as I stood there in dread lest Joe should make a sound.

To warn him, I forced myself to speak, and turning to the Malay:

"You will not hurt that poor lady and her child?" I said.

"You ask?" he said, with a little laugh, as he spoke to me with his dark, oily eyes half closed. "I know what I shall do. You like the little girl?"

"Yes," I said, eagerly.

The Malay laughed and pointed to the food.

"Eat," he said, and then laying his hand on my breast, it almost seemed as if I had been thinking aloud, for he pointed down at the river. "No swim away," he said. "Look—Mugger!"

I followed the direction of his pointing hand, and could see the prominent brow of one of the loathsome reptiles slowly floating down with the tide.

He laughed as he saw me shudder, and gripping my shoulder hard he pointed to the jungle.

"Tiger," he said. "You stop; friends."

He held out his hand as he released my shoulder, and as I stepped back, feeling that it was a hand stained with the blood of my messmates, I felt my nerves tingle, and as if I should like to strike him full in the grinning mouth; but his eyes were fixed full on mine, and knowing that if we were to escape it must be by matching cunning against cunning, I placed my hand in his.

"Hah!" he ejaculated, with a satisfied look.

"And you will not hurt those two?"

He half closed his eyes again, and smiled and nodded.

"I am chief," he said slowly. "You wait see."

CHAPTER VI.

It was wonderfully still there on that glassy river. Now and then there was a splash which I knew was made by one of the crocodiles, and from time to time a parrot shrieked in the jungle, or there was a barking sound, which came, I found, from a great flapping bird with a huge beak.

On board I could hear a low muttering from the men, who kept walking about the deck, three keeping watch while the others lay down under the awning to sleep.

Whenever the Malays came silently round my way I trembled lest Joe should make a sound and betray his presence, but the day wore on, and I prayed for the darkness, under cover of which I hoped to contrive a way for him to escape below, perhaps for us all to get off in one of the small boats, though for the life of me I could invent no plan.

I wanted to get speech with that poor woman in the cabin, to try and give her a word or two that might tell her there were two friends on board ready to risk anything to save her and her child, though I dreaded the meeting and the question I knew must come—"Where is my husband?—Where is the father of my child?"

I sat on there, with my head down on my breast and my eyes closed as if asleep, thinking.

Could I write?

Yes, I could write, for I had, well frayed and worn now, the little notebook in which I had set down engagements before I became a common sailor and started on this voyage.

I took it out of my trousers pocket and wrote a few lines on one leaf.

"Try and be hopeful. You have friends on board."

I tore this out and doubled it up, placing book and note back in my pocket as I sat on, trying to solve the difficulty of delivering it, but no idea came.

In spite of the terrible position and the anxiety, sleep mastered me at last, and I was roused by a hand laid upon my shoulder.

"Get up and help."

I sprang to my feet and followed the Malay to where his men were getting up the anchor. It was close upon sunset, and I saw that the tide had turned, so that it was evidently their intention to let the vessel float farther up the stream, to make sure of the valuable prize.

As soon as the anchor was raised from the soft mud the vessel began to glide slowly up the river. The night grew perfectly dark, and the river mist thickened, but for a long time I did not dare to stir lest one or other of the Malays should be close at hand; but at last, I nerved myself to my task, listened till the muttering of conversation told that the enemy were busy, and quickly drawing myself up I glided over the side of the boat and lay down.

"Joe," I whispered.

"Ay, ay, lad," came from close at hand, and with my lips to his ear told him that when he heard me talking he must drop down on deck and get below into the hold.

"Get among the water-casks," I said, "and I shall know where to find you."

He pressed my hand in answer, and I asked him then for news.

"Don't ask me, lad," he whispered, with a low groan. "They were too cunning for us. Only you and me's left to tell the tale, and they think I went overboard. Skipper's wife!"

"Safe so far."

"And that poor bairn?"

"Safe, Joe. We must escape with them if we have to kill all first."

"I'm ready," he whispered.

I pressed his hand again, and was going to climb out, when I raised my head over the side of the boat. I could see a faint glowing spark of light approaching, and my name was pronounced quietly. Then the glowing light disappeared, and by the sound I knew that the Malay Ismael had run aft and gone into the cabin, suspecting that I was trying to communicate with the prisoners.

Quick as light I was out of the boat, down on deck, and walking quickly forward to where the other Malays were together keeping a look-out ahead as we still floated up with the tide.

"Where's Ismael?" I said, quietly.

Dullah pointed aft in the darkness, and with my hands in my pockets I slowly sauntered down on the other side of the deck to come directly after upon the chief hurrying to his men.

"Ah!" I said, stopping short, "you are there. Give me one of those. I haven't had a smoke to-day."

I heard him draw a long breath as he thrust his hand into his pocket and drew out three cigars, which he placed in my hand.

I took them quietly enough, bit off an end, and the next moment if Joe Stacey had been looking over the side of the boat he would have seen Ismael's dark face and my fair one illumined, as end to end we puff'd at our cigars till mine was well alight.

"You can sleep in your old place," he said. "The hatch will be open."

"All right!" I said, quietly; "but," I added, as if by an afterthought, "shall I be safe?"

"If one of my brothers killed you," he said through his teeth, "I should kill him."

"Hah!" I ejaculated, as I stood smoking; and then to myself, "If Joe is seen he'll get below now," and to give him time I said aloud:

"Won't she get ashore? We're very close."

"The river is narrow now, but deep. If she touches the shore, what then? Allah will help us to get her off."

"Where are we going?" I said.

The Malay uttered a low laugh, and I could get no answer to my questions, but I left him at last, hopeful that Joe had seized the opportunity; and when, after finishing my cigar I climbed up, my hand touched the bottle, but my fellow sufferer was gone.

With the first sensation of hopefulness I had yet enjoyed, I thrust that bottle into my breast, and went forward into the fore-castle to write another letter, and wait for the turn of the tide, for I began to see a way of escape.

I went below, as I said, to my bunk in the fore-castle, and sat down in the pitch darkness to think. We were still gliding up the river with the tide, and I knew that it would be easy to tell when it was high water, for the anchor would be let go, and when the tide turned would be my time.

For what? Wait a bit and you shall hear.

I had my notebook out, and after a good deal of thought of how to say the most in a few words, and of how blind people managed to form letters in a line, I sharpened my pencil, and then took the cork out of the bottle, and set it up to drain while I wrote slowly and carefully:

[TO BE CONTINUED.]



Not Lost, but Gone Before.

(Continued from page 239.)

"Promise!" uttered an entreating voice. "I promise," was the earnest answer.

But the voice was languid and weak, for the dragon-fly grub was sick and uneasy. His limbs had lost their old activity, and a strange oppression was upon him. Upwards he must go now, upwards, upwards! That was the strong sensation that mastered every other. And then he thought of the frog's account, and felt a trembling conviction that the time had come when the riddle of his own fate must be solved.

His friends and relations were gathered around him, some of his own age, some a generation younger, who had only that year entered upon existence. All of them were followers and adherents, whom he had inspired with his own enthusiastic hopes; and they would have helped him if they could, in this his hour of weakness. But there was no help for him now but hope, and of that he possessed, perhaps, even more than they did.

Then came an earnest request, and then a solemn promise, that, as surely as the great hopes proved true, so surely would he return and tell them so.

"But, oh! if you should forget!" exclaimed one of the younger generation, timid and uneasy.

"Forget the old home, my friend?" said the sick grub, "forget the emotions of hope and fear we have shared together, and which I am bound, if I can, to relieve? Impossible!"

"But if you should not be able to come back to us?" suggested another.

"More unlikely still," murmured the half-exhausted grub. "To a condition so exalted as the one in store for us, what can be impossible? Adieu, my friends, adieu! I can tarry here no longer. Ere long you may expect to see me again in a new and more glorious form. Till then, farewell!"

Languid indeed was the voice, and languid were the movements of the grub, as he rose upwards through the water to the bulrushes that fringed its bank. Two brothers and a few of his friends accompanied him in his ascent, in the hope of witnessing what ever might take place above; but in this they were disappointed. From the moment when, clinging with his feet to the stem of a bulrush, he emerged from his native element into the air, his companions saw him no more. Eyes fitted only for the water were incapable of the upward glance and power of vision which would have enabled them to pierce beyond it, and the discoverers descended, mortified and sorrowful, to the bed of the pond. They waited through that day for their friend's return, at first in joyful hope, then in anxiety, then in a gloomy fear that bordered at last on despair.

"He has forgotten us," cried some. "A death from which he can never awake has overtaken him," said others. "He will return to us yet," said the few who clung to hope.

Thus passed on the hours of the second day, and before night a sort of grim and savage silence was agreed upon among them, and they ceased to bewail either the loss of him they had loved, or their own uncertain destiny. On the morning of the third day one of the grub's favorite brothers came sailing into the midst of a group who were just awaking from sleep.

"Our brother has not returned to us," he said.

"But, my friends, I feel that I am going to him, wherever that may be, either to that new life he spoke about or to that death from which there is no return. Dear ones, I go as he did, upwards, upwards, upwards! An irresistible desire compels me to it; but before I go, I renew to you, for myself and him, the solemn promise he once made to you. Should the great hopes be true, we will come back and tell you so. Adieu!"

The grub rose upwards till he reached the brink of the pond, then, seizing a plant of forget-me-not, he climbed out of the water into the open air.

The hope he had again awakened died out as the day wore on and he did not return. And after this others went upwards in succession; for the time came to each when the lustrous eyes of the perfect creature shone through the masked face of the grub, and he must needs pass forward to the fulfillment of his destiny. But the result among those who were left was always the same. There were ever some that doubted and feared, ever some that disbelieved and ridiculed, ever some that hoped and looked forward. If they could but have known, poor things! If those eyes, fitted for the narrow bounds of their water world, could have been endowed with a power of vision into the purer element beyond, what a lifetime of anxiety would they not have been spared! But belief would, in that case, have been a necessity, and hope must have changed her name.

Was the dragon fly really as faithless as they thought? When he burst his prison-house and rose on glittering wings into the summer air, had he indeed no memory for the dear ones he had left, no recollection of the promise he had made?

Ah! so far from it; he thought of them amidst transports of his wildest flights, and returned ever and ever to the precincts of that world which had once been the only world to him. But in that region also, a power was over him superior to his own, and to it his will must submit. To the world beneath he could never more return. The least touch upon its surface, as he skimmed over it with the purpose of descent, brought on a deadly shock, and his wings involuntarily bore him instantly back from the unnatural contact.

"Alas! for the promise made in ignorance and

THE QUIET HOUR.

Temper.

"When it drizzles and drizzles,
If we cheerfully smile,
We can make the weather,
By working together,
As fair as we choose in a little while.
For who will notice that clouds are drear
If pleasant faces are always near,
And who will remember that skies are grey
If he carries a happy heart all day!"

The truest test of anyone's Christianity is the test of the home life. If you want to know what a person is like, don't study him in society, where he has his "company manners" on, but in the monotonous round of his everyday life. As a little girl of my acquaintance said once, when people had been praising her: "They don't know me when I am at home!"

Some people, especially semi-invalids, seem to think that they have a right to be as irritable as they choose. We hear a great deal about "nerves" nowadays, and sometimes when the nervous system is out of order, it is hard to keep them under control. But do we always try? Don't we sometimes act as though we had a monopoly of nerves, and no one else had a right to have any? Have we any real right to speak impatiently and crossly just because someone else—a restless child, perhaps—is fidgeting uneasily in his chair? Is it in obedience to the command, "Be courteous," that we look as black as a thunder cloud if a little brother or sister bothers us by asking questions, or chatters when we want to be quiet?

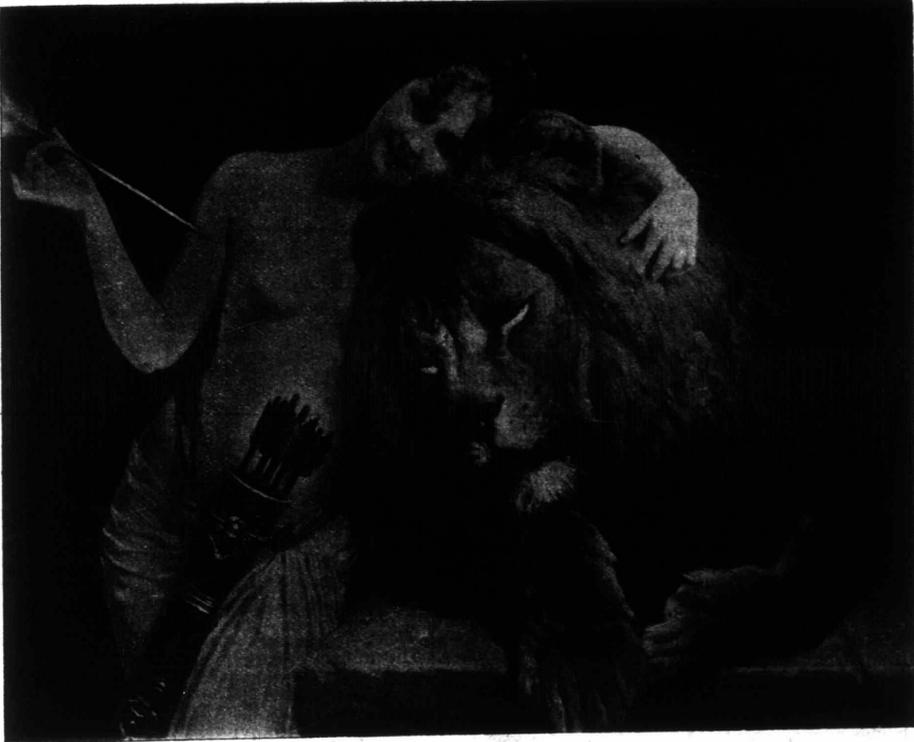
It surely is not Christian love which makes us dislike other people because of little tricks of manner which, as we say, "make us nervous," as if that were an excuse! If you really want to let your nerves run away with you, if you want to lose all control over them, then you are going the best way about it when you get sullen and snappish over trifling annoyances. Perhaps the person who offends you by little peculiarities and mannerisms, is living a life of noble self-sacrifice, beside which your refined self-seeking existence is very mean and petty.

God floods the world with sunshine, and no one has any right to pull down the blinds of his soul, and then complain that his life is sad and dreary. It is always possible to find something to fret about, if one is determined to be miserable; but this manufactured-to-order misery is a sin, and a great sin, too. The Bible is full of commands to rejoice and be glad, and our own common sense agrees with the Bible most entirely—when we see the irritability in someone else.

How do you like to live with people who are sometimes pretty cheerful, but can never be depended on for evenness of temper? The least thing ruffles them. A door banging suddenly, a badly-cooked dinner, an east wind, or any other trifling annoyance, makes them ill-tempered quite long enough to destroy the comfort of the rest of the family. It is easy to see this in others; it is so hard to understand that our own frowning looks and fretful tones not only make the home uncomfortable, but also are a disgrace to our Christian profession.

Worldly people are watching professed Christians, watching eagerly to see if they really do possess a pearl of great price, which it would be to their advantage to gain, even if they had to sell everything they owned to obtain it. If they see a joyful spirit, rising triumphant over the petty vexations of life, shining always, because living always in the light, they are attracted by it, and are inevitably drawn nearer to God. But what if they see just the reverse? Are they not repelled, and inclined to look for happiness in the service of the world? Do you want to drive anyone from the Living Fountain to the broken cisterns, to quench this spiritual thirst? Oh, be very careful, for your everyday life has tremendous influence on those around you. It has far more effect than the great acts of heroism which you feel you could do if you only had a chance. Even if you did shine in them, which is doubtful, they would not help others, in the daily battle with little temptations, half as much as you can help them now by being always sunny and pleasant.

A good temper is not easy to cultivate, but it is far more valuable than wealth, beauty or fame. It is more valuable to its possessor, for it ensures his happiness, which none of these things do, and it is



"LOVE CONQUERS MIGHT."

presumption, miserable grub that I was," was his bitter, constantly-repeated cry.

And thus—divided, and yet near; parted, yet united by love—he hovered about the barrier that lay between them, never quite without a hope that some of his dear ones might come in sight. Nor was his constancy long unrewarded, for, as the days flew past, some fresh arrival of kindred from below added a keener joy to the dragon fly's already joyous existence. Sweet it was to each newcomer, when the riddle of his fate was solved, to find in the new region, not a strange and friendless abode, but a home rich with the welcomes of those who had gone before.

Sweet also it was to know that even while they had been trembling and fearing in their ignorant life below, gleams from the wings of those they lamented were dropping like star-rays on their home, reflected from the sun that shone above. Oh! if they could but have known! MRS. GATTY.

"Love Conquers Might."

This is a well-known picture by Van Courten, and shows us a splendid specimen of the king of beasts, and what a pass he seems to have come to! Poor, poor fellow, the tender passion evidently has him fast, and he is as helpless as that other poor fellow in the fable who had his teeth drawn and his claws cut. He looks so soft, both physically and mentally, that one almost feels like leaning on him too, but then, my friends, he's not in love with us, you see, and would probably quickly assume a different aspect. He is a beauty, though, and looks very happy just now. Love makes a good foil, but it is Might that really makes the picture.

more valuable to others, for it contributes very largely to their comfort and pleasure.

What a nuisance "tempers" are! There is the touchy temper, which is very silly, and makes its possessor most uncomfortable, for it is always spying out insults and taking offence.

We all need to strive most earnestly, and pray most perseveringly for the charity which is "not easily provoked." It cannot be obtained in a day or a week; in fact, a lifetime is not too long to bring this grace to perfection.

As for the habits we have already formed of indulging in cross, impatient and irritable words, or the black and sullen looks which are apt to accompany them, they will have to be broken carefully, prayerfully, and slowly.

"How shall I a habit break? As you did that habit make. As you gathered, you must lose; As you yielded, now refuse. Thread by thread the strands we twist, Till they bind us neck and wrist. Thread by thread the patient hand Must untwine, ere free we stand.

HOPE.

A living, loving Christian—true of tongue, honest of conduct, pure of heart, lovable in daily life—is the most unanswerable argument for Christianity.—F. L. Cuyler.

"As I have loved you" means love that is sweet and gentle to all men, who have many rudenesses and meannesses, who are selfish and faulty, who have sharp corners and vexing ways.—J. R. Miller.

"'Tis not the great things that we do or say, But idle words forgot as soon as spoken, And little thoughtless deeds of every day Are stumbling blocks on which the weak are broken."

Her Money-makers.

"Come out and see my money-makers," said a lady living in the country to a friend from the city who was visiting her. "These," she continued, as they came to a large and well-appointed henhouse, "are my 'church hens'; all that I make out of them above expenses is devoted to religious objects.

"The geese you see down there on the pond are my 'poor and needy geese.' They cost little or nothing, and the profits are applied to the relief of the poor and needy. Away down beyond that wood I keep a drove of hogs—'dress hogs' I call them, because I buy my dresses out of what I make from them.

"Those Alderney cows are my 'theatre and opera cows.' I saw four Wagner operas last winter out of the profits of one of them. You see that bed of strawberries? Well, we don't call them strawberries, but 'shoe-berries.' I buy all the children's shoes, and my own too, out of the income from that strawberry patch.

"These and many other little moneymaking schemes I manage myself, without troubling my husband, who works in the city for a not very big salary. Consequently, we have a great many comforts and luxuries that we couldn't otherwise have; and I thoroughly enjoy the work too."

Upon reading the above article, I could not help ruminating.

Perhaps there are some wonderful people who can do all the things enumerated, but it has not yet been my happy lot to meet them. This lady mentions five industries which she pursues, hinting, too, at various other little "moneymaking schemes." If she manages all these things herself, I should like to know where she gets the time or strength for the theatres, etc. Children, also, are mentioned. Where, then, does their care come in? It would be really interesting if some of our farmers' wives and daughters would give us their opinions on this subject, and tell us of anyone who manages all these little things—hens, geese, hogs, cows, strawberries, etc., etc.—goes to amusements, takes care of children, and (we suppose) household generally. My very humble opinion is that if these industries are personally superintended, the household and children must be neglected. If, on the other hand, assistance is employed and paid for, where does the economy come in?

A Letter from a Cat.

Dear Editor:

I hereby take My pen in paw to say, Can you explain a curious thing I found the other day? There is another little cat Who sits behind a frame, And looks so very much like me You'd think we were the same. I try to make her play with me, Yet when I mew and call, Though I see her mew in answer, She makes no sound at all, And to the dullest kitten, It's plain enough to see That either I am mocking her, Or she is mocking me. It makes no difference what I play, She seems to know the game, For every time I look around I see her do the same. And yet, no matter though I creep On tiptoe lest she hear, Or quickly dash around the frame, She's sure to disappear!

Recipes.

PUFFETS.

Beat together two eggs, one tablespoonful of sugar, and 1/2 cup butter. Add one pint of milk, one quart of flour, and two teaspoonfuls baking powder. Bake in muffin rings in a quick oven.

CORN GEMS.

Two cups cornmeal, two cups flour, two cups sweet milk, two eggs, three heaping teaspoonfuls of baking powder, 1/2 cup butter, 1/2 cup sugar. Bake in gem pans.

SCOTCH SHORT BREAD.

Wash 1/2 cup of butter, wipe it, and cream with 1/2 cup of granulated sugar; add two cups of flour and knead it till smooth. Put it on a sheet of white paper and roll it into a square piece three-quarters of an inch thick. Press the edges all round with a three-tined fork and prick all over the surface. Bake in a slow oven about half an hour. Let it stand in the pan till hard.

POMERANZENBROD.

(A German Cake.)

Separate the whites and yolks of five eggs. Put the yolks into the mixing bowl, beat them slightly, then add two cups of fine granulated sugar and beat them for half an hour or till very light and thick. Beat the whites to a stiff froth and beat them into the yoke mixture. Have ready 1/2 pound of almonds blanched and chopped, and 1/2 pound of citron sliced thin and cut fine. Add these to the batter. Stir in about four cups of flour, or enough to keep the dough in shape when dropped. Butter a large baking sheet or shallow pan, sprinkle on a little flour, drop the batter in small heaps with fork, some distance apart, and bake in a brisk oven ten to fifteen minutes or till a pale golden brown color.

BOILED CELERY.

Bring it to the boiling point and simmer for 45 minutes, drain, add pepper, salt and butter.

CELERY AND POTATOES.

Boil the celery as per recipe given. After it is cold, chop very fine and mix with cold boiled chopped potatoes in the proportion of 1 of celery to 3 of potato. Melt a generous piece of butter in a saucepan and fry the celery and potato, seasoning with pepper and salt.

Weights and Measures in the Kitchen.

- 1 tablespoonful of butter or the size of a small egg = 1 ounce.
10 common eggs = 1 pound.
1 teacupful liquid = half pint.
1 rounded tablespoonful of flour = 1 ounce.
1 cup butter = half pound.
2 cups granulated sugar = 1 pound.
2 cups brown sugar = 13 ounces.
4 tablespoonfuls liquid = 1 wineglass or half gill.
1 rounded cup of flour = quarter pound or half pint.

UNCLE TOM'S DEPARTMENT.

MY DEAR NEPHEWS AND NIECES,—

It is quite a long time since Uncle Tom has mentioned puzzles, and his boys and girls may perhaps charge him with forgetfulness of that particular domain of theirs; but though silent, he has always been an interested onlooker. The number of actual contributors to that column is not very great, but I know that many others take a deep interest in it, and would be sorry to see it die away.

I should like such persons to give tangible evidence of their interest by sending in solutions or original contributions; and, as an incentive, I offer a cloth-bound interesting book for the most and best answers to puzzles published during May, June and July, the contest to be open to all new cousins and to all old ones who have never won a prize. This is a good chance for beginners, as they have an opportunity of winning one of the quarterly prizes as well. By the way, I wonder where our Manitoba cousins have hidden themselves of late? I should like to see some of the prizes go to the Prairie Province this summer. The golden rule, when you enter any such contest as this, is to send regularly for every issue, no matter how few answers you may happen to have sometimes. Often the winners are not much in advance, and the one or two answers someone thought not worth sending might have turned the scale favorably. Some of our little friends think we give a prize for every correct answer, but if they read the rules at the head of the column, they will understand that such is not the case. It would be very pleasant, no doubt, to do so, but we are not quite rich enough to be so generous.

I have pleasure in announcing the following winners in addition to those given last issue:

For solutions during January, February and March: 1st, \$1.50, to Miss Helen McQueen (Diana), Salem, Ont.; 2nd, \$1, to J. McLean, Kentville, Nova Scotia; 3rd, 75 cents, to M. R. Griffith, London, Ont.

"Rolly" and Sila Jackson follow very closely, while the contest between the two last winners was unusually keen.

I must leave space for a goodly number of puzzles this time, so will conclude by hoping we may have a large influx of old and new contributors during this quarter.

Your loving UNCLE TOM.

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—CONUNDRUM.

Wherein does the fashionable lady of the day resemble jugglery? IKE ICICLE.

2—CHARADE.

When Uncle Sam was fighting Spain, A wealthy Last to Washington came; For balls and parties he had no fear, And he said he wished old Spain would burst, For a prop to insurgent hands was he, And to help the cause he had crossed the sea, And should he return to sunny Spain, Total for him was all in vain. But one day he was missed by the upper fry, He had gone to Spain, the old Madrid spy. IKE ICICLE.

3—DIAMOND.

- 1—In wick.
2—An article.
3—A fashionable cloth.
4—To obtain with difficulty.
5—In wick. M. N.

4—CHARADE.

"I once was destitute of One," A friend once said to me, "But since reading the Quiet Hour, Two Total now I be." ROLLY.

5—ENCLOSED DIAMOND.

- 1—Harmony (trans.).
2—A piece of meat, encloses a beverage.
3—An ancient name of Ireland.
4—Tips over, encloses an insect.
5—A vapor (trans.) M. N.

6—ANAGRAM.

"May I visit Farmer Jackson's poultry yard, Mother," asked a young fox, "a nice fat pullet would be a fine addition to our bill of fare. I DON'T SCENT any hounds near, and I'm tired of stopping in the woods all day." "Be satisfied where you are, Reynard," was the reply. "Get rid of your COMPLETE, and you will then be as happy as any owner of a poultry farm." F. L. S.

7—SQUARE.

- 1—Wine boiled and thickly sweetened with honey.
2—A linear measure in Burmah about twelve statute miles.
3—A little rodent which makes great havoc among fruit.
4—A habit practiced by some men (verb form).
5—Devoured. ROLLY.

8—ACROSTIC.

In lawn, but not in lace; In race, but not in run; In run, but not in ran; In correct, but not in right; In shade, and not in light; In money, but not in tin; In temptation—not in sin; In year, but not in cheer. For thee my total hero slain, For freedom's cause and Britain's gain. MURIEL DAY.

9—SQUARE DIAMOND.

- 1. A bed; 2. to penetrate; 3. rocks; 4. renters; 5. fissures; 6. streets (abbr.); 7. in square. L. E. FORCE.

Answers to April 2nd Puzzles.

- 1—Editor's office.
2—Jack, anti, chum, orb, blue, star, dell, acre, lady; Jacob-dal, Kimberly.
3—Cuba Libre.
4—Con-ten-ted.

5— a all a u g u r a l g e r i a l u r i d r i d a

6—Reader, Reade, read.

SOLVERS TO APRIL 2ND PUZZLES.

M. N., "Diana," M. R. G., "Rolly."

ADDITIONAL SOLVERS TO MARCH 15TH PUZZLES.

M. R. G., M. N., "Rolly."

COUSINLY CHAT.

"Rolly"—Should like to accept your invitation, but fear it is impracticable.

"Diana"—I sent you a note, but am afraid I addressed it to the wrong post office. In answering puzzles like 2 and 5 this issue, you should give them in full.

I call the attention of all interested in puzzling to the prize offered by Uncle Tom in this issue. The old prizewinners will not be competitors, so I hope many new friends will avail themselves of the opportunity of securing a fine book of poems.

ADA A.

They were at a dinner party, and he remarked that he supposed she was fond of ethnology. She said she was, but she was not very well, and the doctor had told her not to eat anything for dessert except oranges.

West's Fluid

Has cured Contagious Abortion in several of the finest herds of prize stock in the country; but as it would injure the reputation of the breeders, they will not give written testimonials. These statements are facts.

Write for circular on this disease, specially prepared by a V. S.
 Headquarters for "STANDARD" Sheep Dip.
 Manufacturers: **The West Chemical Company,**
TORONTO, ONT.

THE Ontario Mutual Life.
 Assets, \$4 663,533.
 Income, \$1,051,403.
 Surplus, \$491,394.
 The only Canadian Company which pays dividends to policy-holders only.
 G. E. GERMAN, London, Ont.
 GENERAL AGENT.

SENT FOR A CENT.
 The Spramotor Co. of London, Ont.,



Will mail free to every one applying by postal card, a valuable (copyright) treatise, on diseases affecting fruit trees, vegetables, etc., and their remedies. The information given is of the most reliable character, and is up-to-date in every respect. Remember that the book is FARMER'S ADVOCATE.

Certificate of Official Award.
 This is to certify that at the contest of Spraying Apparatus held at Grimsby 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.

SPRAMOTOR CO.,
 68-70 KING ST., LONDON, CANADA.

PURE SEED POTATOES.
 Pearl of Savoy—Prof. Zavitz, of O. A. C., says: "One of the very best we have grown for general use. Stands third among 160 varieties grown for five years." We can supply a carload.
 Great Divide, a very shallow-eyed, smooth white potato of medium size and very fine quality. Price of either variety per bag, 55c. (bags free), f.o.b. Guelph, C. P. R. or G. T. R. Daubeney oats, 60c. per bush.
JAS. BOWMAN, Guelph, Ont.

Make \$500 to \$800 per acre
 By planting blackberries, caps, red raspberries, or strawberries. Write for best prices and terms. Orders filled quickly, correctly and true. Grafts or cions and wax. Special prices on above before May 24th, 1900.
E. E. HARTLEY,
 Fruit Grower, Box 175, Milton, Ont.

THE Larimer Ditching Plow.

 Covered by patent at Ottawa for the Dominion, and at Washington for the U. S.
 Two workmen and a team near Port Hope prepared 46 rods, 32 inches deep, ready for tile, in a day in the first drainage by one farmer who introduced the plow, and who has been rejoicing ever since. This is the most important implement of the day for foundation work on the farm.
 All information from
SCOTT BROS.,
 "Elm Bank Crescent," Williamstown, Ont.

No crop can grow without Potash.

Every blade of Grass, every grain of Corn, all Fruits and Vegetables must have it. If enough is supplied you can count on a full crop— if too little, the growth will be "scrubby."

Send for our books telling all about composition of fertilizers best adapted for all crops. They cost you nothing.

GERMAN KALI WORKS, 93 Nassau St., New York.

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, and leading breeders everywhere.

Superior to all liquid Dips.
 25-gal. pkt., 50 cts.; 100-gal., \$2.00. If druggist cannot supply, send \$1.75 for 100-gal. pkt. to

EVANS & SONS,
 Montreal or Toronto.
 Premiums on application to—
COOPER & NEPHEWS,
 142 Illinois St., Chicago.

DOMINION LINE STEAMSHIPS.
 Montreal to Liverpool.
 Weekly Sailings.
AMIDSHIP SALOONS, SPEED AND COMFORT.

The Second Cabin accommodation on the steamers of this Company is very fine. Passengers can make a cheap and very comfortable trip to Paris by using this accommodation. The through rate, Montreal to Paris, being \$43.75.
RATES OF PASSAGE.
 First Cabin.....\$60.00 and upwards.
 Second Cabin.....37.50
 Steerage.....23.50

For further information apply to any agent of the Company, or
DAVID TORRANCE & CO.,
 17 St. Sacramento St., MONTREAL, P. Q.

Clydesdale Stallion
 FOALED MARCH, 1896.
 Bay; ratch on face, one white hind pastern. A large, smooth horse, with excellent feet and legs; imported sire and grandam, and descended from prizewinners on both sides.
Jas. I. Davidson & Son, Balsam, Ontario.

NEWTON'S HEAVE, COUGH, DISTEMPER AND INDIGESTION CURE.
 "Wind, Throat and Stomach Troubles."
 Ninth year. Used in veterinary practice prior to \$1.00 per can. Dealers or direct. Book and references free.
Newton Horse Remedy Co. (D), Toledo, O.
 Trade supplied by Lyman Bros. & Co., Toronto.

ROBT. NESS & SONS, HOWICK, QUE.
 BREEDERS AND IMPORTERS OF
Clydesdale Horses & Ayrshire Cattle
 Also the leading breeds of fowls for the farmers.

WANTED
 To purchase, a Thoroughbred stallion for stock purposes, not weighing less than 1,350 lbs. Address—
T. FRED. JOHNSTON, Sec'y.
 Agr. Society of City and Co. of St. John, N. B.

NOTICES.

Ear Labels for Sheep and Hogs are advertised in this paper by the F. S. Burch Co., Chicago. See their announcement among sheep and swine breeders' advertisements.

Sheep Dip.—The selection of a good sheep dip is highly important. Among the best, none stands higher than the Cooper Sheep Dip, advertised in our columns. It is safe, easily prepared for use, is effective, leaves the wool in excellent condition, and is highly recommended by sheep breeders who have used it.

The Tolton Pea Harvester.—Messrs Tolton Bros., Guelph, Ont., announce in our advertising columns that they are in the market again this year with their celebrated pea harvester, an implement which has won its way to favor wherever known, and is now reckoned among the indispensable wherever peas are grown.

A Stock Food Book.—The attention of our readers is directed to the advertisement of the International Food Company, of Minneapolis, Minn., who offer practically free a large volume containing no less than 183 large illustrations of horses, cattle, sheep, swine, and poultry, with an illustrated veterinary department and a fund of instructive reading matter. As indicating the staple character of the business of the company in question, it is pointed out that in March, 1900, their trade was 45 per cent. larger than during the same month in 1899, and this sort of growth has been going on for ten years past. Some 20,000 dealers are handling their food, and they are authorized to refund the money in any case of failure to produce the results guaranteed. Read their announcement, and send for the book.

Deering Harvesters.—The Deering Harvester Company, whose announcement appears on another page of this issue, have just issued a handsomely-illustrated pamphlet which gives a very complete and accurate description of the various lines of their justly famous harvesting and haying machinery, together with facts of interest relative to binder twine, oil and knife-grinders. With prospects daily brightening for another big harvest, the farmer will naturally be on the lookout for thoroughly efficient machinery, and must therefore study closely points of construction as described in such literature as that to which we now refer. A bird's-eye view is given of the Deering works, Chicago, Ill., covering 85 acres, employing 3,000 hands, in addition to 12,000 local agents in America alone. Copies of the pamphlet may be obtained from any local Deering representative, or from the permanent branch houses at London and Toronto, Ont.; Montreal, Que., or Winnipeg, Man.

GOSSIP.
 The F. W. Stone Stock Co., Guelph, Ont., advertise Hereford bulls for sale; also two stock farms, one of which is the Moreton Lodge farm, adjoining the Agricultural College farm; the other the Plains farm, at Arkell, 5 miles from the City of Guelph. These are well-situated properties, and from the fact that large herds of cattle have been fed on them, the farms should be in a good condition of fertility.

R. Corley, Belgrave, Ont., writes:—"Continue my advertisement of Shorthorns until further notice, as I find it pays to advertise in the ADVOCATE, as my recent sales go to show. I have sold one bull calf to R. McMurry, Morris, Ont.; bull calf to John Yull, Harrisville, Mich.; one cow and calf to J. E. Corley, Mt. Forest, Ont.; and three young cows to Hector Cowan, Castle City, Iowa. I have still some extra fine young stock for sale."

Isaleigh Grange Stock Farm, at Danville, P. Q., advertises in this paper high-class Ayrshire and Guernsey cattle and Yorkshire hogs. They have now for sale three choice Ayrshire bulls, 15 to 18 months old, of fine color, sired by Matchless, the greatest of the World's Fair champion cow imp. Nellie Osborn, and the cows at Isaleigh Grange are up-to-date in type, breeding, and capacity for dairy work. A few choice Guernsey bulls are also for sale, ready for service, and the Isaleigh Grange Guernseys are second to none on the continent. Choice young Yorkshires are also about ready for shipment. Read their ad., and write Mr. T. D. McCallum, the manager, for description and prices.

Alfred Mansell & Co. shipped from Liverpool to New York, March 31st, a very choice selection of Shorthorns on account of Mr. Robt. Miller, Stouffville, Ont., for Mr. E. S. Kelly, of cycle tire renown. Among them was the notable bull, Brave Archer, bred by Mr. Duthie, exhibited at the Royal Show at Maidstone last year by Sir John Gilmour, where he was unplaced in the prize list, though Mr. A. W. Smith, of Maple Lodge, who reported the show for the FARMER'S ADVOCATE, considered him not only by far the best bull in the class, but the only good one. He fared better, however, at the Highland Society's Show, where he defeated two of the Royal winners and gave Corner Stone a hard tussle for first place. He was purchased at this show by Mr. Deane Willis, of Bapton Manor, Wilts, from whom Mr. Miller secured him, only, it is reported, at the enormous price of \$6,000. Brave Archer is a son of Scottish Archer. Mr. Miller also included in his purchase from Mr. Willis the peerless heifer, Bapton Pearl, winner of first prize as a two-year-old at the Royal last year, and of 10 firsts and 5 championships in all; a daughter of Count Lavender. She produced a roan bull calf in August, and is in calf again. In the importation is also included the two-year-old heifer, Rosy Morn, by Misty Morn, from Mr. G. Harrison, and a beautiful roan yearling heifer from Mr. Duthie, by Pride of Fashion and from Mistletoe 11th, by Captain of the Guard.

Place Your Egg Orders . . .
 with the Lucknow Poultry Yards and you will not be disappointed with hatches and the quality of stock. Our matings for 1900 far surpass any previous matings in Buff and White Cochins, L. Brahmas, Buff and Silver Wyandottes, White and Barred Rocks (exhibit on cockerel and pullet mating in Barred), Buff Leghorns, Red Caps, Black Minorcas, Black Spanish, C. Seebright, and Pyle Game Bantams. Eggs, \$2.00 per 13; \$5.00 per 45. We have strong pens of White, Brown, and Buff Leghorns and Barred Rocks, \$1.00 per 13; Pekin and Rouen ducks, \$1 per 11. Our stock won for us over 1,000 prizes in the past 4 years, which should be sufficient proof that we understand mating, etc. Satisfaction guaranteed.
J. C. LYONS, Lucknow, Ont.
 N. B.—Miss Coldwell's Barred Rocks are now owned by us.

HORSEMEN! THE ONLY GENUINE IS GOMBAULT'S CAUSTIC BALSAM.

The Safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Hemishes from Horses and Cattle. **SUPERSEDES ALL CAUSTERY OR FIERING.** Impossible to produce scurf or bluish. Every bottle is warranted to give satisfaction. Price \$1.50 per bottle. Sold by Druggists, or sent by Express, charges paid, with full directions for its use. Send for free descriptive circular.
THE LAWRENCE-WILLIAMS CO., Toronto, Ont.

EDWARD R. HOGATE COMPANY

Importers of
Shire, Clydesdale, Hackney and Coach Stallions.
 We have them on hand from 3 to 5 years old, Shires and Clydesdales, weighing from 1,300 pounds upwards, and Hackneys and English Coach horses from 16 to 17 hands high, full of life and superb action. Write now for particulars and where you can buy the cheapest. Our last importation from England arrived February 1st, 1900. Terms to our customers.
ADDRESS:
EDWARD R. HOGATE,
 264 Arthur St., TORONTO, CAN.
 Barns: 84 and 86 George Streets.

Eureka Veterinary CAUSTIC BALSAM.

A reliable and speedy remedy for Cuts, Splints, Spavins, Sweeney, etc., etc., in Horses, and Lamp Jaw in Cattle. See pamphlet which accompanies every bottle, giving scientific treatment in the various diseases. It can be used in every case of veterinary practice where stimulating applications and blisters are prescribed. It has no superior. Every bottle sold is guaranteed to give satisfaction. Price 75c. per bottle. Sold by all druggists. Guaranteed remedy for sterility in cows, with full instructions. Price, \$2. Prepared by **THE EUREKA VETERINARY MEDICINE COMPANY, London, Ont.**

THORNCLIFFE Stock Farm

The largest stud of Clydesdales in Canada, headed by the Champion Stallion of all ages,
"LYON MACGREGOR."



Stallions and Colts
 From the best blood in Scotland and Canada. Ayrshire bulls and heifers from imported stock. Jersey heifers and bull calves, sired by the prize-winning bull, Distinction's Golden. Best milking strains, with good tests.
 Terms reasonable.
 A visit to Thorncliffe will well repay you.
ROBT. DAVIES,
 Thorncliffe Stock Farm, TORONTO.

A Few **Durham Heifers** In Choice **Durham Heifers** In Calf.
 Two bulls; two bull calves; all of choice breeding. Berkshire boars; brood sows and sow pigs. Prices right.
A. J. C. SHAW & SONS,
 THAMESVILLE, ONT.

Galloways and Shropshires.
 We are offering for sale at reasonable prices 8 choice Galloway cattle, bulls and heifers, including the College Gambler and his two yearling sons. Also over 100 Shropshire sheep of all ages and both sexes, including 30 shearing ewes and 5 shearling rams. Also imported ram.
 Write for what you want.
T. LLOYD JONES & SONS, Burford, Ont.

For Sale: A few young Shorthorn bulls and heifers. Also Tamworth boars and sows from prize stock at Toronto and other exhibitions.
C. LAWRENCE, Collingwood, Ont.

Kicking Cows.

Stop your cows kicking, increase the flow of milk by the use of

SORE TEAT SALVE.

Positively prevents chapped teats, warts, and caked legs or udder. Price, 25c., 50c., and \$1. per tin.

WM. MOLE, Veterinary Surgeon, 443 Bathurst St., TORONTO.

5 SHORTHORN BULLS

Of the most noted Scotch families, and choice individuals. For prices and particulars write

SHORE BROS.

White Oak.

5--Shorthorn Bulls--5

From 9 to 15 months. Also a few choice yearling and 2-yr. old heifers, among which are grand, thick-fleshed and choicely bred animals, mostly solid red colors. Speak quick, for they will not last long.

SPOTTVILLE STATION, G. A. BRODIE, BETHESDA, ONT.

4-SHORTHORN BULLS-4

For Sale.

From 5 to 15 months. A few young cows or heifers; color red; good pedigrees.

JAMES BROWN, Thorold, Ont.

A. D. M^cGUGAN, RODNEY, ONTARIO.

Shorthorn Cattle and Lincoln Sheep

The noted sire, Abbotford, stands at the head of our herd. We have a few choice red bulls to offer; also ram and ewe lambs from imported stock.

R. & S. NICHOLSON

SYLVAN P. O., PARKHILL STATION. Scotch Shorthorns, imp. and home-bred. The Imp. Clipper bull, Chief of Stars, heads the herd. Eight extra good 2-year-old heifers for sale, in calf to Chief of Stars (72215). Inspection invited.

Scotch Shorthorns

FOR SALE.

100 head to select from; 15 grand young bulls by Valkyrie = 21806-, and cows and heifers of all ages, of the most approved breeding, served by (imp.) Diamond Jubilee = 28861-, now at the head of our herd.

T. DOUGLAS & SONS, Strathroy Station and P. O. Farm 1 mile north of the town.

Shorthorns and Leicesters.

Herd Established 1855.

A number of young bulls, cows and heifers for sale. Herd headed by imported Christopher 28859, and Duncan Stanley = 16364-. Grand milking cows in herd. Also a number of Leicesters of both sexes, from imported foundation.

JAMES DOUGLAS, CALEDONIA, ONT.

Shorthorn Bulls

FROM 8 to 17 months old.

Red; in good condition. Also thick young cows, bred to Imp. Prince William.

R. MITCHELL & SON, Burlington Jct. Station, Nelson, Ont.

SHORTHORNS

Choice bulls ready for service, by Scottish Chief = 27214-, by Scottish Pride (imp.). Dam Fancy's Gem, by Guardsman (imp.).

BERKSHIRES.

Modern type, well-bred boars and sows, all ages.

ALEXANDER LOVE,

EAGLE, ELGIN CO., ONT.

AUCTION SALE OF Shorthorn Cattle, TUESDAY, MAY 15th, 1900.

20 head of Registered Shorthorns. 2 Improved Yorkshire Sows. Horses and Farm Implements.

Farm one-half mile west of Burlington Junction, G. T. R. Send for catalogues.

GEO. ANDREW, Auct., C. G. DAVIS, Oakville, Ont. Freeman P. O.

SCOTCH SHORTHORNS and BERKSHIRES.

Choice young bulls and heifers for sale. Also Berkshire pigs of the most approved breeding. Meadowvale Stn., C.P.R. Six miles from Brampton, G.T.R. S. J. PEARSON & SON, Meadowvale, Ont.

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. Q.

40 HEREFORDS

Bulls, Cows, and Heifers, for immediate sale.

Alfred Stone, 5 Douglas St., GUELPH, ONT.

Herefords for Sale

Choice young bulls, from 1 to 2 1/2 years old, and show bull, 3 years. Also

Moreton Lodge Farm,

Next O. A. College.

Plains Farm, Arkell,

Containing from 200 to 250 acres each.

The F. W. Stone Stock Co., GUELPH, ONT., CANADA.



75 HEAD Herefords

High-quality, Early-maturing

Prizewinners, Producers of Money-makers in the feed lot.

The blood of "Corrector," "Eureka," "Ancient Briton," and "Rupert," on an "Anxiety" foundation. Send for illustrated catalogue.

H. D. SMITH, COMPTON, QUE.

Meadowbrook Jersey Herd

For sale, a splendid bull calf, reg. A. J. C. C., six months old, at your own price. Thirty splendid White Wyandotte hens and a few cockerels.

EDGAR SILCOX, o SHEDDEN, ONT.

DAVID A. MACFARLANE, KELSO, P. Q.

Ayrshire Cattle.

The blood of Nellie Osborne is largely represented in my herd, and combine style, quality and production. A few choice things for sale.

JERSEY CATTLE

That will put

Money in your pocket.

MRS. E. M. JONES,

Brockville, Ontario, Can.

Box 324.

JERSEY BULLS.

High-class show bull, Prince Frank's Son 48758, A. J. C. C., solid color, calved Oct. 25th, 1896. 1st prize at Western Fair, London, 1897, as a calf, and 1898 as a yearling, beating 2nd-prize bull at Toronto. Quiet, sure and a capital breeder; probably the best show bull in Canada to-day. Sire 3 times a sweepstakes winner at Western Fair; dam a pure St. Lambert and a good one. Also yearling bull, St. Lambert of Ettrick 55395, A. J. C. C.; solid color; calved Jan. 25th, 1899. Handsome and richly bred. Sire, Stoke Pogis Cross 36700, pure St. Lambert; dam a deep milker. Also handsome bull calf, eligible to register, solid color. Sire, Prince Frank's Son; dam, Stella of Ettrick. Prices right for quality. Come and see, or write.

W. G. LAIDLAW, Wilton Grove, Ont.

FOR SALE: A fine A. J. C. C. Jersey bull, 16 months old, solid color (dark fawn), black points

Take first money as a calf wherever exhibited. Will make a fine show and dairy bull. Price, \$40, f. o. b.

GEO. LATSCH, Freeport, Ont.

HIGH GROVE STOCK FARM

ROBT. TUFTS & SON, Proprietors, Tweed (Hastings Co.), Ont.

BREEDERS OF Jerseys—The best strains of Jersey (A. J. C. C.) cattle. Yorkshires—Large Improved Yorkshire sows. Pure-bred and high-grade stock always for sale at reasonable prices. Write for what you want.

PLEASE MENTION FARMER'S ADVOCATE.

GOSSIP.

J. R. Harvie, Orillia, Ont., writes:—"I have two good Shorthorn bulls, 14 months old, one red, the other roan, in fine condition and from good Scotch-bred families."

Mr. James Bowman, Guelph, advertises in this issue pure seed potatoes of choice varieties, which have ranked high in the tests of the Experimental Union. He also offers Danbeney oats, an early-ripening and heavy-yielding variety. Read the ad.

D. J. Gibson, Bowmanville, Ont., writes:—"The Collie puppies I advertised are all sold, and also a number of Tamworths. My customers say the stock I send them give good satisfaction and frequently duplicate their orders." See advt. in another column.

D. H. Rusnell, Stouffville, Ont., who advertises in this paper Shorthorn bull calves and yearling heifers, and Shropshire rams and ewes, writes: "Demand has been good; have recently sold 12 head of Shorthorns, part to Manitoba and others to different parts in Ontario. We are pleased with the result of our advertisement in the ADVOCATE, and wish it success."

Jos. Yuill & Sons, Carleton Place, Ont., report the following list of sales of Ayrshires recently: Three cows to J. M. Quinn, Montreal, Que.; bull calf to Wm. Champion, Reburn, Manitoba; bull calf to W. R. Houston, Pembroke, Ont.; heifer calf to Alex Stewart, Beckwith, Ont. Our cattle have wintered well, and we have four extra fine bulls fit for service for sale, also a choice lot of yearling heifers and a lot of fine young Berkshires, both sexes, ready to ship.

R. Reid & Co., Hintonburg, Ont., in ordering a change of advertisement, state that they have for sale a promising yearling Ayrshire bull and half a dozen splendid bull calves 2 to 8 months old, by Gold King and Imp. Duke of York 2nd. Also a fine selection of Tamworth boars and sows 6 to 8 months, bred from prizewinning stock, and spring litters that will soon be fit to ship. With hogs selling at \$6.00, feeders should be encouraged.

The F. W. Stone Stock Company, Guelph, recently shipped to Gordon & Innes, of Winnipeg, the Hereford Bull, "Canada" [C. H. R. 1173], also "Greeney of Red Deer" 25317, A. H. R., to Dan Hamblin, of these went to the Canadian Northwest. The following will be shipped to British Columbia in about ten days: Laddie [1051], Sir Charles [996], Harry [1174], Dainty's Hero [1208], Imogene 3rd [1551], and Veronica 3rd [1552].

Messrs. Telfer Bros., Paris, Ont., write us under date of April 18th respecting the dispute as to winners of their imp. Southdown shearing ewes last year:—"We have just had word from Mr. Clayton, the manager of the Paghman Harbor flock of Southdowns, and we find that we have been wrongly informed. Instead of the shearing ewes being first at the Royal Counties Show, they were third, and second at the Oxford Show, beating the Royal first-prize pen."

On page 278 will be seen the new advertisement of Mr. John Campbell, Fairview Farm, Woodville, Ont., announcing the necessity of another importation of Shropshire sheep in July. Mr. Campbell reports the outlook for this year's trade one of the brightest in many years. And as in the past, the demand is greater for high-class stock. He states that it is easier to sell half a dozen first-class rams at a good paying price than one middling good one at a low figure. And there is more satisfaction, as a rule, to both buyer and seller. There is always room at the top. With fat lambs nearly a year old selling freely in Toronto at \$6.00, and in New York at \$8.75, it is not strange that owners of pure-bred flocks find themselves nearly in the swim.

H. Gee & Sons, Fisherville, Ont., in sending up change of ad. state: "We sold out all our Barred Rock cockerels and had to refund money in a couple of instances. We culled our breeders closer than ever last year, and expect finer stock than ever from our matings this year. The pen we offer eggs from is a pen of bright-colored females, with good legs, beaks and combs, mated to a fine cockerel. He is the best bird we ever raised, and is a Lefel-Shoemaker bird. The pullets and hens are similar in breeding, but from a different sire. We purchased a \$35 trio from Sid. Conger, bred from his Chicago 35 winners, and expect to be in the front row. We send you feathers from pen we offer eggs from."

AUCTION SALE OF SHORTHORNS.

Mr. C. G. Davis, Freeman, Ont., announces in an advertisement in this paper that on May 15th he will sell at his farm, 1 mile from Burlington Junction, near Hamilton, 20 head of registered Shorthorn cattle. See the ad. and send for the catalogue.

SOME GOOD CLYDESDALES.

John Miller & Sons, Brougham, Ont., write us:—"Among the Clydesdale stallions we offer for sale is one rising 3 years, Border Duke (1651). His sire, Ferguson (959), was got by the Prince of Wales horse, Prince Fortunatus (8136), and his dam was by Macgregor (1487). This is a very large, good-colored colt, and will weigh a ton at maturity. Another rising 3 years, Prince Brilliant (10698), is a very thick, heavy-boned colt, and from his breeding should make an extra good stock-getter. He was sired by William the Conqueror (9089), he by Prince of Wales (673). Una (8002), the dam of this colt, was got by Darnley (222). We have also an extra good imp. yearling and three home-bred yearlings sired by the champion horse, Young McQueen (2290)." See their advt.

MRS. E. M. JONES' JERSEYS.

Mrs. E. M. Jones, Brockville, Ont., in ordering a change in her advertisement of Jersey cattle "that will put money in your pocket," refers us to a paragraph in a late issue of a New Brunswick paper, concerning a young cow she sold to Mr. G. R. Jones, of Lewisville, N. B., in which it is stated that this cow has already made an extra good stock-getter, and with care when she gets on grass should make 20 lbs. or over. To say the least, she is a beauty." Mr. James Walsham, Portage la Prairie, Manitoba, to whom was sold the bull, Belvedere Signal, writes he weighs 1,500 lbs., and is as smart as a calf, has won everything shown for, and the people are protesting against his showing any more, as he takes the prizes every time.

Insure Your Crops

of wheat and oats. This is best done by applying 100 lbs. of

Nitrate of Soda

per acre early in the spring. Promotes stooling, stimulates growth, increases yield. Of great value on all crops, vegetables, grass, fruits, etc. Get free book, "Food for Plants," which tells why. Address John A. Myers, 12-RJohn St., New York. Nitrate for sale by fertilizer dealers everywhere.

Write at once for List of Dealers.

GLEN ROUGE JERSEYS.

WILLIAM ROLPH, Markham, Ont., offers twelve Jersey Bulls and Heifers (pure St. Lambert), out of tested cows. Grand individuals. Prices right.

BRAMPTON JERSEY HERD.

Brampton's Monarch (imported), Canada's champion bull, 1898, heads the herd, which numbers 75 head. Now for sale, high-class cows and heifers in calf, heifer calves, and 6 extra choice young bulls, sired by Monarch, the best we ever saw. They are from tested show cows. A few high-grade springers.

B. H. BULL & SON, BRAMPTON, ONT.

The Annandale Farm Holstein-Friesians.

For sale, after careful selection from my famous herd, several very fine thoroughbred and grade bull calves, ages from 15 months old, from cows averaging 10,000 to 16,000 lbs. milk per year and testing 3 1/2 to 4%; sired by the grand bull, COLANTHUS ABBEKERK 2nd, winner of 1st prize at Toronto, Ottawa, and London, as yearling. Prices reasonable.

E. D. TILLSON, Proprietor, Tilsonburg, Ont.

FOR SALE:

THIR 13 NOS. HOLSTEIN BULL Sir Pietertje Burkey DeKol His dam, Helena DeKol's DeKol, tested officially 362 lbs. 10 1/2 ozs. milk and 12 lbs. 7 ozs. butter in 7 days as a 2-year-old. Also Sir Pietertje Pride, calved last March. Both bulls in prime breeding form. Maggie Keys and other good ones in the herd. Correspondence solicited.

A. D. FOSTER, HOLLOWAY, ONT.

MAPLE HILL HOLSTEIN-FRIESIANS

Three Yearling Heifers, sired by Colanthus Abbecker 2nd, and in calf to Daisy Teake's King (brother to Daisy Meake's Queen, the great test and show cow). Three Bull Calves, sired by De Kol 2nd's Paul De Kol Duke, the great butter-bred bull; dams, the fine show cows, Lady Akkrum 2nd, Cornelia Artis, and Midge Merton.

G. W. CLEMONS, St. George, Ont.

BROOKBANK

Is headquarters for Holstein bulls. They are going fast; be quick if you want one. In writing, state age, etc., preferred.

GEO. RICE, Currie's Crossing, Ont.

LYNNFIELD HOLSTEIN HERD.

WE HAVE PURCHASED

a stock farm at Lynn, Ont., where we have removed our famous herd of Holsteins. We can give you a special bargain in the 8-month-old heifer, "Ione Jewel Sylvia," winner of 4th prize in a large class at Toronto this year. If you want choice cows, two-year-old heifers, or heifer calves, write or visit us.

C. M. KEELER, Lyn, Ont.

WE WANT TO SELL A FEW

Holstein Heifers, coming 2 years old

THEY are of the richest and largest producing strains, fine individuals, and bred to as good bulls as there are living. We have a few bull calves and yearling bulls also for sale.

HENRY STEVENS & SONS.

LACONA, OSWEGO CO., N. Y.

Maple Glen Stock Farm.

Special Offer: An August bull calf, sired by Gem Pietertje Hengerveld Paul DeKol, a rich bull, bred by President Matieson, Utica, N. Y. Has for dam the sweet show heifer, Gilly Flower 2nd, an undefeated winner in 1898 as a yearling, also 1st Ottawa and 2nd Toronto, 1899, as a two-year-old, where she was also a member of sweepstake aged herd. She gave over 50 lbs. milk per day on show grounds as a two-year-old. Also a bull two years old past; dam was half-sister to our old stock and show bull. The sire of some of the best in world to-day. We still have a few females from 3 months to 6 years old for sale—one a dairy test winner, of the Teake family. Prices reasonable for quality. C. J. Gilroy & Son, Glen Buell, Ont. Brockville, on C. P. R. or G. T. R.

3 Holstein-Friesian Yearling Bulls FOR SALE.

Prices right. Apply to WILLIAM SUHRING, Sebringville, Ont.

RIDGEDALE HOLSTEIN-FRIESIANS

For Sale: One yearling bull, also three bull calves, all sired by "Father Tensen," and whose dams are granddaughters of "Aaltje Posch 4th," the champion milk and butter cow at the London, Ont., Dairy Show, in December, 1899.

Shipping stations: **R. W. WALKER,** Port Perry, G.T.R. **Utica P. O.,** Myrtle, C.P.R. **Ontario.**

KEEP THE BOYS ON THE FARM

By sending them to Meadows Farm, Carleton Place, to see J. Yuill & Sons' stock. Eighty-four Ayrshires, second to none in the world for milk production. Thirty-two Shropshire ewes and two rams which are from prizewinning stock. Fourteen Berkshires of the bacon type; and a grand flock of E. P. Rocks. Also two good Collie pups, 4 weeks old. **J. YUILL & SONS, Props., Carleton Place.**

We are looking orders for

Choice Ayrshire Spring Calves,

At \$12.00 each, from deep-milking strains. Breeding stock all registered.

H. GEORGE & SONS, Crampton, Ont.

Ayrshire Cattle and Berkshire Pigs.

The bull Tom Brown and the heifer White Floss, winners of sweepstakes at World's Fair, were bred from this herd. Young stock for sale. Also Leicester sheep & Berkshire swine.

D. BENNING & SON,

-1-y-o Glenhurst Farm, Williamstown, Ont.

Choice Ayrshires

Herd now headed by first-prize bull at Toronto and London. Females of all ages for sale. Choice stock at fair prices. Poultry: L. Brahmas, Buff and W. Cochins, Black Minorcas, B. P. Rocks, from \$1.00 to \$2.50 each. For particulars write **WILLIAM THORN, "Trout Run Stock Farm," Lynedoch, Ont., Norfolk Co.**

Ayrshire Bull Calves of 1899

One bull 5 months and young calves 2 to 3 weeks, from some of our best imported cows. Will sell at reasonable prices. Address:

ROBT. HUNTER,

Manager to W. W. Ogilvie. **LACHINE RAPIDS, QUE.**

Maple Cliff Dairy and Stock Farm.

Breeders of **FOR SALE:**

AYRSHIRES, 1 yearling and 6 bull calves from 2 to 3 months old.

TANWORTHS, Boars and sows, 6 to 8 months old, and sucking pigs.

BERKSHIRES. Booking orders for young pigs.

R. REID & CO., Hintonburg.

Farm 1 mile from Ottawa. Electric cars to farm. om

4 AYRSHIRE BULLS 4

Sired by Beauty Style of Auchenbrain (imp.), whose dam gave 72 lbs. milk in one day, and out of high-producing dams. om

R. S. BRIDGES, Brantford, Ont., Formerly T. Brooks & Son.

Choice Ayrshires, Barred Rocks and Eggs.

4 FINE BULLS fit for service. Bull calves, and heifers. A few Barred Rock cockerels. Eggs for hatching from choice matings in Barred Rocks, at \$2 per 15; incubator eggs, \$4 per 100; Cayuga duck eggs, \$1 per 11.



JAS. McCORMACK & SON, om **ROCKTON, ONTARIO.**

1 2-year-old Ayrshire bull and 2 yearlings for sale.

Also a fine lot of calves, sired by Dewey, bred by Wm. Stewart & Son, Menie.

F. W. TAYLOR, Wellman's Corners, Ont.

For Sale: Six Ayrshire bulls, ranging from 5 months to 1 year past. Also a few cows and heifers, thoroughbred fowls, and Scotch collie dogs. om

WM. STEWART & SON, MENIE, ONT.

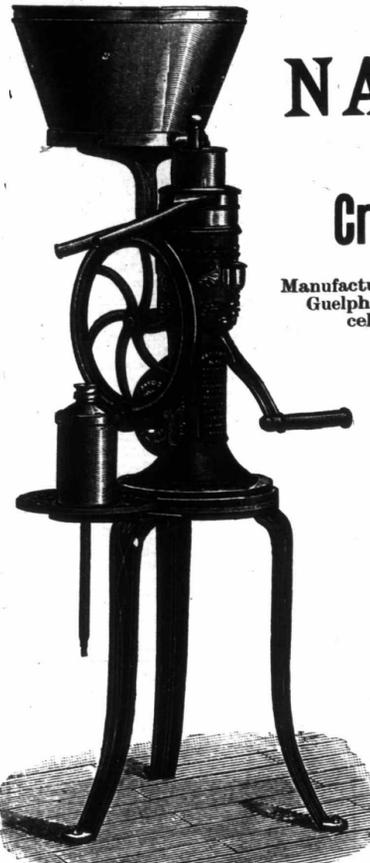
AYRSHIRES FOR SALE.

The kind that can speak for themselves. Size, constitution, dairy and show combined. Six young bulls for sale, by Glencairn 3rd (imp.), dam Priuorse (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, TREDINNOCK FARM, om **STE. ANNE DE BELLEVUE, QUE.**

CALVERT & DWYER CO'Y, WOOL

TORONTO, CANADA. Write us before selling your wool. It will pay you, om



THE NATIONAL FARM Cream Separator

Manufactured by the Raymond Mfg. Co. of Guelph, Limited, manufacturers of the celebrated Raymond Sewing Machines.

THE National is an up-to-date machine, leading all others in separating cream by centrifugal force. It is the farmer's choice, because it runs easy, skims fast and clean, and makes a perfect cream, containing any per cent. of butter-fat desired. It is also easier to clean than any other. The National is built of the very best material suitable for the construction of a high-speed machine, and with proper care should last a lifetime. The bearings are interchangeable and easily adjusted. Every machine is guaranteed to do good work, and a trial of the "National" is solicited before purchasing any other. The already large sale of the "National" and the growing demand for it, shows how much the Canadian farmers appreciate a Canadian-made machine that does its work so easily and well, and at the same time returns such a large profit on the small investment. Ask for the "National"; try it and buy it.

THE CREAMERY SUPPLY CO., GUELPH, ONT.

General agents for Ontario.

MESSRS. CAMPBELL & GLENN, 381 TALBOT ST., LONDON, ONT.

Agents for the Counties of Middlesex and West. om

"NATIONAL" NO. 1 HAND POWER. Capacity, 350 to 350 lbs. per hour.

The Raymond Mfg. Co'y of Guelph, Ltd. GUELPH, ONT.

Ayrshires, Guernseys, Yorkshires and Shropshires are our leaders.



ALL high-class, pedigreed stock. Those desirous of purchasing thoroughbred animals should write for particulars at once. Orders booked now in rotation for present and future deliveries. Address—

ISALEIGH GRANGE FARM, Danville, Quebec. **J. N. GREENSHIELDS, Prop.** om **T. D. McCALLUM, MGR.**

METAL EAR LABELS Used by all Live Stock Record Associations.

BURCH Sheep size, per 100.....\$1.50
Eggs size, per 100..... 1.50
Cattle size, per 100..... 2.00
Punch and Pliers for attaching labels to ear, each \$1.00.
Name on one side and any numbers wanted on reverse side. **F. S. BURCH & CO.,** om 178 Michigan St., CHICAGO, ILL.

KENT OR ROMNEY MARSH Sheep.

ANNUAL RAM SALE

The annual show and sale of registered Kent or Romney Marsh Rams, consisting of selected specimens from leading flocks of the breed, will be held at **ASHFORD, KENT, ENGLAND,** **On Friday, September 28th, 1900.**

Catalogues and full information from **W. W. CHAPMAN,** Secretary Kent or Romney Marsh Sheep Breeders' Association, Fitzalan House, Arundal Street, Strand, om **LONDON, ENGLAND.**

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.,** Shrewsbury, England, or to our American representative, Robert Miller, Stouffville, Ont., Canada.

J. E. CASSWELL, Laughton, Folkingham, Lincolnshire, om

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. At the "Annual Lincoln Ram Sale," 1895 and 1897, the 1896 rams were all sold for exportation. Ram and ewe hoggs and shearlings for sale, also Shire horses, Shorthorns, and Dark Dorking fowls. Telegrams: "Casswell, Folkingham, Eng." Station: Billingboro, G. N. R. om

EUROPEAN ADVERTISEMENTS. LINCOLN LONG-WOOL SHEEP BREEDERS' ASSOCIATION.

Lincoln Ram Sales, 1900.

The 10th and 11th sales of Lincoln Long-wool Rams, by members of the Association, will be held in Lincoln, as follows:

3rd August, - - 400 Rams.
7th September, - - 500 Rams.

On view the afternoon before the day of sale.

STEPHEN UPTON, om **ST. BENEDICT'S SQUARE, LINCOLN, ENG.**

19th FEBRUARY, 1900. om

EUROPEAN ADVERTISEMENTS.

HAMPSHIRE DOWN SHEEP.

SPLENDID MUTTON, GOOD WOOL, GREAT WEIGHT.

THIS HIGHLY VALUABLE

English Breed of Sheep

Is unrivalled in its rapid and wonderfully early maturity, possessing, too, a hardiness of constitution adapted to all climates, whilst in quality of mutton and large proportion of lean meat it is unsurpassed. Full information of

JAMES E. RAWLENCE, om **SECRETARY HAMPSHIRE DOWN SHEEP BREEDERS' ASSOCIATION, SALISBURY, ENGLAND.**

HENRY DUDDING, RIBY GROVE, STALLINGBOROUGH, LINCOLN, ENGLAND. Breeder of Lincoln Longwool Sheep and Shorthorn cattle. The Riby Flock of upwards of 1,400 Ewes holds an unequalled record for true type, merit, and quality. Its produce and their descendants have won the highest honors at all the principal exhibitions and shows throughout the world; its wool exhibits being unbeaten. Established upwards of 140 years. Its produce leads the way from the fact that satisfaction is given. The Riby Shorthorn Herd of upwards of 300 selected specimens of Booth, Bakes, Crickshank, and Scotch strains, is one of the largest Herds in Great Britain. Its principal Stud Bulls are: "Pride of Fortune" 73240, s. "Pride of Morning" 145604, d. "Flora 2nd," by "William of Orange" 50604; "Golden Robin" 63718 (rich roan), s. "Roan Robin" 57992, d. "Golden Sunshine," by "Royal James" 54972; "Prompter" (Vol. XLV.), by "Pretext" 69255, d. "Risington Lass," by "Umpire 13th," 1st and champion at Ombersley, 1898; "Rosario" s. "Wiltshire Count" 69824, out of "Rose Blossom" (G. Harrison). This bull, his sire and dam, won 84 prizes, including first and champions. Annual Home Sale, Tuesday, July 24th, 1900. Telegrams: "Dudding, Keebley." Rail Stations: Stallingborough, 3 miles; Great Grimsby, 7 miles. om

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.

Address: **FITZALAN HOUSE, ARUNDEL ST., STRAND, LONDON W. W.** om **Cables—Sheepcote, London.**

The Danesfield Pedigree Stock

IMPORTERS desirous of securing selections of either Shire horses, Aberdeen-Angus cattle or Hampshire Down sheep should inspect the stud, herd and flock, property of Mr. R. W. Hudson, which are kept in the highest degree of purity that care and selection can produce, at Danesfield, Marlow, Bucks, England. Specimens of horses, cattle and sheep have been largely exhibited at the principal English shows during 1899 with very prominent success. For full information, etc., apply:

MR. COLIN CAMPBELL, om **ESTATE OFFICE, DANESFIELD, MARLOW, BUCKS.**

who will be happy to make arrangements for inspection, or to quote prices. om

Bonnie Burn Stock Farm

Forty rods north of Stouffville station, Ont., offers for sale Shorthorn bull calves and yearling heifers, Shropshire lambs and shearlings (both sexes), om **D. H. RUSSELL, Stouffville, Ont.**

IMPORTATION

Of Shropshires for Fairview Farm in July. Our D. J. Campbell will select and import. Only choice rams and ewes will be brought out. 'Tis the good ones that please customers first and last.

We breed them and import them. Orders can now be booked for imported stock, and some good rams are now at Fairview. om **JOHN CAMPBELL, Woodville, Ont., Canada.**

Shropshire Rams and Ewes

Newly imported from the greatest English breeders. Home-bred rams and ewes of best quality. Scotch Shorthorns and Clydesdale horses for sale at moderate prices, and in large numbers, by

ROBERT MILLER, om **STOUFFVILLE, ONT.**

Oxford Down Sheep

Flock Established 19 Years. Animals of all ages and both sexes for sale, reasonable. Rams to head flocks a specialty.

HENRY ARKELL, om **ARKELL P. O., ONT.** Guelph: Telegraph and Telephone. om

D. Breeder of Lin Shorthorn cattle. 1,400 Ewes holds an merit, and quality. He has won the pal exhibitions and wool exhibits being of 140 years. Its fact that satisfacti on Herd of upwards of Bales, Crutchshank, the largest Herds in Bulls are: "Pride of Morning" 14564, of Orange 50894, "Roan Robin" by "Royal James" by "Prefect" "Umpire 13th," 1st "Rosario" of "Rose Blossom" e and dam, won 84 ons. Annual Home Telegrams: "Dud- Scallingborough, 3

al Sheep Breed- ent or Romney ' Association, the Southdown

at. Exporter and registered stock ported on com- and all enquiries

USE, ARUNDEL LONDON W. W.

egree Stock

uring selections of en-Angus cattle or ld inspect the stud, r. R. W. Hudson, degree of purity that at Danesfield, Mars of horses, cattle hibited at the prin- with very prominent c., apply: MPBELL.

W. BUCKS. gements for inspec-

ock Farm station, Ont., of- ives and yearling shearings (both Stouffville, Ont.

ATION m in July. Our D. port. Only choice out. 'Tis the good and last.

port them. Imported stock, and view. Ont., Canada.

and Ewes greatest English and ewes of best and Clydesdale e prices, and in

LLER. OFFVILLE, ONT.

19 Years. Sexes for sale, locks a specialty.

ELL. L P. O., ONT. Telephone.

GOSSIP.

Is writing to advertisers, mention the "Farmer's Advocate."

OFFICIAL TESTS OF HOLSTEIN-FRIESIAN COWS FROM MARCH 1 TO APRIL 1, 1900.

These tests are uniformly made by representatives of Agricultural Colleges or Experiment Stations, at the homes of the owners of the cows. The length of each test is seven consecutive days; the age given is at the date of the last calf; the butter-fat is determined by the Babcock test, and the butter estimated first by the 80 per cent. rule and second by the 85.7 per cent. rule. Among the cows making the best records were the following:

- Fisher Mercedes 43902; age 7 years, 10 months, 2 days; 28 days after calving; milk 355.4 lbs., butter-fat 14.301 lbs., butter 80 per cent. fat 17 lbs. 14 ozs., butter 85.7 per cent. fat 16 lbs. 11 ozs.
Quaker Maid 37899; age 5 years, 8 months, 23 days; 3 days after calving; milk 455.9 lbs., butter-fat 15.593 lbs., butter 80 per cent. fat 19 lbs. 7.9 ozs., butter 85.7 per cent. fat 18 lbs. 3.1 ozs.
Shadeland Zora 2nd 36219; age 6 years, 5 months, 19 days; 48 days after calving; milk 538.2 lbs., butter-fat 17.011 lbs., butter 80 per cent. fat 21 lbs. 4.2 ozs., butter 85.7 per cent. fat 19 lbs. 13.5 ozs.
Kalsora Pledge De Kol 40637; age 3 years, 8 months, 11 days; 22 days after calving; milk 322.9 lbs., butter-fat 13.058 lbs., butter 80 per cent. fat 16 lbs. 5.2 ozs., butter 85.7 per cent. fat 15 lbs. 3.7 ozs.
Margaret Lyons 48596; age 3 years, 8 months, 1 day; 33 days after calving; milk 380.6 lbs., butter-fat 12.140 lbs., butter 80 per cent. fat 15 lbs. 2.3 ozs., butter 85.7 per cent. fat 14 lbs. 2.6 ozs.
Jessie Forbes 2nd 3710mia 44130; age 3 years, 1 month, 4 days; 21 days after calving; milk 378.5 lbs., butter-fat 12.703 lbs., butter 80 per cent. fat 15 lbs. 14.1 ozs., butter 85.7 per cent. fat 14 lbs. 13.1 ozs.
Zermah Clothilde 43745; age 3 years, 2 months, 20 days; 49 days after calving; milk 335.6 lbs., butter-fat 12.243 lbs., butter 80 per cent. fat 15 lbs. 4.9 ozs., butter 85.7 per cent. fat 14 lbs. 4.5 ozs.
Daisy Van Beers 46449; age 2 years, 9 months, 9 days; 72 days after calving; milk 303.1 lbs., butter-fat 10.233 lbs., butter 80 per cent. fat 12 lbs. 12.7 ozs., butter 85.7 per cent. fat 11 lbs. 15 ozs.
May Hartog Pauline De Kol 45124; age 2 years, 12 days; 42 days after calving; milk 325.6 lbs., butter-fat 11.725 lbs., butter 80 per cent. fat 14 lbs. 10.5 ozs., butter 85.7 per cent. fat 13 lbs. 10.9 ozs.
Roxie Wayne De Kol 45125; age 2 years, 13 days; 50 days after calving; milk 319 lbs., butter-fat 10.435 lbs., butter 80 per cent. fat 13 lbs. 0.7 ozs., butter 85.7 per cent. fat 12 lbs. 2.8 ozs.
S. HOXIE, Supt. Advanced Registry, Holstein-Friesian Ass'n of America.

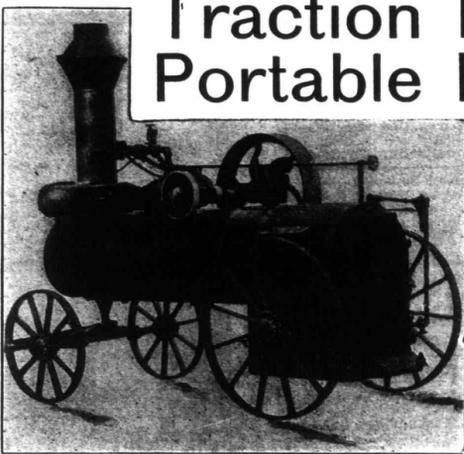
THE HILLHURST HERD OF SHORTHORNS. We are in receipt of the private catalogue of the Hillhurst herd of high-class Shorthorns, which embraces the pedigrees of 63 heads, 36 of which have been imported from Great Britain within the last two years, and include representatives of many of the best-known Scotch families, as well as a few excellent specimens of the Cumberland and Gloucestershire strains, combining deep-milking qualities with size and thick flesh, which, bred to the very superior Scotch-bred bulls in service in the herd, are reasonably sure to produce ideal utility cattle. In 1899 the great dark roan Collynie-bred bulls, Scottish Hero and Joy of Morning, were imported, and it is safe to say that no herd in America to-day can boast of two better bulls in breeding and individual merit; indeed, it would probably not be going too far to claim that no herd on the continent can show two that are their equal.

Scottish Hero, coming two years old in this month of May, is of the same breeding on the side of both sire and dam as the Royal champion Marengo, being sired by the Crutchshank-bred Scottish Archer, of Miss 134th, by William of Orange, the best Orange Blossom bull ever bred at Sittyton, used for many years in the Upper Mill and Collynie herds, and, with perhaps the exception of Heir of Englishman, the most impressive sire ever used in either herd. Scottish Hero is lengthy, low set, broad of chest, has well-sprung ribs, full corners, long level quarters, big thighs and broad buttocks, an ideal head, and the best quality of flesh, skin and hair.

Joy of Morning, a year old past in December, also bred by Mr. Duthie, was the highest priced Scotch-bred bull imported to America last year, and was sold at the last Collynie sale to Mr. W. S. Marr, of Upper Mill, who he secured for Hillhurst. He is one of the best sons of the great Pride of the Morning, whose record as a sire of Royal and Highland Society winners is second to none, his produce being uniformly wide-ribbed and big-fleshed like himself. The dam of Joy of Morning is Jessica 2nd, of the Jealousy tribe, by Scottish Archer, a Sittyton Secret by Cumberland, whose dam was by the Royal Northern prizewinning Pride of the Isles, purchased when a yearling by Deane Willis for 300 guineas, now a principal stock bull at Collynie, and considered by Mr. Duthie one of the best animals and one of the best sires he ever owned. There are in the catalogue two richly-bred and personally promising young imported bulls, 14 months and 5 months respectively, a red and a roan, both of the favorite Miss Ramsden family, the latter bred by Mr. Duthie, sired by Mr. Bruce's Silver Plate, dam by Scottish Archer, and grandam by Field Marshal, the former by a son of Star of Morning. A very taking, richly-bred and substantial red 2-year-old bull is Pine Grove Monarch, a high-class show bull by Royal Gloster, of the Sittyton Duchess of Gloster tribe, and by the Crutchshank Victoria bull, imp. Indian Chief. Space forbids individual reference to the grand herd of females, which rank with the best in the Dominion, and must be seen to be fully appreciated.

Hillhurst is historic ground for Shorthorns, and the enterprise, experience and good judgment of Mr. Cochrane is a guarantee that the herd will be kept up to the highest standard. Parties looking for good things in this line will do well to write for the catalogue, communicate with him, and visit the far-famed establishment where grand Shorthorns, Shropshires, Hampshires and Dorsets luxuriate on the rich pastures of this 1,000-acre farm on limestone foundation, lying 1,100 feet above sea level, in one of the most charming sections of Canada. Hillhurst Station is on the Portland division of the Grand Trunk Railway, 117 miles east of Montreal, 15 hours from Toronto, and 36 from Chicago.

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Tamworth sows ready to breed. March pigs, both sexes. JOHN FULTON, JR., Brownville, Ont.

ENGLISH BERKSHIRES. FOR SALE: Two 3-year-old boars, both first-class stock-getters; one yearling boar by (Imp.) British Flag, and a few choice Shorthorn heifer calves. Orders booked for spring pigs. JOHN RACEY, Jr., Lennoxville, Que.

Berkshires and Tamworths My herd has Varna Duke and Manor Lad (2nd-prize 6-months boar at Toronto, '99) at head, with equally well-bred sows. My Tamworths have the blood of imported Nimrod, Middleton Mimulus, and O. A. C. 110 (the silver medal sow at London in '98), her son Parkhill Prince, and Nimrod imp. at the head. Write for what you want. W. I. TUMELTY, Madoc, Ont.

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Yorkshires, Berkshires, and Shorthorns. In Yorkshires: one boar one year, July; 1899; sows safe in pig by imp. boar; sows ready to breed. In Berkshires, one June, 1899, boar; sows ready to breed; and booking orders for young pigs, both breeds, ready to ship in May. One bull eleven months; young calves, both sex. Write JAS. A. RUSSELL, Precious Corners, Ont.

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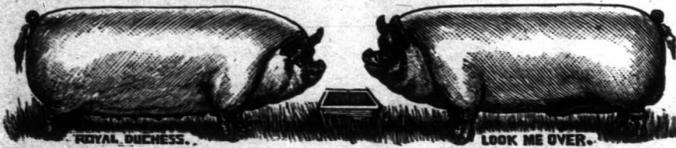
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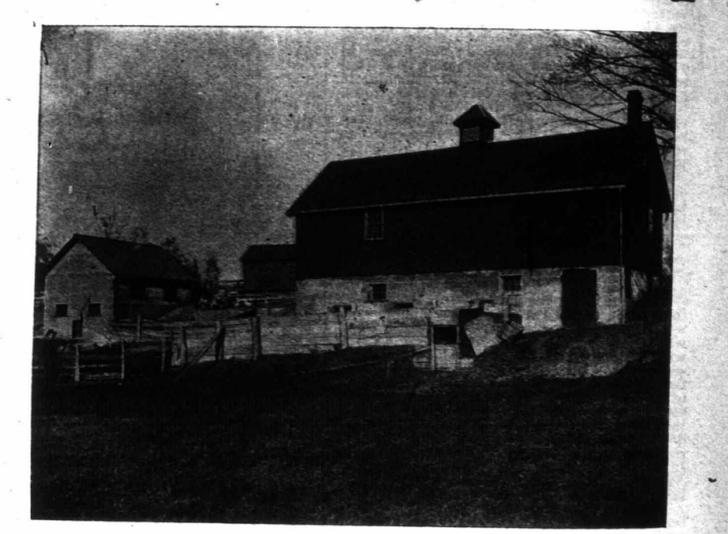
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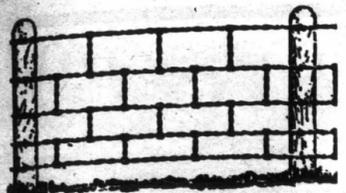
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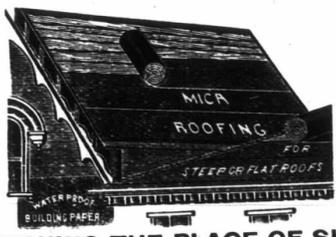
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The product of years of practical experience, careful study and experiment under the hardest climatic conditions of heavy snow and severe frost in winter and high temperature in summer, with a variation of 150 degrees. Our Spring Post meets perfectly the requirements and overcomes all the difficulties of contraction and expansion, under a variation of 150 degrees of temperature, and has besides a reserve capacity of as much more to provide for great strain and to automatically take up the stretch in the wires. Our "Hinge" Stays so act, when under pressure of snow or other weight, that when the weight is removed the fence springs back to place, with Stays unbent and fence uninjured. A system all our own and unlike any other. We use heavy wire—high carbon spring steel wire of highest quality—but our system is cheaper and the completed cost less than any other fence. Write for full particulars, and state fully your requirements.

THE STRATHY WIRE FENCE CO., Wolland, Ont.
 (Successors to Strathy & Co.)
 Agents of ability wanted in every part of Canada.

BINDER TWINE

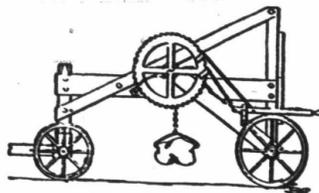
The man that don't realize the importance of sustaining this co-operative twine movement with his patronage and influence is little better than a



FARMERS' CO-OPERATIVE BINDER TWINE COMPANY, Limited, Brantford, with its thousands of stockholders, is again ahead in the great Binder Twine race for the harvest of 1900. Competition defied. Red Star (magnificent), 12c.; Blue Star, 11c.; Standard, 10c. Mill running full tilt. Raw material bought right. See our farmer agents at once. Farmers, you would have paid 16c. to 20c. a pound this coming season for twine had it not been for the existence of this Co-operative Company. Opposition—"Buy us this Co-operative Company. Opposite—"Buy us this Co-operative Company. Crush us if you can. We hold you in defiance so long as the farmers are loyal to their trust." Order early, this is your last warning.

JOSEPH STRATFORD, GENERAL MANAGER.

LEMIRE Stone and Stump Lifter



THE PATENT FOR SALE.

Has an 18,000-lb. Lifting Capacity, which is Unequaled.

It lifts stones and deposits them 5 feet high in fences. Clear your land for reapers and mowers at a small cost, and build durable fences of the stones and stumps. The lever lifts and holds the stone in position for removal. Stone can be laid just where you want it. One man can raise a stone one team cannot draw, and do it quick and easy. Agricultural societies and farmers' clubs are buying them for sections. Price moderate.

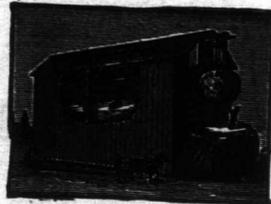
For particulars write—

COPP BROS., LIMITED, HAMILTON, ONT.
A. LEMIRE, PROPRIETOR, Wotton, Que.
 At all the leading exhibitions.

TORONTO ENGRAVING CO.
 92 BAY ST
 CUTS BY ALL PROCESSES
 LIVE STOCK A SPECIALTY.

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.**

AT THIS OFFICE
 207 Dundas St., London, Ont.

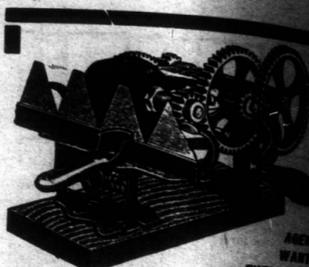
YOU can make a profitable investment if you so desire. We have open for subscription the stock of the "Ros Ror" mines, and it is a safe stock and increasing in value. The management is very careful and conservative, and are pushing ahead vigorously with the work, with splendid results, and hope to be able to quit selling stock soon. This is accounted one of the "Good" mines of the Lardeau, and I should be glad to have you write me for particulars if you think of investing.

A. E. WELCH,

LONDON, CANADA.

BOYS FOR FARM HELP.

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 upon application to Mr. ALFRED B. OWEN, Agent, Dr. Barnardo's Homes, 214 Farley Ave., Toronto.



The Gem Sickle and Tool Grinder.

In the hands of a boy alone will sharpen any moving-machine knife made in ten minutes, and do it right. A grindstone and two men won't do it in an hour—not right. It will grind anything that can be ground on a grindstone, and many things that can't, and do it quicker, easier, and better. It's made with stones that cut, and on which you can't spoil the temper of your knives or tools. It's made by emery-wheel people—people who furnish emery wheels, emery stones and grinding machinery to manufacturers—people who ought to know better. There's not room here to tell its good points—it has too many. Catalogue free—it tells the rest. With one stone each for sickles, sickles and saws, it sells at \$7.50, and is worth more. Address:

CHICAGO WHEEL & MFG. CO., 225-259 York Street, LONDON, ONT.

FACTORY: 39-45 W. Randolph St., Chicago.

BRANCHES: Brandon, Man.; Moose Jaw, Assn.; Calgary, Alta.; Vancouver, B. C.; Portland, Ore.; San Francisco, Deaver, Dallas, New Orleans, Memphis, Atlanta, Richmond, O. S. A. Albany, Augusta.

AGENTS: London, Eng.; Vienna, Odessa, Buenos Aires, Hamburg, Paris, Melbourne, Cape Town.

BINDER TWINE.

FARMERS who wish to be supplied with binder twine from the Central Prison are requested to send to "The Warden, Central Prison, Toronto," before the 1st June next, their names and addresses, together with a statement of the probable quantity required in each case.

On the 1st June the Inspector of Prisons will fix the price to farmers for their own use, which price will be based on the market price of the hemp used, the cost of manufacturing, etc., and will, on the date mentioned, advertise the same.

After the public announcement of prices, those farmers whose applications have been received, and who notify the warden of the Central Prison as to the number of bales required, whether one or more, and give directions where to ship, will be supplied at the advertised price and terms.

JAMES NOXON, Inspector, Toronto, March 23rd, 1900. Parliament Buildings.

FREEMAN'S Three-Ply Ready Roofing

EASILY APPLIED — Great Reduction in Prices. Send for Price List, etc. Parliament Buildings, Toronto, October 20th, 1899.

THE W. A. FREEMAN CO., 57 Ferguson Ave., South Hamilton, Ontario.

Gentlemen,—Nine years ago I purchased from you a large quantity of material known as Freeman's Ready Roofing, with which I roofed the north half of my barn and two sheds, 60x20 each. This year I re-roofed this roof and found it in excellent condition. A shingle roof put on part of the barn two years before was badly in need of repair. I shall hereafter use your ready roofing on all my out-buildings. Yours truly (Signed) F. W. HOWES.

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ALL MODERN CONVENIENCES. RATES, \$5 TO \$4 PER DAY. "BUSINESS" RATES ALL THROUGH.

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 Will do all knitting required in a family, homogen or factory use. SIMPLEST KNITTER ON THE MARKET. We guarantee every machine to do good work. Agents wanted. Write for particulars. PRICE, \$5.00.

DUNDAS KNITTING MACHINE CO., DUNDAS, ONTARIO.



ROCK SALT for horses and cattle. Per 100 lbs. 70c., or 500 lbs., \$3.00, Toronto. Cash with the order. Also in car lots. Toronto Salt Works, Toronto.

Queenston Cement

FOR WALLS AND FLOORS.

WRITE us before designing and laying out farm buildings. State number and kind of stock to be kept, and give size of stables. We will send sketch of basement floor, showing how to use to advantage the room at your disposal. Our system of ventilation is being adopted by the leading stockmen. Fully covered by Letters Patent, but to our patrons we make no charge.

Isaac Usher & Son, QUEENSTON, ONT.
Proprietors Queenston Heights Stock Farm.

Correspondence with Shorthorn breeders solicited.



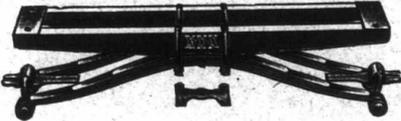
No. 1—Piano-body Top Buggy, \$36—as good as sells for \$25 more.

INTERNATIONAL CARRIAGE CO., BRIGHTON, ONT.

Our XXX springs, farm wagons, are the only genuine springs made. Get our prices and take no imitation.

IT IS WORTH YOUR WHILE

To investigate the difference in prices of our rigs to those sold by others for the same grade of work. IN INTRODUCING our work into CANADA we are offering SPECIAL INDUCEMENTS to purchasers to try some of our many styles of vehicles and harness, and OUR PRICES will INTEREST YOU. We have Piano and Corning Body Buggies in endless variety. Young Men's Buggies, Light Driving Buggies, Phaetons, Road Wagons, Light Two-seated Wagons, Heavy Democrat Wagons, fifteen different styles of Surreys, and Carls galore. All made from first-class materials, staunchly built, perfectly trimmed and beautifully finished. Our illustrated catalogue for the asking.



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FARMERS' STORES

TWINE

PURE MANILA, 650 FEET,
SPECIAL MANILA,
TIGER,
STANDARD.

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.

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

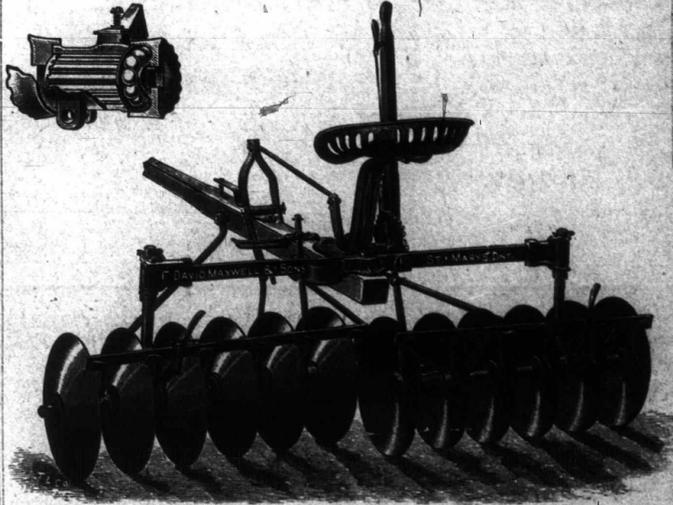
St. Lawrence Sugar Refining Co.'s

EXTRA STANDARD GRANULATED SUGAR, indiscriminately taken from ten lots of about 150 barrels each. I have analyzed same and find them uniformly to contain:

99.99 to 100 per cent. of pure Cane Sugar, with no impurities whatever.

(Signed) JOHN BAKER EDWARDS, Ph. D., D.O.L.,
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The "BEST," not the "cheapest." The only harrow with Combined Ball and Roller Bearings. The only harrow with Patent Adjustable Cleaner. No expense has been spared on the cost of manufacturing, and the Maxwell Disc is what we claim—the best produced.

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No. 209.

Strongly built. Roomy box and seats. Well finished. Ask your dealer for "Armstrong" Carriages. Catalogue on application.

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