

**PAGES
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FARMER'S ADVOCATE

AND HOME MAGAZINE

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

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No. 458.

EDITORIAL.

Every farmer should read Professor Day's article in the Farm Department in this issue on soil moisture. It is a subject of superlative importance, and is treated in this contribution in so plain and practical a manner that the wayfaring man, though an average farmer, cannot fail to understand and appreciate it.

Col. D. Wilson, of Elgin, Ill., has been engaged to address farmers' meetings on dairying in Manitoba and the Northwest this season, \$200 towards his expenses being paid by Canadian Department of the Interior, the Department of Agriculture, and the Manitoba Government. We understand that Prof. Robertson prepared a list of places at which it would be advisable for him to speak. The Colonel is probably a first-class man, but where are our Canadian experts? Doubtless all too busy making first-class butter to trot around telling others how to do it.

Professor Day, Agriculturist of the Ontario Agricultural College, has kindly contributed for the information of our readers a report of the result of his experiments with fattening steers during the last winter, which we publish in this issue, and which serves to emphasize the opinion held by not a few advanced feeders, that the cost of production may be materially lessened by the use of a light or medium grain ration, rather than a heavy one, and that much waste in many instances results from the latter practice. We trust that even in this busy season feeders will take time to read, study and digest this report, and will profit by its lessons, not by accepting it as a settlement of the question, but by testing it in their own practice, and thus aiding in its settlement.

Important Announcement.

The FARMER'S ADVOCATE will be sent to new subscribers from now till the end of 1898 for thirty-five cents. Present subscribers sending us lists of five new names at the above rate for the remainder of the year will have their own subscription advanced one year. The following letter expresses the opinion of one who carefully reads each issue of the FARMER'S ADVOCATE:

To the Editor FARMER'S ADVOCATE:
DEAR SIR,—I enclose check to pay my subscription for your paper to April, 1898. I have much pleasure in saying that without doubt your paper is of inestimable value to farmers, and I only wish I had known of it when I was managing Lord Aberdeen's ranches in B. C. It would have helped me there in many difficulties, as it helps me now in my dairy farm. I get quite a number of English and Scotch agricultural papers, the *North British Agriculturist* amongst the number, and in my opinion, for practical facts and methods, your paper excels them all, and this is also the opinion of some eminent agriculturists in the Old Country, to whom I regularly forward the FARMER'S ADVOCATE after reading it right through myself. It seems to me that every issue contains just the solution of the difficulty you were in. And now in your most interesting issue of 1st inst. you have a very important paragraph, which, I think, requires much consideration, and may in the near future have a considerable bearing on the vexing question of weed killers. I refer to Mons. Bonnet's discovery (page 308) that the solution of sulphate of copper kills mustard and thistles, both of these noxious weeds being the curse of this country, especially the former. Looking at it from the chemical point of view, I do not see why this solution should not succeed, and I am determined to try it on a patch of corn I have which is, unaccountably to me, simply thick with mustard. Perhaps, then, you can kindly inform me of the quantity of sulphate of copper to be used as to water, or say the 15% solution of iron sulphate. I shall be exceedingly obliged if you can give me the necessary instruction as to this, and I will let you know the result. I remain, yours faithfully, EUSTACE SMITH.
"Park Farm," West York, Ont., July 7, 1898.

P. S.—You may publish this letter if you choose, as some of your readers may be able to throw more light on this interesting question. E. S.

The Tuberculosis Scare.

Hon. Mr. Fisher, the Dominion Minister of Agriculture, appears to have got hold of the right end of the stick in regard to tuberculosis among cattle. In addressing a large Farmers' Institute gathering a short time ago in Lanark Co., Ont., he congratulated those present upon having a country well adapted to stock-raising, and he advised them to make the most of it by keeping good stock and keeping them well. He emphasized the importance of having clean, well-ventilated buildings, and healthystock. "You must," said he, "have healthy stock. A scare was started some time ago about 'tuberculosis.' People were said to be in great danger from affected stock. During the past eighteen months we have been carefully watching it, and have tested many herds, with the result that only about five per cent. were found to be affected. As people become educated as to the best methods of combating this disease, it will, we hope, decrease very fast. Use whitewash in your stables, keep them sweet and clean, and with care and the isolation of affected animals you may very soon greatly lessen this disease, which has only as yet got a partial foothold in Canada."

One by one, States and countries that embarked in the tuberculin-test-with-slaughter-attachment-crusade have abandoned the foolish extravagance, and are working out the problem on more rational lines, in which proper sanitary conditions play an important part.

Opportunities for Investigation in Swine Feeding.

The comprehensive article in our Stock Department on the salient features of profitable swine feeding, as ascertained by experimentalists, is of special interest at the present time, and will well repay careful study. A good many deliverances have lately—since the hog and corn got into politics—been tendered on this subject by parties possessing little actual accurate information or experience, but still able to speak as positively as an oracle. It is true that Canadian skill in breeding, general management, feeding, and packing have put our bacon at the top; still there is work for our scientific investigators, when we consider the great variety of swine foods easily grown or available in Canada, possible mixtures, varied conditions affecting gain and profit, varying market requirements, and other points, such as when the fattening period should begin, and how long it should continue; whether limited freedom and exercise all through, or close confinement, say for the last month or so, is preferable; whether or not it is better to finish with a single grain or continue mixtures to the end; the effect of roots, rape or clover on quality, as well as gain, in fattening; whether Canada flint corn is preferable to the Western horse-tooth sorts; what grains or millfeeds can advantageously be used with corn (prices considered) to improve the latter (the exclusive use of which is adapted to produce fat lumber-camp pork) in feeding for high-class bacon; also to determine why, as in the Danish experiment, certain pigs on a given food make the lowest grade of pork, and a few others in the same trial convert exactly the same food into the first-class article, while pigs on another food of a different character gave equally puzzling results; in short, to get at what may be considered an ideal method of breeding, management, and feeding—one that will give as uniformly as possible the highest class of product, consistent with profit—for farmers are not disposed to raise pigs at a loss to please others, though there is no apparent necessity for such a contingency to arise. We would therefore commend the further scientific investigation of this important subject to our progressive Canadian investigators.

By way of supplement to the above and as an

example of the practical methods pursued by our intelligent Canadian swine-raising farmers, the description of the establishment of Mr. Freeman, of Oxford Co., Ont., also published in this issue, deserves close examination. A few political editors and others would give those who read their "cock sure"—"know-it-all" effusions the idea that the Canadian farmer has neither knowledge nor judgment to exercise in the management of his business, and that he would not hesitate an instant to make a dollar by adopting discredited Western States methods of hog raising, no matter what happened trade. We have no notion that he will be disturbed in the even tenor of his way from the rational policy of years by the chatter of faddists and amateurs. Mr. Freeman is neither, but is an earnest student of the branch of farming with which he has been evidently particularly successful, aiming by profitable methods to produce what the market requires, and always ready to learn. Experience is a great teacher.

The Royal Show.

The Royal Agricultural Society of England sets the pace for a purely agricultural show. For sixty years, save one, this staid old organization has gone steadily on its way, presenting to all similar institutions a splendid example of adherence to a principle. Without any circus or side-show attractions to draw the crowd, and without any government grant to bolster it up, it goes on from year to year, ever popular, and well supported by private donations, in addition to its regular revenue. It offers a prize list which is liberal and generous, and being well patronized by the people, who attend in gratifying numbers, it stands to-day the most successful institution of its kind in the world. The programme of the show is eminently practical, embracing, besides the awarding of large cash prizes in some 17 breeds of sheep, 14 of cattle, and a corresponding number of breeds of horses, pigs and poultry, milking tests in three classes of cows, the trial of draft motor machines, exhibitions of agricultural implements, seeds, roots, and manures; daily demonstrations in butter and cheese making; lectures on the horse's foot, and how to shoe it; competitions of shoeing-smiths; demonstrations of cramming, plucking and trussing poultry for the table; demonstrations in bee driving and daily lectures on bee management; and daily parades of all the horses and cattle before the grand stand. This last feature is so systematically arranged and carried out as to make a most fascinating feature of the show, numbers being displayed upon the animals corresponding with a carefully prepared catalogue, giving full information as to age, breeding, and ownership of each animal. The expense entailed runs close to \$75,000, and the receipts to a few thousand dollars more. The exhibition for 1898 was held last month in Birmingham, and in all its features was a decided success, except that owing to unfavorable weather, and the fact that the show was held in a park nine miles from the city proper, the attendance was light as compared with that of the average of years. The attendance on the best one-shilling day at Birmingham was 49,011, as compared with 73,119 on the corresponding day at Manchester in 1897, and 80,002 at Leicester in 1896. The total attendance this year was only 98,278, as compared with 217,930 last year, and 146,277 in 1896.

Interesting reports of the stock sections of the show by our English and Scottish correspondents will be found in this issue, and illustrations of some of the prize animals will be given in this and future issues. The "Royal" is certainly a great institution, and is worthy of high commendation for the excellent work it is doing. While the conditions in our Dominion may not be such as to enable us to copy all the good things in their programme, yet there is much in it that we may adopt in part or in

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full in the conduct of our exhibitions which would add much to their usefulness from an educational standpoint, and present to our people a higher ideal of what constitutes a model agricultural exhibition, and we trust as the years go by we shall be found approaching a little nearer to this standard.

A Great Clover Crop.

The farmers in all the older provinces of the Dominion are to be congratulated on the magnificent crop of clover now being harvested, the bulk of it, we believe, having been saved in good condition. If judiciously fed to the right class of stock it may easily prove to be worth more to the growers than a full crop of wheat, even at the boom prices which prevailed a few weeks ago and which have been followed by the usual reaction. There is literally millions for the farmers in this clover crop, not only in the immense amount of wholesome and nutritious stock food it provides, and its great possibilities in producing beef and mutton, cheese and butter, and even bacon and eggs, but also in its restorative influence on the fertility of the land, which is one of its greatest virtues, drawing, as it does, from earth below and air above and storing in available form elements which are necessary for the growth, development and production of the best paying crops of all kinds. Clover draws nitrogen from the air and stores it for use as a fertilizing agency, while the roots run deep down into the earth and bring up mineral elements which feed the crops, while the decaying roots and stems and leaves when plowed down furnish potash and phosphoric acid as well as vegetable matter or humus in the soil, which, improving its mechanical condition, contributes to its ability to retain moisture, rendering it more suitable for a seed-bed for cereal crops as well as for future catches of clover when re-sown, to repeat the round of restorative agencies. If clover were sown every year with all cereal crops on well-prepared land we should have no fear of the future fertility of the farms of fair Canada. With this and the barnyard manure made from the feeding of stock on the farm our land may be kept in good enough condition to grow the best of crops in perpetuity. Let it be laid down as one of the cardinal principles to sow clover and keep at it continuously.

"Another rule that may safely be followed is, that the more finished the product the greater the profit. In other words, that in general it will pay best to sell oats, barley, and peas, or other coarse grain, and hay, in the shape of beef, pork, and mutton, or butter and cheese, and thus keep on the land the bulk of all that is taken from it by these crops, together with the elements derived by them from the atmosphere."—Col. O'Brien, President of the East Simcoe Farmers' Institute.

STOCK.

Points in Experimental Pig Feeding for Profit.

Mainly in the light of investigations by modern experimenters we propose to consider the subject of swine feeding, with three points chiefly in view, viz.: (1) Animal health and vigor; (2) gains in weight from food consumed; and (3) quality of product. On the whole, it will be seen that the results represent a convergence with those deducible from the best practice of the intelligent Canadian hog-raiser. Passing over what relates to the feeding and management of breeding stock, which alone would take a lengthy chapter, we note that after weaning pigs should (the season permitting) have the freedom of a grass lot, affording them pure air and exercise, with foods having a liberal supply of protein for muscle formation, such as skim milk, buttermilk, shorts, bran, peas, and green clover, and ash for the growth of strong bones, so that we may have a well-nurtured animal, of vigorous health, to finish, of a character suited to market requirements, as to lean meat, etc., within the limits fixed by inheritance through the laws of breeding in type and capability as a feeder. The bulk of experimental work in America has related to this question of comparative gains from certain foods or combination of foods, and with various breeds and crosses, European investigators, notably those of Denmark, having done most in regard to the effect of foods on the product.

Exercise, Shelter, Grass, Weights, etc.—As a result of four years' trials (Utah Experimental Station) shot in pens and others allowed exercise in yards and pasture, there was 2 of a pound greater daily gain and a saving of 92 lbs. of grain or 18 per cent. of the food consumed in making 100 lbs. of gain in favor of the latter, not counting the value of what grass was eaten. The general experience of Canadian swine feeders is, that under such conditions there are far less losses from pigs going off their feet or their feed with stomach derangement and rheumatism. It has not yet been shown that pigs can make satisfactory gains on pasture alone, if we except one case (Utah) where alfalfa was pastured. It was found (Illinois) that pigs on blue grass pasture given a half-full feed of corn for first eight weeks, and the next four weeks a full feed of corn, ate 441 lbs. corn to 100 lbs. gain, and with a full feed corn all the time ate 507 lbs. corn to 100 lbs. gain. In a check lot, without grass, 629 lbs. corn were taken for 100 lbs. gain, showing a 30 per cent. gain with the half feed on grass, and 20 per cent. gain with the full feed in lot without pasture. In regard to the value of shelter, another point affecting profit and loss, it was found by a winter experiment (Kansas) that pigs kept in an open yard, protected only with board fence on north, from Nov. 27th, for ten weeks, required 25 per cent. more corn to make 100 lbs. of gain than those enjoying the shelter of pens in a barn basement.

As a result of several hundred feeding trials at many American stations, with lots of pigs of different weights at the beginning of the fattening period, it was found that the quantity of food eaten per day varied from 2.23 lbs. by pigs weighing 15 to 50 lbs., up to 7.50 lbs. by 300 to 350 lb. pigs. In the case of 450 lb. hogs, 10 lbs. of grain daily, or its equivalent, were eaten, or four times as much as the 50 lb. pig. It was also shown that pigs averaging 38 lbs. each made 100 lbs. gain from 293 lbs. feed, a proportion of which was skim milk and other easily digestible foods. Pigs weighing 78 lbs. took 400 lbs. feed to make 100 lbs. gain, and there was a steady increase in feed requirement for 100 lbs. gain as the pigs became heavier, the 174 lb. pigs taking 482 lbs.; the 226 lb., 498; and the 320 lb. animal consuming 535 lbs. food for 100 lbs. gain, or 33 per cent. more than the 78 lb. animal. A twelve weeks' fattening trial (Wisconsin) with mature hogs demonstrated that the gain after the first four or five weeks of confinement is secured only by constantly increasing quantities of feed for a given weight of increase, and the dangers from pigs going off their feed or from disease increase under confinement with heavy feeding.

Foods.—Next let us look at the results of trials with various feeding stuffs. The average of five trials at four stations (Kansas, Ohio, S. Dakota, and Wisconsin) showed that 6 lbs. more corn meal than whole wheat meal (460 of one and 463 of the other) were required to make 100 lbs. gain, the difference being so small as to put them on a par; but an equal mixture of corn and wheat meal effected a saving of 5 per cent., which indicates the economy of feeding grains mixed rather than singly. As a result of two experiments between shorts and corn, 15 lbs. more corn meal than shorts were required to make 100 lbs. gain; but in one trial a 439 lb. mixture of shorts and corn (equal parts) proved as valuable as 522 lbs. shorts fed alone or 537 lbs. corn meal alone. The combination was 20 per cent. more valuable than shorts alone, hence the mixture was not only a more economical ration, but should give a better quality of pork. In a seventy-two day trial with bran and skim milk vs. shorts and skim milk, the latter proved twice as valuable as the bran.

Corn meal was found (Wisconsin) 8 per cent. more valuable than whole shelled corn for fattening; shorts being mixed with each, but the cost of grinding reduced the difference considerably. In several trials (Mississippi an exception) corn and

cob meal was found superior to corn meal alone, but it is difficult to get it ground sufficiently fine.

In a comparison (two trials) between barley meal and corn meal, skim milk being combined in the second experiment, 471 lbs. barley meal produced 100 lbs. gain, and 435 lbs. corn meal 100 lbs. gain, or 36 lbs. in favor of the corn. In the second trial there was a difference of 24 lbs. meal and 27 lbs. skim milk; or, averaging both, 8 per cent. more barley was required to make a given gain. In the second trial the barley-fed pigs drank twice as much water as those on corn. Danish experimenters confirm the foregoing, and also indicate barley to be probably the best single grain for producing bacon of the highest quality in regard to firmness and flavor. In one trial (Massachusetts) it required 20 per cent. more oats than corn to produce 100 lbs. of gain. Two trials—one with equal parts ground peas and bran (wet) vs. ground corn and bran—resulted in favor of the former, 363 lbs. making 100 lbs. gain, while 455 lbs. of the corn-bran mixture were required. Of soaked peas and soaked corn, respectively, 421 and 458 lbs. were required for 100 lbs. gain, showing the superiority of the peas.

Buckwheat is a valuable pig feed, but not equal to wheat (Ottawa). In regard to potatoes, one trial (Wisconsin) showed that 440 lbs. corn meal produced 100 lbs. gain, but 262 lbs. corn meal mixed with 786 lbs. boiled potatoes gave 100 lbs. gain; in other words, 441 lbs. potatoes save 100 lbs. of corn meal. Trials at three stations showed that 400 lbs. of field roots saved 65 lbs. grain, on which basis 615 lbs. roots would save 100 of grain. In Denmark 1 lb. barley was found equal to 8 to 8 lbs. mangels or 4 to 8 lbs. fodder beets. In Canadian practice, pulped roots mixed with ground grain prove of great value in winter fattening hogs, preserving the animals in health, which is difficult to do in heavy feeding when closely confined in cold weather. The great advantage of some succulent feed is in keeping the animals on their feet and in good vigorous health, to which end exercise, cleanliness, and good ventilation greatly aid.

One experiment at Ottawa (Canada) Station shows the following results:

| FEEDS. | LEBS. FEED FOR 1 LB. INCREASE. | 'SHRINKAGE PER CWT. |
|------------------------------------|--------------------------------|---------------------|
| Shorts..... | 4.41 lbs. | 22.57 |
| Barley (ground)..... | 4.35 " | 25.44 |
| Corn (ground)..... | 4.16 " | 23.11 |
| Shorts, Barley, Corn (mixed)..... | 2.90 " | 18.26 |
| Skim milk..... | 2.51 " | 18.26 |
| Peas (unground)..... | 3.33 " | 21.57 |
| Skim milk..... | 2.35 " | 25.81 |
| Barley (unground)..... | 3.04 " | 25.81 |
| Skim milk..... | 2.90 " | 18.26 |
| Corn (unground)..... | 2.51 " | 18.26 |
| Skim milk..... | 2.51 " | 18.26 |
| Oats (unground), Barley, Peas..... | 3.20 " | 20.92 |
| Skim milk..... | 2.60 " | 20.92 |

*Fasted 14 hours before killing, and dressed weight taken 24 hours after killing.

Unfortunately no record is given as to quality, such as might have been secured by submitting the carcasses, tagged with numbers, to competent experts on bacon and hams for the British market.

Several tests showed that foods largely protein gave more blood, larger livers, etc., than those on carbonaceous (largely fat and heat producing) foods like corn; with corn worth 40 cents per bushel, skim milk is worth about 20 cents per 100.

Corn alone has not been found well suited for bone and muscle production in young and growing animals, and requires to be fortified by foods supplying what it lacks if used at all for such. Pea meal is rich in protein, but too heavy to be fed alone, being improved by mixing it with bran, shorts, ground oats or corn meal. Soaked whole peas appear to do better than pea meal alone.

Quality of Pork.—Many feeding trials have been made in Denmark, with a slaughter test at the conclusion, and expert examinations of carcasses as to fat and lean and other differences attributable to feeding or other causes, carcasses being grouped in four classes according to quality (No. 1 being the best), the grading being done with special reference to the British market. One trial indicated that 1 lb. separator skim milk was equal to 2 lbs. whey, but the latter was after cheese had been made from the skim milk, so that it contained less fat and less casein than whey in Canada, where the cheese is all made from whole milk. Skim milk pork was found superior to that from whey, the same grain being fed in each case. In a test with 110 animals, there was shown to be a practical equality between rye and barley, both as to gains and quality, nor was oil cake of any more value, pound for pound, than barley or rye. The result of seven series of experiments with 144 hogs on thirteen farms, feeding equal weights of corn as against barley or rye, showed a slightly higher gain on corn, and it was about equal to a mixture of the other two feeds. Exclusive corn made the softest pork and put most carcasses in the lowest grade. The shrinkage was about the same. Some pigs fed on rye or barley went into the fourth or lowest class, as the following table shows, weights at slaughtering varying from 181 to 185 lbs.:

| FOODS. | PER CENT. IN CLASS— | | | |
|------------------------|---------------------|--------|--------|--------|
| | No. 1. | No. 2. | No. 3. | No. 4. |
| Barley all time..... | 57 | 35 | 4 | 4 |
| Corn till 120 lbs..... | 28 | 50 | 22 | 0 |
| Corn till 140 "..... | 25 | 58 | 17 | 0 |
| Corn till 160 "..... | 45 | 30 | 25 | 0 |
| Corn all time..... | 29 | 33 | 24 | 14 |

In another trial, where half barley or rye and half corn were fed, five carcasses went into No. 1 class, and seven into No. 4. Barley alone put eight into No. 1 and one into No. 4, and corn alone,

three into No. 1 and ten into No. 4. This indicates in a remarkable way the difference in the individual capacity, largely fixed by their breeding and probably to some extent by early management of certain animals. In another trial, a steady increase with increasing weight in the food required to produce a pound of gain occurred, pigs weighing 275 lbs. taking nearly twice as much food for 100 lbs. increase as those weighing 33 to 75.

Two seasons' experiments at the Ontario Agricultural College, taking into consideration health of animals, their gains, the quality of their flesh (examined by packers for English market), and the composition of sweet and sour whey, indicated that souring did not seriously detract from the value of whey for pig feeding. Two experiments showed 100 lbs. whey (sweet and sour) equal to 13.31 lbs. of the meal used, worth at the prices paid about eight cents.

Four lbs. of boiled potatoes or 8 lbs. of mangels, fed with skim milk or whey, were found (Denmark) to be about equal to 1 lb. grain, and the quality of pork in all cases proved satisfactory. In other experiments results favored exercise for light pigs; that about 11 per cent. more feed was required in winter than summer to make 100 lbs. of gain, and that in comparing light and heavy feeding, light feeding required 391 lbs. to make 100 lbs. gain, 397 lbs. (medium) to make 100 lbs. gain, and 404 (heavy) to attain the same result. Pigs weighing 275 lbs. required about double the feed for 100 lbs. gain as those weighing from 35 to 75 lbs.

In a breed test between three native sorts and Tamworths and Poland-Chinas, the "natives" made the poorest gains, and the "Tams" the best, and the Poland-Chinas produced superior pork to the natives, being harder.

In a trial (Robertson, Canada) of soaked frosted wheat, the product was pronounced by the Davies Co., of Toronto, "excellent—very rich and luscious, and superior to hogs fed on peas alone, the complaint regarding pea-fed bacon in England being that the lean was hard, and the fat to some extent also. Farmers should mix their grain, grind and feed with whey, skim milk or buttermilk." The feeding of half wheat in ration with barley, rye and bran showed that it was not a cause of "soft" sides. "Softness" in sides was thought to be a result of want of exercise and use of foods lacking in nourishment.

Summary.—By way of brief review, the foregoing study indicates the advantage to the farmer of giving his pigs a reasonable amount of exercise, comfort (which includes cleanliness), and succulent food, along with the heavy fattening grains, early maturity, and mixed rations; though, in regard to several points, there is yet room for further researches by Canadian investigators.

Duroc-Jersey-Yorkshire Cross to Produce the Bacon Hog.

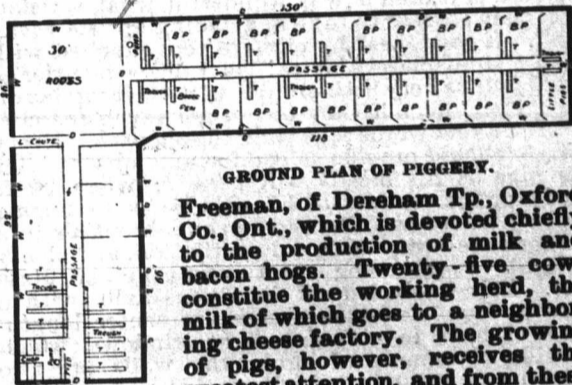
I consider the cross of the Duroc-Jersey boar with Yorkshire sow the very best, barring the Tamworth, for fine bacon, suitable both to the English market and to the feeder. The Yorkshire pure-bred is not a suitable hog from the feeder's standpoint. The Yorkshire is too long-legged and lanky, and consequently too hard to feed. Again, the packers do not want the pure-bred Yorkshire, Wm. Davies Co., in their letter in the ADVOCATE some months ago, said they "did not want Yorkshires pure-bred at any price." They wanted in preference "the Tamworth pure-bred or the Yorkshire crossed." This is about the preference, too, of all the packers in Canada, and this is about what Rattenbury in this Island wants. Previous to the pronouncement of the packers, I advocated the cross of the Yorkshire, and I advocated, in preference, the cross of the Yorkshire with the Duroc-Jersey. I publicly gave my reasons for my faith in this cross. The Yorkshire has the length of body necessary, and the narrow back and light jowl, but it lacks the depth of body and large heart girth. The Yorkshire, in my experience, and in the experience of all others, as far as I know, is a hard feeder. The Duroc-Jersey, on the other hand, has the depth of body, good heart girth, but is too broad in the back, too short in body, and too heavy in jowl as well as shoulder. The Duroc-Jersey is a remarkably easy feeder, and the most docile and sweet tempered hog I ever saw. Something very remarkable about the Duroc-Jersey is the fact that it never squeals. Not so with the Yorkshire. The Yorkshire will squeal louder and oftener than any hog I ever saw. It is quite a hard job to keep a Yorkshire brood sow from running down in flesh when nursing a litter. The Duroc-Jersey will not run down in flesh much when suckling, and are great milking mothers. In fine, the objections to the Duroc are: Short body, broad back, heavy shoulder, heavy jowl, fat. The objections to the Yorkshire are: Lightness of body, lankiness, long-leggedness, want of heart girth, and irritability. The attributes of the Duroc are: Great docility, and depth of body, good heart girth, hardihood and easy feeding qualities. The attributes of the Yorkshire are: Narrow, fleshy back, light head and shoulder, great length of side, and leanness. So you see what the one lacks is well supplied by the other, and what the other lacks is well supplied by the one. Therefore, the ideal bacon hog for profit is not the Yorkshire nor the Duroc-Jersey, but the Duroc-Jersey-Yorkshire cross.

P. E. Island. J. A. MACDONALD.

A Well-Conducted Bacon Pig Raising Establishment.

It is a fact worthy of cognizance that a large majority of Canadian farmers recognize the wisdom of adjusting their farming operations to meet the demands of the market, and thus secure the greatest returns for their labor and capital invested. At this particular time the bacon industry is the one most before our attention, largely, perhaps, because of the position our hog products have secured on the British markets. The question is raised, particularly in the minds of our U. S. neighbors south and west, whether the advantage gained in price of bacon over fat pork will warrant the supposed greater cost of producing the "strip of fat and strip of lean sort" which we have for years been striving to produce in order to suit the palates of our best customers across the sea. The difference in price between "Canadian long-rib lightweights" and "American rib in bellies"—the highest price American bacon—as quoted by a recent Liverpool market report is shown, the former being 45 to 46 shillings per cwt. for Canadian, and 34 to 35 shillings per cwt. for American; whereas Canadian hams are quoted at 46 to 48 shillings per cwt., and American 33 to 35 shillings per cwt.—quite a difference, it must be acknowledged. While the difference in price would leave us a handsome profit, even if produced at considerable greater cost, we are not prepared to acknowledge that with the greater intelligence and care of our farmers our bacon need be expensively produced. We are aware from experience and observation that good breeding, selection, feed, exercise, housing, as well as the time of year to market our hogs, have all to be intelligently studied in order to increase the margin of profit from the same. Let us study

AN EXAMPLE IN PIG-RAISING. as a specialty on a Canadian farm: We recently had the privilege of spending most of a day on the two-hundred-acre farm of Mr. S. A.



Freeman, of Dereham Tp., Oxford Co., Ont., which is devoted chiefly to the production of milk and bacon hogs. Twenty-five cows constitute the working herd, the milk of which goes to a neighboring cheese factory. The growing of pigs, however, receives the greatest attention, and from these is the main revenue of the farm is produced. Both cheapness of production and excellence of product are intelligently sought after and satisfactorily secured. For the last few years about 200 hogs per year have been turned off at about six months old, weighing from 150 to 240 pounds, the bulk of the pigs going about 170 pounds each at that age. Up till the present time 18 brood sows have been kept, but now this number is to be increased to 30, from which it is hoped 400 "baconers" per year will be sold. To accommodate this increase a substantial but cheap new piggyery, 150 by 28 feet, is being built. This is shown in the accompanying illustration, and includes the longer portion, which contains the root house. The wing, 66 by 32 feet, is the old building, which at the time of our visit contained 114 pigs, which will all be sold during July and August. This building can be easily accommodate 200 pigs, which will be fed off twice a year hereafter.

The new building, as will be seen by the illustration, contains 22 brood sow pens, and one pen across the east end in which the little pigs from the whole of the sows will learn to eat. The sows all farrow about the same time twice a year, in February and August. When the winter litters are from two to three weeks old they are given access to the entire pens with their dams, where they become acquainted, and by the time they are four weeks old they have learned to eat well. The rations of the sows are then reduced and the little pigs are not weaned until they are eight weeks old. By this time they are eating so heartily they scarcely notice the weaning, and have developed good, vigorous forms. The sows are now quite thin, but healthy, and in good condition for breeding for the next litter. The sows after being bred are turned out and rough it on grass and clover in summer, and roots, with a little bran, in winter.

After farrowing in summer the sows run with their litters on pasture and grain stubble as soon as they commence to feed, and are given cobs of soft new corn as soon as the young pigs will take it. This is found to promote rapid growth and prepare them for the pens as soon as the cool, damp weather arrives. They are then housed in the brood pens, in which they remain until eight weeks old, when they are weaned and turned immediately into the fattening pens to go forward without an hour's delay. The winter litters are farrowed in a short time before farrowing is to take place. They are given the run of the barnyard up till this time and very cheaply fed as above mentioned. Not only are the sows fed cheaply as a matter of economy, but larger and healthier litters are thus

produced. Mr. Freeman informed us he had raised as many as 96 pigs from eight sows at one lot of litters, and it is the great exception to lose young pigs from any cause whatever.

FEEDS AND FEEDING.

From the time the pigs are weaned (at two months old), till they are sold they are pushed forward on whatever sorts and mixtures of grains are cheapest. He feeds three times per day. At certain seasons it is found advantageous to sell certain foods and buy others. He feeds mixtures of grains, giving a ration so composed as to be a good bacon-producing food, and believes in giving food so that the pigs will relish it. Shorts are fed more or less at all times, and are bought in carloads at the season when they are cheapest. By watching the market closely it is rarely necessary to pay higher than \$12 per ton. At the time of our visit equal parts of crushed corn, oats and barley and shorts were being fed. This is allowed to soak in whey and water from 12 to 24 hours. The feed box stands just in front of the pump and beneath a whey spout into which the whey is emptied from the waggon. Each piggyery has a cement cistern or tank, which is filled from a spring well by windmill pump. As will be seen by the illustration, the feeding-troughs are all at one end of the pens in which the entire feeding herd run together. The pigs can get at the troughs from either side, so that less trough room is required. They are given their fill of slop morning and night, just thin enough so that it readily runs the entire length of the troughs, which have a slight fall from the passage end where the feed is poured in. At noon time in summer they are given corn on the cob on the floor of the north part of the pen, and given a drink of the thin liquid taken from the bottom of the feed box. In winter the noon food consists of raw mangels fed whole on the floor where the corn is fed in summer, and peas in the straw are fed in the division of the pen next south of where the mangels are fed. Wide doors are always open between these portions of the pen, making it one large pen. In summer the pigs have constant access to a large straw yard at all times, kept clean by frequent and liberal bedding, and afforded exercise. By this means the pens and surroundings are kept perfectly sweet and clean, practically no manure, liquid or solid, is dropped inside the pen, but every portion is saved in the straw yard.

In winter the fattening pigs are kept in continuously, except occasionally on a very fine day they are given a run. The pens in winter are cleaned out every day as regularly and carefully as the cattle or horse stables. The pigs wear nose rings all the time, which Mr. Freeman considers keeps them much more contented than if allowed to dig up the yard. They thus do better and keep in apparently perfect health at all times.

The pens have cement floors and walls, and when kept well bedded answer to Mr. Freeman's satisfaction. Both the old and the new pens are well lighted by large windows. The new one has six windows on each side and one at the east end, each 3 feet 3 inches by 4 feet 6 inches. These have double glass on the same sash, and are hung on hinges from the top, so as to be fastened out of danger when the pens are being cleaned out. The manure when cleaned out is taken directly to the field and spread. Along the walls of the new pen inside are rows of doors in the partitions dividing the pens. Through these the sows are driven to their various pens, and in the doors will be arranged creep holes for the young pigs to pass at their pleasure. The spaces marked "d" in the outer walls of both the old and the new pens are small doors, through which the pigs can enter or exit. The troughs now in use are of wood, but cement ones are to take their place, and will also be used in the brood sow piggyery.

The walls of the piggyeries are 6 feet 6 inches high, and each has a loft above for straw bedding and unthreshed peas. The new building has 16 foot posts above the walls. The only floor above the pens consists of poles about two feet apart, upon which the straw is built. This provides, in Mr. Freeman's estimation, ideal ventilation, as it allows the steam and foul air to escape without causing draft. As will be noticed, the root house is in close proximity to either pen, and water is conveniently situated, so that feed can be mixed quite close to where it is needed.

AS TO BREEDING.

The breeds or crosses of pigs best suited to Mr. Freeman's business is not yet with him a settled question, although, so far as a sire is concerned, he has no desire to change from the Yorkshire, which he has used for a number of years with good satisfaction. His present boar, as well as several previous ones, was bred by Mr. J. E. Brethour, of Burford, Ont. For years Berkshire sows were the only ones used, and it is with much reluctance they are to some extent being given up, as they have proved themselves good mothers of large, even litters. They were inclined, however, to become too fat for the present market demand, and for this reason a number of half-bred Berkshires and Tamworths are now in farrow for August litters. This cross will likely be adhered to for dams, although a dash of Yorkshire in the dam, Mr. Freeman considers, would be no bad element. He considers Yorkshires and their crosses are less liable than any of the others to become crippled through heavy feeding. He also maintains that the Yorkshire is the slowest pig to get to a condition where

he carries "the double curl" in his tail, indicating the highest state of thrift or gain.

Mr. Freeman's feed supply last fall when the August litters commenced to be fed consisted of 16 tons of shorts, which cost \$12 per ton; five tons of bran, part of which was fed to cows and horses; 1,000 bushels of peas and oats, half of each; 400 bushels of barley; 1,500 bushels of corn, on the ear; and 3,000 bushels of mangels. This will more than carry the 200 pigs to marketing condition. This grain, reckoned at 60 cents per hundred, and the price of the pigs sold at \$5 per cwt., live weight, leaves a nice profit, besides an enormous amount of valuable manure to fertilize his fields and grow heavier crops of fall wheat and other grains, which, by the way, are at the present time looking particularly well. True, every one may not have got five cents per lb., live weight, for his pigs, as he did about the time of our visit, but just here is where Mr. Freeman's business ability tells. He contrives to have his pigs ready when pigs are dearest.

What about the much-talked-of advantage of pasturing growing pigs on clover and other green foods? some will ask. To our question on that subject, Mr. Freeman stated that he did not consider it profitable to turn fattening pigs on grass or clover fields. The thing is to feed liberally but wisely. Keep the animals contented, and with mixed grain at 60 cents per cwt. pork can be more cheaply produced upon it, with roots in winter, than if they were allowed access to clover or any other pasture.

NOTE.—By mistaking our directions the engravers made the cut for illustration too small. The upper portion represents the new building 160x25 feet, containing root house, 22 brood sow pens and pen for little pigs before weaning. B. P. represents brood sow pens; T. trough; W., window; and D. door. L., chute in passage between root house and old pigery, shows where pigs are loaded to be taken to market. The situation of pump in either building is shown by small circle marked pump.

How to Produce the Hog the Packer Wants at a Profit.

[By Andrew Graham, Pomeroy, Man., before the Sheep and Swine Breeders' Association.]

The first essential for the production of the right sort of a pig for our purpose is a good brood sow. From whichever one of the different breeds your sow is taken is not of so much importance as is her type, individual merit, and fitness for our particular purpose. Many writers on this subject tell us to get a good sow, but not necessarily a pure-bred, and breed her to a pure-bred hog. My honest opinion is that more money can be made by procuring a first-class pure-bred sow of whatever breed you prefer, and mate her to the right type of hog of another breed. The difference in the original cost will be but a few dollars, which will be more than offset by the extra feeding quality of her offspring. For producing the stamp of hog required by the packer, I believe the sow should be selected either from the Yorkshire or Tamworth breeds, and mated to either a Berkshire or Poland-China hog. My reason for preferring a sow of one of these breeds is on account of their being more prolific and remarkably good mothers. I believe far better results can be attained by breeding from pure-bred animals than can be had from mating a grade sow to a pure-bred hog. When we have secured a sow that will produce large litters of uniformly good pigs, and is at the same time a kind mother and liberal milker, we have made a good start toward success. Then, if pork is a fair price and coarse grain not too high, I think it will pay well to raise two litters each year. This I have been doing successfully for a number of years past; in fact, I have been nearly if not quite as successful with pigs farrowed in midwinter as with those coming in the spring. Some breeders advise only one litter in the year, coming about the first of April. This plan is objectionable for several reasons. 1st. The sow is only doing one-half the work she is capable of, or, in other words, you require to keep two sows to do what one could do, thus increasing the cost of production. 2nd. Where but few pigs are kept you have not at all times sufficient growing pigs to consume the waste of the dairy and kitchen. And last, but not least, it causes nearly all our pigs to be placed on the market during the last two months of the year, thus overstocking the capacity of the packing establishments and causing the inevitable slump in prices.

When and how to wean pigs is a question of far greater importance than is generally conceded. To wean a litter of pigs without checking their growth requires considerable skill and care. A sow that is a heavy milker will consume a large amount of food; this should be supplied liberally, and the pigs encouraged to feed with their dam as early as possible. I think it is a good plan to provide a low trough for the pigs where the sow cannot reach it. The little fellows should have supplied, at least five times during the day in small quantities, warm skimmed milk, thickened with wheat shorts and chopped oats. Very soon they will learn to depend on the trough rather than on their dam. In this way they will be effectually weaned by the time they are eight or nine weeks old. With a strong, healthy litter of pigs, weaned without any setback, we have made a second step on the road to success. At three months old (not sooner) your pigs may be reduced to three feeds a day. To obtain best results, the feeding should be done regularly. Boar pigs should be castrated while still with their dam; this is sometimes neglected, but always at a loss. The object of the feeder now should be to retain the pig-flesh, and hasten them

along as rapidly as possible without impairing the digestion.

The Ontario farmer has considerable advantage over us in the matter of growing cheap pork; he, as a rule, is more extensively into dairy farming, which goes hand in hand with pork production. His clover meadow for growing pigs is of untold value in preparing them to assimilate large quantities of concentrated food a little later on; and for finishing off it is doubtful if we have anything that equals peas. As a substitute, and a good substitute, for the clover meadow, a farmer should have a yard of say an acre adjoining the hog pen, divided through the center by a tight fence. After preparing the land well, sow one-half of this to a mixture of wheat, oats and barley as early in the spring as safe. When about a foot high turn in the pigs, and sow the other half with the same mixture. This feed will not of itself do much in building up the pigs, but it will make them more healthy and cause them to make better use of the more concentrated foods, give all the exercise needed, and make flesh of better quality; or, in other words, make them nearer the ideal packer's pig. In addition to this, I would always manage to have a patch of green corn convenient to the pig yards. It is wonderful the amount of green corn they will consume. A little later sugar beets come in good. A good plan is to make the hog yard the dumping ground for the weeds which are continually making their appearance in the garden and among the small fruits.

In the summer season, when pigs are out most of the time, there will be but little need of conditions, but during winter, when constantly confined in close quarters, they will require a good supply of charcoal or wood ashes. I think a little sulphur and salt mixed with the ashes is an improvement. I have found it a good plan to throw a few sods into the pens occasionally. About a year ago I brought home some three or four hundredweight of nut coal. It appeared to be too hard to burn successfully in our stoves, so I made pig feed of it, and it was wonderful what satisfaction they seemed to take in grinding up the rocky stuff. If good, healthy pigs are kept supplied with such "stomach regulators" as I have mentioned there will be very little trouble with their "going off their feet," even if they do not get much exercise.

Just a few words regarding the pig barn. Every farmer should provide as comfortable quarters for his pigs as his means will permit; when he is studying the comfort of his pigs he is advancing his own interests. The three prime essentials in a hog pen are—warmth, good ventilation, and plenty of light. I built a hog pen a short time ago, 24x40 feet. This I divided off into pens 8x10, with a passage four feet wide through the center lengthwise. I have in nine four-light windows, which provide abundance of light; the walls are two thicknesses of lumber, shiplap inside and sided up on the outside, two-inch plank floor underneath and a tight floor above. In the upper part we keep our hog feed and coarse grain. I prefer the hollow wall to the single thickness of lumber, as it is much drier. I find my pigs do better to allow say ten of them to have the run of two pens than to confine five of them in each pen. The pens should be cleaned at least every other day and plenty of good, dry bedding furnished. Nothing is more detrimental to the thrift of a pig than being kept in a badly ventilated pen.

I believe that good, strong, healthy pigs will stand heavier pressure, more concentrated food, and less exercise than I have advocated, say up to six months, when they might be turned off at a weight of about two hundred pounds; but I think, by feeding more bulky food and giving more exercise, we can afford to keep them two months longer to attain the same weight, and in this way we will have pork of better quality. The farmer that would make a success of producing the pig the packer wants must select judiciously, house comfortably, and keep his pigs moving on steadily and rapidly from farrowing time until the block is reached. The more cheap and bulky feed can be worked in the better, both for the quality of the pork and the feeder's pocket.

Feed Well-bred Hogs.

It is a question in the minds of a good many whether pedigree or individual merit should be first considered in raising pigs for the market. We would venture to say that the first named should receive the greatest attention, for the reason that it is pedigree which gives prepotency to the type, and consequently a breed that can be relied upon to produce certain results under similar conditions. It is when the feeding and final fattening for market comes on that the value of pedigree shows up. Nondescript animals will consume a great deal more food, and in every respect prove unsatisfactory. For economy in producing pork there is nothing that tells like established pedigree. But while recognizing the great importance of pedigree, the merits of individual animals must not be overlooked. Amongst all pedigree stock there are weeds which must be eliminated, and a strange fact is that the most showy animals do not always produce the best stock of their kind. Therefore when once a boar is known to produce entirely satisfactory progeny, that animal should be kept as long as possible for breeding purposes; and not less important than the boar is the brood sow, which should also be a carefully selected animal.—*The "Exporter" of Montreal.*

Our Scottish Letter.

NORTH COUNTRY SHORTHORNS AND SHROPSHIRE AT THE ROYAL SHOW.

Scotland has been in England during the past week doing big work. The great show of the Royal Agricultural Society of England has been held near to Birmingham, and in the Shorthorn cattle, Shropshire sheep, and draft horse sections Scottish-bred animals have carried off the leading honors. The championship for Shorthorn bulls has gone to Marengo, a great fleshy roan bull, owned by Mr. Philo L. Mills, Ruddington, Notts., and bred by Mr. W. Duthie, Collynie, Tarves. He was bought as a calf at Mr. Duthie's sale in 1895 for 195 gs., or considerably over £200, and was got by Scottish Archer, out of one of the Missie tribe of cows, bred by Mr. W. S. Marr, Uppermill, Tarves. In the younger classes first prizes went to Scottish-bred bulls also, Mr. Duthie being breeder of another of the winners. Two North of England breeders showed excellent stock, and got a large share of the prizes. These were Mr. J. Barnes, Aikbank, Wigton, Cumberland, and Mr. John Handley, Greenhead, Milnthorpe, Westmorland. The championship for female Shorthorns went to Mr. C. W. Brierley, Twyford, Brimfield, a West of England breeder. He shows splendid cows, and one of these—a red and white named Jewel II.—was champion of her sex. Mr. Barnes' yearling heifer, first in her class, was reserve. The show of Shorthorns was the best seen at the Royal for many years. The entries were very numerous, there being no fewer than 180 head of Shorthorn cattle in the yard, and in the two classes of yearlings there were over fifty entries apiece. Trade was brisk, and many bulls, especially those of a dark roan or red color, changed hands. The principal buyers were for South America. The patrons of the Sittyton cult were naturally much elated at the result, all the more that the two judges were not supposed to be prejudiced in favor of the Scottish type. It is manifestly the winning type, for the simple reason that it is the type most likely to supply the butcher with beef. Booth cattle have manifest merits as crossing cattle, and it will be a long time before they can be dispensed with. Scotland, and especially Aberdeenshire, has the ball at its foot just now, and the breeders in that part of the world, as well as their many colleagues in the South, may be depended on to kick it through the posts.

SCOTCH SHROPSHIRE WIN.

The Shropshires were in the sheep section what the Shorthorns were amongst cattle—the most numerous and the most difficult to judge. They were also parallel in this respect, that Scotland furnished the champions. For many years past Mr. David Buttar, a tenant farmer in Forfarshire, has been breeding Shropshire sheep, and it has been clear to close students that he was gradually but surely overtaking the most successful breeders in the West Midlands of England. Last year he made an average of over £10 apiece for his rams, and buyers were forward from the principal breeding districts in the South. After what happened at Birmingham on Monday, Mr. Buttar's average for 1898 will be something far in excess of his average for 1897. A shearing ram bred by him was first in his class, which numbered forty-eight entries from the best flocks in England, and the same ram was awarded the gold medal as the best ram of any age in the show. As though this were not enough, Mr. Buttar also won first prize for the best group of five shearing rams, beating nineteen pens of five each from the best flocks in England. This was a more extraordinary feat even than the other, because it must be borne in mind that Mr. Buttar has to give away at least two months in age to his southern rivals. The lambing season is easily two months earlier in Shropshire than in Forfarshire, and exhibitors of any class of stock know very well what a two-months handicap in a matter of this kind means. Canadians will yet, we are persuaded, be as partial to Scottish Shropshires as they have been to Scottish Shorthorns. Mr. Buttar's place is at Corston, Coupar-Angus, about twenty miles north of Perth.

A MEAGER SHOW OF CLYDESDALES.

Clydesdales have a stiff fight to maintain in the southern part of this kingdom, and there is something very disheartening in the appearance which the breed makes, so far as numbers are concerned, in comparison with their great rivals at the Royal Show—the Shires. This year, in the breeding classes there were nearly 130 head of Shires exhibited, and there were but 31 Clydesdales. Besides this, the competition amongst Shires was general, all sections of breeders and strains of blood being represented; while in the Clydesdale section the majority of exhibitors kept clear of the show altogether. This is not an isolated experience at the Royal, and the reasons for it are well understood in Scotland. The animals exhibited were in every sense of good quality, but competition was restricted, and the labors of the judges were easy. A good general show of Clydesdale breeding stock at the Royal would do a world of good to the breed, and it is very unfortunate that there is so little prospect of this being obtained. In these circumstances Scotchmen naturally feel grateful to the local committees, which both this year and last, alike at Manchester and at Birmingham, offered handsome prizes for the best pair of draft animals shown in harness, irrespective of breed. Last year, at Manchester, this prize was won by a pair of magnificent geldings, chiefly of Clydesdale breed.

ing, owned by Mr. Wm. Clark, Netherlee, Cathcart; and this year, at Birmingham, Scottish-bred horses, namely, a pair of geldings owned by Messrs. J. Young & Sons, Edinburgh, were again victorious, beating two teams of Shires. Last year the award was made by two English judges; this year it was made by one judge, who had been adjudicating in the Shire horse ring on the first day of the show. These victories two years in succession show clearly that geldings of Clydesdale breeding can hold their own against Shires any day. The winning horses this year were both bred in Scotland, and were first and second at Glasgow in April. One was bred in Dumfriesshire, and is a pedigreed Clydesdale, a grandson of Macgregor, and the other was bred in Aberdeenshire. The Dumfries horse, it is worth observing, was got by the same sire, Lyon of Purdomstown 4520, as the champion of last year. He was bred by Mrs. Gass, Homgillside, Ecclefechan. Lyon of Purdomstown was a big, powerful horse, with a magnificent fore end.

Apart from showing, the chief items of interest at present are the publication of official reports on Cheddar cheese making with the aid of pure cultures, the founding of a flock book for Border Leicesters, and the opening of the early potato market in Ayrshire, where as high as £46 10s. per acre has been paid for early potatoes. There is also a slight revival in the Clydesdale export trade, and several useful, well-bred colts have within the past month or six weeks gone to Canada. We hope the revival in this department will continue and be a steady trade. It is better so than a spasmodic outburst such as was seen ten or fifteen years ago. The one experience necessary in the dairy world here is an increase of technical knowledge. Good has been done in recent years by what instruction has been conveyed, but much more requires to be done before anything like satisfactory progress has been made. Accurate knowledge of the conditions of the milk in cheesemaking belongs to only a very few; but it is idle to expect anything like a general advance in quality until what is the peculiar heritage of the few becomes the universal heritage of the many.

The Royal Show.

SPECIAL SHEEP AND PIG REPORT.

The sheep section was a grand one and a sight that sheepmen in every country should have seen. Nowhere else in so small an area could so large and meritorious a collection of the different breeds be seen. Here there were specimens of no less than seventeen distinct breeds on exhibition, and when it is remembered that these were the select of the best of the country a true conception of their high value and merit can be realized. Space will not allow of a fully technical description, therefore I must content myself by giving a brief outline of the more prominent features in each separate breed.

Leicesters, with twenty-three entries in two female and three male classes, were good, level and strong. Mr. J. J. Simpson led the way for old rams, ram and ewe lambs with grand pens, most typical of their breed; whilst Mr. G. Harrison was to the fore with yearling rams and ewes, the latter a particularly fine pen of great character and quality. Mr. E. F. Jordan was also well to the fore.

Cotswolds were present to the number of twenty-three; a grand lot; larger in numbers and better in quality than we have seen for some years. In the classes for old rams, yearling rams, ewes and ewe lambs Messrs. Garne were first and second with highly meritorious pens, particularly in the yearling ram and ewe classes. In the latter, a third premium also went to these gentlemen, these exhibits being such that few, if any, could exceed in quality and true breed types. Mr. R. Swanwick was first and second for two grand pens of ram lambs, as well as being noticed in other classes.

Lincolns were present to the number of sixty-two entries in six classes, wherein were contained some of the grandest sheep the breed could produce, Mr. Henry Dudding being at the head of the section, winning, as he did, the champion award of the breed with his grand typical yearling ram, of true type, fine character, and fleece and skin of the highest quality and value. This ram is one for whom, previous to his Royal victory, the sum of \$2,000 had been refused. The R. N. for champion was Mr. J. Pears' grand good ram, two years old, who was bred by Messrs. S. C. Dean & Sons, whom it may be known were purchasers of Mr. Henry Dudding's \$1,750 ram in 1896, which ram won for Messrs. Dean the champion award at this show in 1897; thus for two years the Riby flock has bred the Royal champions. Mr. H. Dudding won, in addition to the above, first and R. N. for yearling ewes, second for ram, ram lambs, second and R. N. for ewe lambs, and second for pen of five yearling rams. Mr. J. Pears won first for old ram, third for five yearling rams, R. N. for ram lambs, second for yearling ewes, and first for ewe lambs. Mr. J. E. Casswell's grand and typical flock was most prominently to the fore, and though not included as often as some others in the money was throughout there or thereabouts. This exhibitor's grand, deep and good bodied sheep, with fleece, staple and character of the highest merit, ran very close for the premier place in the old ram class, wherein he came in for second place in the old ram class, wherein he came in for second place in the old ram class, as well as being close up in several others. Mr. T. Casswell and Messrs. T. R. & H. Casswell were also well to the fore, as was also Mr. T. Herd, a breeder whose flock has great merit.

Oxford Downs made a larger and more general exhibit than has been the case for some years past. The yearling

ram class was not a strong one, especially the premier prize sheep of Messrs. Treadwell's, who also came in second for old rams. Mr. J. C. Eady's flock was well to the front, being represented by his grand unbeaten pens of ewes, which won first and second, and by two rams of great merit, which secured second and R. N. respectively. Messrs. Hobbs went to the top with a good typical old ram. Messrs. W. Arkell, A. H. Wilson and H. W. Stilgoe were leaders in the lamb classes.

Shropshires—In the seven classes for this breed were no less than 122 entries. Perhaps the most striking feature of this exhibition was the pronounced and uniform type that prevailed through the whole of the classes. Mr. D. Buttar's exhibit was a grand one, and the record he established in the male classes is one that will be hard to beat. He had eight rams entered, three as singles in the yearling ram class, which secured first and champion, H. C. and C., and five in the pen of five yearling rams class that secured first prize therein, the champion ram being a grand one both in flesh, character and type. Mr. A. Tanner came first in the old ram class with an extra good sheep, last year's champion, Mr. J. Bowen-Jones' flock being second in shearing rams and third in yearling ewes. Mrs. Barr's flock was prominently represented, securing, amongst other honors, first for ram and ewe lambs and second for pens of five yearling rams, etc. Mr. R. P. Cooper, of sheep dip fame, went to the fore with a grand pen of yearling ewes, and J. L. Naper and P. L. Mills were also numbered amongst the leading winners.

Southdowns made a grand show; seventy-four entries were present. The old ram class was headed by a really grand sheep of Mr. E. Mathews' breeding, followed by Mr. J. J. Colman's ram, this same breeder being also first and second with yearling rams, a lucky win. The Pagham Harbor Co.'s stock were well to the fore with grand typical sheep, being C. for old rams, third and R. N. for yearling rams, and first for both ewe and ram lambs; grand ones, too, they were; also third for ewes. Mr. W. Toop was well up, winning a well-deserved second for yearling ewes, a class wherein Sir James Blyth led the way. Mr. A. Heasman and the Duke of Richmond were also well up.

exhibits were of great quality and merit.

Large White Yorkshires were present in strong force, Mr. P. L. Mills being first for old boars and sows, as well as champion for the breed with his grand boar, Ruddington Lad, a pig of great quality, substance and build. D. Daybell, D. Gibson and F. Allmand were also well up in the prize list.

Middle Whites a very capital entry of great uniformity and merit, Mr. A. C. Twentymen being the champion winner, as well as a prominent one in other classes, with grand typical pigs of even quality and first-class merit. Sir Gilbert Greenall, Messrs. Sanders Spencer and A. Hiscock were also prominent winners.

Small Whites made, for them, a very large and meritorious exhibit. Mr. D. Gibson was winner of the champion award with a grand pig, the Hon. P. D. Bouverie heading the other two classes with grand typical pigs of great merit.

Berkshires were indeed a grand lot, full of animals of most perfect type and conformation were the whole of the classes allotted to this breed. The Earl Carnarvon was leading man in these classes, securing the championship honors with a grand and typical sow of the highest merit, Messrs. J. Jefferson, Russell Swanwick, J. P. King, J. W. Kimber being also amongst the winners.

Tamworths, a breed well-known and justly appreciated in your country, made here a grand show of very first class animals, which did their breed great credit. Mr. John Norman was winner of the champion prize, as well as being well to the fore in class prizes. Messrs. D. W. Philip and R. Ibbotson were also well to the front in what must be called a first-class exhibit of the breed.

Experiments with Fattening Steers.

SIR,—There is considerable difference of opinion among cattle feeders as to whether a light or heavy meal ration is most profitable for fattening animals. As this is a very important practical question, investigations regarding the problem were commenced in the winter of 1896-7, in which steers were fed heavy, medium, and light rations, with results very much in favor of the medium and light rations as compared with the heavy ration. As the individuality of animals very materially affects results, the experiment was repeated during the past winter on the following plan:

The fattening period covered by the experiment was planned to extend over six months. Nine steers were divided into three groups with three steers in each group. It was planned to start group 1 on a fairly light ration and increase rapidly until they reached, as nearly as possible, one pound of meal per day per 100 lbs. live weight. Group 2 was to receive, as nearly as practicable, two-thirds of a pound of meal per day per 100 lbs. live weight. Group 3 was to be started on about one-third of a pound of meal per day per 100 lbs. live weight, and gradually increased, as deemed advisable, until equal to group 2. The experiment commenced Dec. 3rd and closed May 31st, thus covering a period of 179 days. The daily meal rations for each group were approximately as follows:

| | Group 1. | Group 2. | Group 3. |
|---------------|----------|----------|----------|
| December..... | 8 lbs. | 6 lbs. | 4 lbs. |
| January..... | 10 " | 8 " | 4 1/2 " |
| February..... | 11 " | 8 " | 5 " |
| March..... | 12 " | 9 " | 5 " |
| April..... | 13 " | 9 " | 9 " |
| May..... | 13 " | 10 " | 10 " |

One steer in group 1 was considerably lighter than the other two, and his daily meal ration was one pound less than the quantities stated above for group 1. The meal ration consisted of equal parts by weight of peas, barley and oats.

In order to show the relation between the weight of meal and the weight of the steers the following table is appended, in which the calculations are based upon the quantities of meal actually consumed. The table shows the average weight of the steers for the whole fattening period and the relation which the meal rations bear thereto.

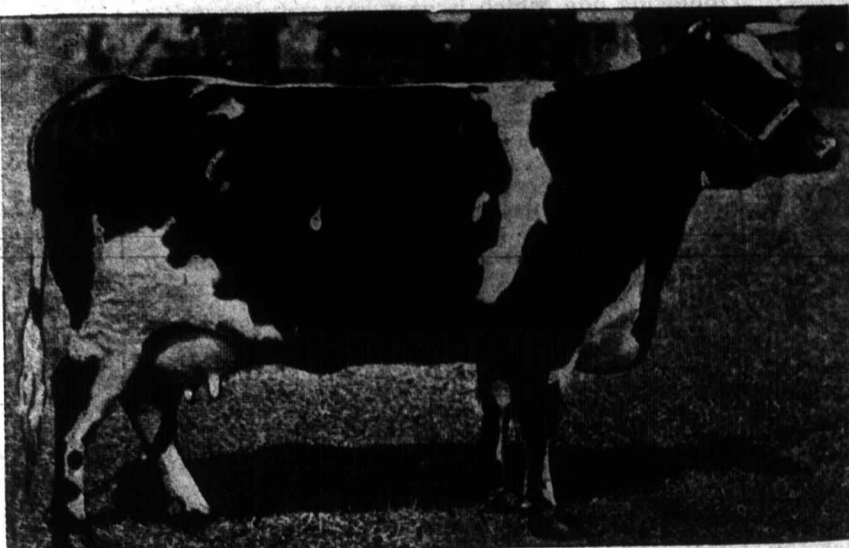
AVERAGE WEIGHT OF STEERS AND MEAL RATIORS.

| | Average weight of steers throughout feeding period. | Average daily meal ration per steer. | Average amount of meal consumed per day per 100 lbs. live weight. |
|----------------------------|---|--------------------------------------|---|
| Group 1 (heavy ration).... | 1,229 lbs. | 10.66 lbs. | .81 lbs. |
| " 2 (medium ration).... | 1,265 " | 8.21 " | .65 " |
| " 3 (light ration)..... | 1,269 " | 6.68 " | .53 " |

It will be seen from the above table that group 1 averaged slightly over four-fifths, group 2 slightly under two-thirds, and group 3 a little over one-half of a pound of meal per day per 100 lbs. live weight.

In addition to the meal ration the steers received equal quantities of roots, together with what hay and straw they would eat, all fodders being carefully weighed.

As the experiment proceeded one steer in group 2 and one in group 3 were discarded as unsuitable



SHORTHORN COW, JEWEL II, CHAMPION FEMALE OF THE BREED AT THE ROYAL SHOW, BIRMINGHAM, 1898; OWNED BY C. W. BRIERLEY.

Hampshire Downs were of great merit in respect to old rams, yearling ewes and ram and ewe lambs, but not so good in yearling ram class, Mr. A. de Mornay being to the fore with old rams, yearling rams and yearling ewes, the latter an unbeaten pen. Ram lambs were headed by a grand and typical pen of Mr. J. Flowers' breeding, and these were closely followed by Earl Carnarvon's pen, who also in the ewe lamb class led the way with a grand pen, hard indeed to beat, full of type and substance. Mr. W. T. Twidell, T. Palmer, Lord Rothschild, and T. F. Buxton were also well to the front.

Suffolks were numerically a poor show, Earl of Ellesmere being the leading winner throughout, except in one class, where Mr. S. R. Sherwood led the way.

Border Leicesters were well and largely shown, good in type and character throughout, Messrs. J. E. Nicholson, G. Laing, J. W. Hall, John Twentymen, R. Hay, F. Winter, and Rt. Hon. A. J. Balfour being amongst the leading winners.

Dorset Horns were shown only in small numbers, Mr. W. R. Flower and H. L. B. McCalmont dividing the prizes between them, the former winning with grand rams of great merit.

Kentish or Romney Marsh were rams of great and exceptional merit, and as these are a breed not well known with you it may be as well that your breeders should give them a trial, for in them there is money, as they are hardy, great rustlers, and good wool and meat producers. Mr. W. Millen was first for rams, as well as second, whilst Mr. J. S. Godwin also went well to the front with a really grand specimen. Messrs. A. Amor and G. W. Finn were also well to the fore. In ewes, Mr. F. Neame's flock led the way, whilst Messrs. H. Rigden and W. Millen were well to the fore with very capital ewes.

Wensleydales, a breed worthy of trial with you as well, made an excellent exhibition, and they were of great interest as well as of good quality. Messrs. T. Willis, J. Rhodes and J. Hough were the leading winners.

Cheviots were also well to the fore with a very small entry, Messrs. John and Jacob Robson being winners.

Black-faced Mountain sheep were a nice level lot, interesting and picturesque. Messrs. J. Vickers, T. D. Argue and Robson were most prominent.

Lonks, Herdwicks and Welsh Mountain were also well to the front in good quality and type.

PIGS.

This section of the show was a very good one and its

for the test, and the experiment was completed with two steers in each of these groups. The following table shows the weights and gains of the different groups:

| WEIGHTS AND GAINS OF STEERS. | Weight Dec 3. | | Weight May 31. | | Total gain. | | Average gain per steer. | |
|------------------------------|---|--|---|---|--|---|---|--|
| | Group 1, three steers (heavy ration)..... | Group 2, two steers (medium ration)..... | Group 3, two steers (light ration)..... | Group 1, three steers (heavy ration)..... | Group 2, two steers (medium ration)..... | Group 3, two steers (light ration)..... | Group 1, three steers (heavy ration)..... | Group 2, two steers (medium ration)..... |
| | 2,285 lbs. | 2,245 " | 2,241 " | 4,140 lbs. | 3,015 " | 5,835 " | 301.66 lbs. | 235 " |
| | | | | 1.68 lbs. | 1.59 " | 1.65 " | | |
| | | | | | | | | |

It will be noted that all the gains are low. This was due to having to use some very poor hay during a portion of the time. It will also be noted that the results are somewhat contradictory, the medium ration group making the smallest gain, whereas the light and heavy ration groups are practically equal. These discrepancies are due to individuality of the animals. However, the rate of gain is not the most important point, but the cost of gain is all-important. In valuing fodders difficulties always arise, but as the sole object of this experiment is to compare the relative merits of different methods of feeding, it has been thought advisable not to attempt to follow the fluctuating market values, but to adopt reasonable average values for the different fodders. For the sake of uniformity, therefore, the same values will be used as were used in the first experiment, viz.: meal, \$13; hay, \$6; straw, \$3; and roots, \$2 per ton. The valuation of the meal is considerably lower than the average price during the past winter, but a higher valuation would simply make the comparison of the different methods even more striking. The following table shows the cost of one pound of gain in each experiment and the average of the two experiments:

| COST OF ONE POUND OF GAIN. | Cost of 1 lb. gain. | | Cost of 1 lb. gain. | |
|-----------------------------|---------------------|-----------------|---------------------|-----------------|
| | 1st experiment. | 2nd experiment. | 1st experiment. | 2nd experiment. |
| Group 1 (heavy ration)..... | 6.37c. | 7.70c. | 7.03c. | 7.03c. |
| Group 2 (medium ration).... | 5.59c. | 7.26c. | 6.42c. | 6.42c. |
| Group 3 (light ration)..... | 5.91c. | 6.46c. | 5.13c. | 5.13c. |

So far as the comparison of the light and medium rations goes the results are contradictory in the two experiments, since in the first experiment the medium ration proved the more economical of the two, while in the second experiment the results have been reversed. But in both experiments the results have been decidedly in favor of the two lighter rations as compared with the heavy ration. The results of these two experiments, therefore, go to strengthen the position of those who advocate a moderately light meal ration for fattening cattle. It will not do, however, to assume that the problem is solved, for there is still room for much further investigation. G. E. DAY, Ontario Agricultural College. Agriculturist.

The Coloring of Sheep.

In the course of his hurried perambulation of the Royal show, the Prince of Wales gave expression to a sentiment with which most people will agree. He was glad, he said, that breeders had largely given up the practice of coloring Shropshire sheep. It is easy to trace the origin of the custom, and no doubt many are still firmly convinced that it is necessary if successful showing is to be contemplated. It is curious to note, however, how few colored sheep were ticketed last week. Fashion has a great deal to do with the

showyard, and we can scarcely conceive that any judge would cast a sheep, or a pen of sheep, for the simple reason that the wool was not identically colored. Everyone knows that uniformity of color is dependent upon circumstances, and we scarcely think that even sheep on clayey land or in smoky districts would be badly treated by a judge. In the case of the Lincoln and Leicester breeds, sweet oil is used on the coats, but this practice also deserves condemnation. Kent sheep breeders show their sheep in everyday attire, and so do Border Leicester and Cotswold men. Why, therefore, should the other long-wool breeders persist in a practice which has little to recommend it? It keeps many people from handling the sheep and inspecting so closely as they otherwise would.—*Farmer and Stockbreeder.*

Wool Balls in Lambs.

SIR,—I have several times seen enquiries as to the cause of wool balls in lambs and requests for a cure. The whole cause arises from their biting their own short wool to displace the ticks that are annoying them; and the only cure is prevention. This will be arrived at by bathing the ewes with an effectual dip about a fortnight before lambing. If this is impracticable from the weather being too cold or frosty the bathing of both lambs and ewes should take place immediately the weather would permit thereof. In my experience I have found that bathing the ewes twice a year with a good dip—once in the fall and once in the spring—kept the breeding ewes very clean and stopped all loss in lambs from wool balls. THOMAS BLAKE. North-eastern Assiniboia.

Remedy for Horn Fly.

SIR,—In your last issue I noticed the remedy for the horn fly used by Mr. Rennie, of the O. A. C. I send you the one we use at the farm here. After experimenting for some time, we now use the following one, which is very successful as well as cheap. It is composed of lard and pine tar, mixed in the proportion of ten of lard to one of pine tar, melting the lard and stirring in the tar, and apply to the cattle about once per week, just sufficient to grease the hair. The cheaper grades of lard will do just as well. My experience with mixtures containing kerosene and carbolic acid is that these substances, being more volatile, seem to evaporate more quickly when the animals are exposed to the hot sun. R. R. ELLIOTT, Central Expt. Farm, Ottawa. Herdsman.

FARM.

SOIL MOISTURE.

RELATIONS BETWEEN SOIL AND WATER—IMPORTANCE OF HUMUS, ROLLING, SURFACE CULTIVATION, AND UNDERDRAINS.

G. E. DAY, AGRICULTURIST, ONT. AGR. COLLEGE.

Importance.—There can be no plant growth without water. It is water which carries plant food from the soil into the plant; consequently, without water the plant cannot supply itself with food, and most necessarily die of starvation. It will have been noticed by the most casual observer that in seasons when the rainfall is abundant, but not excessive, crops are good on almost every soil; and it is not putting it too strongly to say that the lack of moisture is a more common cause of crop failure than the lack of plant food in the soil.

As the water rises through the plant, the various growing parts extract from it the food which it brings up from the soil, after which it is allowed to escape into the air through openings in the leaves of the plant. Thus each growing plant has within it a tiny stream of water which has its source in the soil, is gathered in countless tributary streams through the roots to the main stream in the stem, and which empties through the leaves into the great ocean of air. The amount of water removed from the soil by plants in this way is very great. Hellriegel found, by means of experiments with barley, rye, oats, wheat, horse beans, peas, red clover and buckwheat, that on the average these crops removed from the soil 325 tons of water for each ton of dry matter produced. The amount of water stated refers only to the water removed through the plants, and does not include that which escapes by evaporation from the surface of the soil, which, especially under careless tillage, would increase very materially the amount mentioned.

Relations Between Soil and Water.—Everyone knows that water always makes an effort to find its level, or, in other words, to travel towards the sea. This peculiarity of water is caused by the force known as gravity, the same force which causes bodies to fall to the earth when unsupported. Further, if a flower pot is filled with soil, and water is slowly poured upon the soil, eventually some of the water will be found escaping through the hole in the bottom of the pot. If the pouring is now stopped it will be found that very soon the water ceases to drop from the bottom of the flower pot, and that only part of the water which was poured on the soil has run away from it. What does this mean? Why did not all the water run away from the soil, or why did any run away? When the water was poured upon the soil in the pot two forces acted upon it. First, there was the force of gravity pulling upon it and tending to draw it away from the soil in the pot, and, secondly, there was

the attraction of the soil particles for the particles of water, which tended to prevent the water from escaping from the pot. This second force is known as the *absorptive* power of the soil. The absorptive power is limited, and only a certain amount of water can be held by the soil in this way. As the pouring on of water continued, finally a point was reached when the soil could hold no more; it was saturated, after which all the additional water poured on the soil was pulled away from it by the force of gravity. The movement of water down through the soil under the force of gravity is called *percolation*, and it occurs in all soils when more water has been added than the soil can absorb.

The attraction of the soil particles for the particles of water gives rise to another movement. If, instead of having the water poured in at the top, the flower pot had been set in water so that only the lower soil in the pot came in contact with the water it would be found that the water would gradually make its way upward from the wet soil to the drier, until all the soil in the pot became moistened. The same phenomenon can be witnessed if one corner of a lump of loaf sugar is dipped in a cup of tea, or a piece of blotting paper is held in contact with ink. In each case the liquid is raised above its level through the pores of the substance touching it. This movement is called *capillary* movement, and the power of the soil or other substance to raise liquids above their natural level in this manner is called *capillary* power, or *capillarity*. Only porous substances possess capillary power, and the finer and more numerous the pores, the greater that power; that is to say, a soil possessing a great many very fine pores can raise moisture to a greater height than one with larger pores.

The great natural source of soil water is rain. Rain falls on the surface of the soil and makes its way downward through the spaces between the soil particles, where a portion of it is held by the absorptive power of the soil. But if more rain falls than the soil can hold, the excessive water percolates down to the lower layers of soil, or escapes as drainage water. When the rain ceases, the sun and wind evaporates some of the water from the surface soil; plants use another portion, and soon the surface soil becomes drier than the soil below it. Then capillarity comes to the rescue and water begins to move from the moist soil below to make good the loss at the surface, thus bringing fresh supplies within reach of plant roots. It must be borne in mind that capillary movement is always from the moist soil towards the drier, no matter what direction that may be.

Were it not for the power of soils to absorb and retain water, our fertile upland soils would be barren as the Sahara, since the water would immediately percolate down out of the reach of plant roots; and were it not for capillary movement of water, plants would perish during a very short period of drought. Hence, the first great question in dealing with the water supply of plants, is how to improve the absorptive and capillary powers of the soil.

Influence of Soil Constituents.—Roughly speaking, soils are made up of sand, clay, and humus. These will be noticed in turn:

1. *Sand* is composed of comparatively coarse particles of rock, and, consequently, the spaces between the particles are also large. As before stated, this condition is unfavorable to capillary movement of water, and it also interferes with the absorptive or retentive power of the soil. Thus sand possesses poor capillary and retentive powers.
2. *Clay* is made up of very fine particles, and therefore it might be expected to possess great capillary and retentive powers. Such is the case when conditions are favorable, but the particles of clay are so fine that they are apt to become so closely wedged together as to clog the pores, and, instead of a porous soil, the result is a baked mass possessing very few pores and, consequently, very poor capillary power. Sand and clay, therefore, are two extremes, the one being too coarse and the other too fine in texture.

Humus, or decaying vegetable matter, has wonderful absorptive power; in fact, it has the greatest absorptive power of any soil constituent. It does not run together and bake, like clay, but always retains its valuable properties.

Importance of Humus.—When humus is mixed with a sandy soil, the retentive and capillary powers of the soil are greatly improved. What were once barren sands have been brought to a high state of productiveness by simply adding humus and thus improving their water-holding power. In a clayey soil it tends to prevent the clay from baking, and thus also improves its behavior towards water. In all soils its influence is beneficial, and soils which contain sufficient humus can produce large crops in very dry seasons. Here is a substance, therefore, which is all-important in providing moisture for crops, and which may be called the very foundation of successful farming. It assures increased interest when it is remembered that the supply of humus is largely under the control of the farmer. Let the farmer, therefore, look after the humus in his soil, and the humus, to a large extent, will look after the supply of moisture for his crops, and perform other important functions as well. There is not room here to discuss methods of increasing the humus of the soil, but it may be stated that clover and farmyard manure are two important allies of the farmer in adding to the supply.

Influence of Degree of Compactness.—A loose,

open condition of the soil favors percolation, but is unfavorable to capillarity. A moderately compact condition of the soil improves capillarity, because pressing the particles of soil together makes the spaces, or pores, smaller, the influence of which was previously explained. If the soil is packed very hard, however, many of the pores will be completely closed, and thus the capillary power will be injured, if not destroyed. It is possible, therefore, to have a soil too compact as well as too loose. In the fall it is an advantage to have the soil in a loose, open condition so as to allow the fall rains and melted snow to percolate through the soil and provide a store of water for the next season, instead of running off the surface. By the time spring comes the soil will have settled and become sufficiently compact to regain its capillary power. Then, spring cultivation should be shallow, just sufficient to form a seed-bed, but not deep enough to interfere with the capillarity of the lower soil, so that moisture may be carried readily towards the surface to supply the growing crop. In this may be found one of the reasons why crops usually grow better on fall-plowed than on spring-plowed land.

Influence of Surface Cultivation.—It has already been explained that a fairly compact condition of the soil is favorable to capillary movement of water. If no means are taken to prevent it, a large amount of water is thus brought to the surface where it is wasted by evaporation. If a layer of straw, sawdust or other similar material were spread over the surface of the soil, it would prevent the wind and the rays of the sun from coming in direct contact with the soil, and hence would save a great deal of moisture by checking evaporation. This plan is not generally practicable, but a substitute is found in loosening the surface soil to the depth of two or three inches, or even one inch, by means of the cultivator, harrow, or other suitable implement. This loosened layer quickly loses its moisture, and, owing to its loose condition, it has very little capillary power. The moisture rises through the firmer soil until it reaches the surface layer, where its course is checked by the loose soil. The surface layer protects the lower soil, which contains moisture, from the wind and sun, and thus evaporation is checked. The first shower that comes will pack the surface layer and restore the capillary connection between it and the lower soil, so that the loosening should be repeated as soon as practicable after a shower. Even if there is no rain, the surface layer will gradually settle until it recovers more or less of its capillary power, so that if an effective mulch is to be maintained it is necessary to repeat the operation of loosening at intervals of about ten days. To be of any use the loosening must be thorough, so as to completely cover the surface with a mulch of loose soil. Merely scratching the surface without thoroughly loosening it is worse than useless. Of course, many crops will not admit of this treatment, but the yield of roots, corn, potatoes, raps, etc., can be greatly increased by frequently loosening the surface soil. Land that is lying idle waiting for a crop, such as turnip or rape ground, should have its surface frequently stirred, commencing as early in the season as circumstances will permit. This will not only save a great deal of moisture for the crop when it is sown, but it will cause the soil to work up into a much better state of tilth, without any troublesome and injurious clods.

Influence of Underdrains.—It was previously explained, and illustrated by means of the soil in the flower pot, that a soil can absorb and retain a certain amount of water by means of the attraction of its particles for the water, but that there is a limit to the amount of water soil can thus retain, and when water is added beyond this limit it simply drains out of the soil if it is given an opportunity to do so. The water absorbed and retained by the soil may be called *capillary water*, whereas that which drains away from it may be called *free water*. Had the hole in the bottom of the flower pot been blocked the soil in the pot would then have contained both free water and capillary water. Similar conditions frequently exist in soils that possess very compact subsoils through which the free water cannot readily escape, and a soil in such condition is called an *undrained soil*. Capillary water does not clog the pores of the soil, but free water does, and when the free water is allowed to drain away the soil is left moist and porous. It is capillary water that plants make use of, but free water is very injurious to plant roots when it encroaches upon their domain, because it blocks up the pores of the soil, excluding air and making the soil cold. As a result plants on an undrained soil (a soil from which the free water cannot readily escape through natural or artificial channels) form very shallow roots. As the season advances, the free water gradually subsides, but it leaves the soil in very bad mechanical condition; that is, the soil will be inclined to bake and will possess very poor capillary power. Had this injurious free water been removed by underdrains at once, it would not have injured the texture of the soil, and the plants would have sent down their roots more deeply. It is easy to understand how a deeply-rooted plant in a soil possessing good capillary power will be much better supplied with water than a shallow-rooted plant in a soil whose capillarity has been very seriously injured; therefore, it is not difficult to understand how underdrains increase the supply of water for plants in soils where the natural drainage is not sufficient.

Influence of Rolling.—If a roller is passed over a

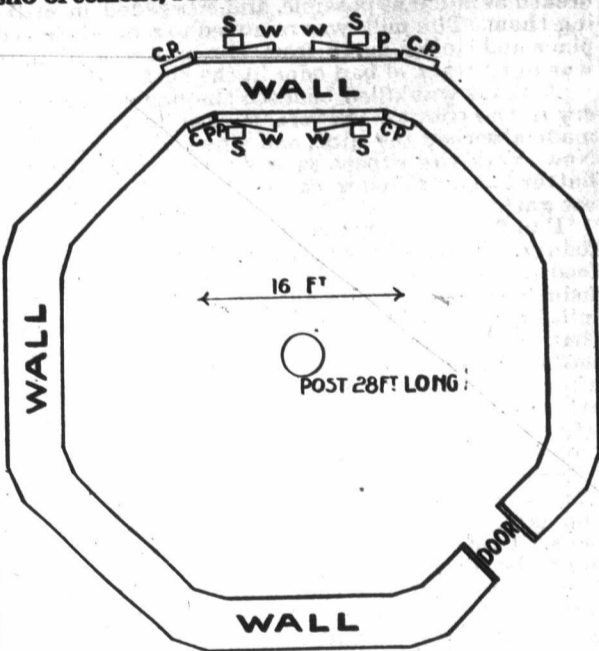
loose soil, it presses the particles of soil together and thus improves the capillary power of the surface soil. This is the reason that a rolled surface is more moist than an unrolled surface. But bringing the moisture thus to the surface increases the evaporation, so that the rolled field will lose more moisture than one whose surface is loose. Investigations prove that while the surface of the rolled field contains more moisture than that of the unrolled, the lower soil contains less moisture than that of the unrolled, because in the rolled field there is a more rapid rise of moisture from the lower soil to the surface, where it escapes into the atmosphere. When a field is plowed in the summer, as in the case of a sod field, rolling with a heavy roller is an advantage, since pressing the plowed soil aids moisture to rise from below into the part which has been loosened by the plow, and thus hastens decomposition of the sod. However, the rolling should be followed by thorough surface cultivation to prevent the escape of moisture. Sometimes, after grain is sown in the spring, a crust will form on the surface as the soil dries. A roller passed over the surface at this stage will crush down the ridges left by the harrow or drill, breaking the crust, and leaving the surface in a more loose and open condition than before the roller was used. In this case, therefore, the roller would tend to check evaporation by injuring the capillarity of the surface soil.

Influence of Level Culture.—A good deal of attention is being given to level culture for roots; and results of tests are in favor of the method. The question is so simple that an explanation is probably unnecessary. As the water rises from below by capillary movement, no one needs to be told that it will reach the bottom of a ridge before it reaches the top. The ridge also exposes a greater surface to the air and, consequently, there is greater evaporation. When a shower falls, much of the water will run off the top of the ridges to the spaces between them. As a result of all this, the surface roots of a plant on top of a ridge are but poorly supplied with water, unless the season is exceptionally moist.

The subject of soil moisture is so large that it is impossible to treat it fully and keep within reasonable bounds as regards space. An attempt has been made to present a few leading facts and explanations in the hope of removing some of the difficulties from the subject. Though all else be forgotten, let it be borne in mind that humus, surface cultivation, and underdrains are extremely effective weapons against drought and hard times.

Cement Octagonal Silos.

To the Editor FARMER'S ADVOCATE:
SIR,—In order that your readers may be benefited by our experiment in building an octagonal silo of cement, I furnish the following information:



GROUND PLAN OF CEMENT OCTAGONAL SILO.

Our silo is built eight-sided, 16 ft. in diameter, 28 ft. high, and will contain about 130 tons of ensilage. The walls are built of Queenston cement, mixed to the proportion of one of cement to four of coarse, clean gravel, with as many field stones pounded in as we could get in, and have plenty of cement to fill in well between. The thickness of the wall at the bottom is 18 inches, set on a foundation of the same material 10 inches thicker than the wall, affording 6 inches of a base on the inside and 4 inches on the outside of the wall. This is simply to give strength to the base to carry the immense weight of the structure.

These walls taper in on the outside to 15 inches at the top, and hang in from 1 1/2 to 2 inches, making the silo so much smaller at the top than at the bottom, which allows the silage to settle freely. The door is 20 inches wide, made of plank, open from top to bottom, closed by setting in inch boards one foot wide, nailed together with an overlap of 3 inches, set against cleats nailed to the door frame 2 inches back from the inside face of the wall; thus, when set in place, the boards are even with the wall, affording almost an air-tight door. These boards are set in as the silo fills, and taken out as the silage is used from the top. This affords a very

convenient door; no lifting of silage to throw it out or digging down into it to open a door.

The cost of labor in building these walls was twenty-five cents per rod. It required half barrel of cement per rod; the gravel, being rather fine, required more cement than coarser gravel would have needed. We pounded in as many and as large field stones as we could get in, and allow 2 inches of clear grout between the plank and the stone on each side of the mould. The walls were finished inside by plastering very thinly with clear cement, thus leaving a very smooth face, affording as little friction as possible for the silage to adhere to, and finished on the outside with one of cement to two of coarse sand; plastered very thin, and then floated and blocked off. This affords a decent and orderly appearance on the outside.

The arrangement of the wooden frame used in building the structure is difficult to explain without the aid of an illustration. We therefore give a crude illustration, showing ground plan of the walls, the door and wooden frame for one side. We first set up a post 28 ft. long in the center of the silo, and from this post we brace our upright corner planks O P. We then set our studs S three inches from the wall; then put in our moulding planks P, and drive in between them and the stud our wedge W until the moulding planks are even with the upright corner planks. We then proceed to fill in the mould with concrete until full; allow to stand thus for four hours, when the wall will have become firm enough to remove the plank. This is done by knocking out the wedges and pounding on the edge of the plank until it loosens, being careful not to injure the new wall; set the plank again, allowing it to remain two inches below the top of the new wall, and thus prevent its breaking off at the edges. The cement concrete requires to be rammed very firmly with a heavy pounder. Caution must be taken to brace the upright corner planks firmly in position. This is easily done by bracing inwardly to the center post with three braces—one at the top, and with two intermediate braces, and latterly by tie braces from one corner to the other. The outside studs and upright corner planks are held by wires, which may be cut and left in the wall.

This is a brief description of our octagonal silo and how it was constructed. Our scaffolding was on the inside and raised as we required it, the bracing for the studding removed as we came to them. It required five men seven hours each day to fill in twenty inches of wall—three and a half hours in the morning, then let it harden, and three and a half hours filling again the latter part of the afternoon. This afforded plenty of time for the cement to get firm enough to work on. The center post was removed from the silo as soon as it was finished.
A. H. CHRISTIAN,
Maple Shade Farm, Ontario Co., Ont.

The Tree Planting Question.

Referring to the extended series of articles published in the FARMER'S ADVOCATE some time ago, the River Platte Review, Buenos Ayres, S. A., says: "The question of tree planting is receiving serious attention in Canada, as is also the destruction of the forests by large firms of sawmillers. This question of tree planting is one which should be constantly kept before our estancieros, for 'a country without woods is a house without a roof. No peace there! Sun, wind, rain and cold keep every one in a turmoil.' Some estancieros are, we happen to know, giving this subject their attention, but there are many who never give it a thought. The principal reasons why an estanciero should grow trees on his land are that he may have them for fuel, timber, windbreaks, ornaments for the home grounds and avenue purposes, while at the same time there will be produced fruit; they will also increase the value of the property."

Brome Grass on Alkali Land.

The following extract from the 1897 report of the Dominion Experimental Farms will be of interest to many. Those who heard Superintendent McKay's address before the Live Stock Association last winter in Winnipeg will remember the claim he made for Brome grass and its peculiarity in being better feed if cut after the seed was ripe enough for seed than before. Its claims as a productive grower on alkali lands will interest many, and further information on this point will be closely watched for:

"One notable feature which distinguishes this grass is that while most grasses after the flowering period deteriorate rapidly while the seeds ripen, Brome grass can be left standing till the seeds are fully ripe and yet the hay crop will be heavier, without being poorer, than if it had been cut when in flower, as should be done generally for all hay grasses in order to get the best value. This remarkable characteristic of Brome grass is due to the fact that after the seed-bearing stem has grown up a great number of leafy sterile shoots spring up from its base. It is owing to this supplementary growth that the straw after threshing still makes hay of excellent quality.

"A special value for this grass has lately been discovered, namely, its adaptability for alkaline soils. Mr. McKay, having tried some experiments, reports as follows:—'Indian Head, Assa., Nov. 12th: The Brome grass on alkaline land, which I referred to in speaking to the Committee on Agriculture while in Ottawa, was grown on two low spots in a field of about 15 acres. The spots are

not very large (three-quarter acre in both), but before sowing the bottoms were white with alkali, though not so bad as low places in other districts. A good many crops had been grown on the field prior to the grass being sown, and no doubt have had some effect on the alkali. It seems to me as if alkali washes out of the soil into low spots, for we find it in varying quantities in places where water stands for a few days and then settles into the soil. Last June we had a deluge of rain, leaving us a five-acre plot in one of the grain fields covered with water until September. That spot is covered with alkali now, and as far as I know there had been no alkali there before.

"The crop of hay on the three-quarter acre was very heavy, but the land being moist would cause a good crop in any case. Part of this year's crop of Brome hay was grown on low places, upon which alkali is observed every year we plow them; and in these places the crop was very heavy. As no record was taken of the yield on the alkaline spots, I cannot give any exact quantity per acre, but there was at least one-third more hay on them than on the ordinary land."

DAIRY.

Milk and Butter Test at the Royal Show.

In the milk and butter tests at the Royal Show at Birmingham last month in the class open to Shorthorns, Ayrshires, and other pure breeds, except Jerseys and Guernseys, the first prize went to a Lincoln Red cow, which gave 59½ lbs. milk in one day and a total weight of butter-fat of 31.4 ozs. In the class for Jerseys and Guernseys the first prize was won by a Jersey that gave 38½ lbs. milk in a day, testing in the morning 4.7% butter-fat and in the evening 6.2%, and a total weight of butter-fat of 32.8 ozs. The second prize cow, a Jersey, gave 41½ lbs. milk, testing 4.1 and 5.65% butter-fat and yielding a total of 31.7 ozs. butter-fat. In the class for dairy cows, any weight, breed or cross, giving the largest quantity of milk containing 12% total solids, of which not less than 3% shall be fat, the first prize was won by a Shorthorn and Ayrshire cross, yielding 63½ lbs. milk testing 3.45% butter-fat and 12.4% solids.

Care of Milk on the Farm:

It has often been said that milk when first drawn from the udder, if the cow is healthy and the milking done with strict regard to cleanliness, is perfectly pure and needs nothing to purify it. Farm practice, however, does not bear out this statement. This has been explained by the theory that milking is never done with absolute cleanliness, and this is why results fail to substantiate the theory of absolute purity.

Much might be said on both sides of this proposition, but as we are dealing with actual conditions rather than ideal conditions, it is evident that a study of ascertained facts will be more helpful than a theory based upon conditions which are said to be non-existent.

Milk is a perishable product. The rapidity of its deterioration we can modify. By learning what conditions hasten its decomposition and what delay it we learn the essentials.

In the first place, milk as drawn is charged with dissolved gases which will hasten decay unless eliminated. If we seal warm, fresh milk as it comes from the udder (seal it air-tight), it will become fetid and unfit for use.

This teaches us that the can cover must never be shut down tight upon warm milk. The milk becomes fetid; it soon begins to decay. It is not fit to be made into butter or cheese or any other article of human food.

Aeration and Cooling.—There are now on the market different kinds of aerators which are intended to purify the milk. Or, if the word purification is objected to, they aerate and cool it and greatly enhance its keeping qualities. They are not all alike in construction, but are alike in office, and all are guaranteed. To use them successfully, one has but to do as the graduate of Vassar College replied when asked: How do you make biscuits? The blooming damsel replied: Buy a package of baking powder and follow the printed directions. So the use of an aerator is learned. Buy the aerator and follow the accompanying directions for that particular kind. Aerators are a matter of convenience. Milk can be cared for with success without one. Any method which cools it rapidly and allows the gases to escape answers the purpose. The most convenient method I have found is to strain it into the can and set it at once in a tank of cold water and stir it once or twice as it cools. The water cools the milk faster than air will cool it, and stirring it facilitates the escape of the gases.

The most convenient way for me to provide this cold water is to have a small building by the well; make it with double walls, set a tank inside and cause all the stock water to flow through this tank. The stock water passing through this tank all the year keeps the tank water pure and cold in summer and pure and above freezing in winter. So the milk can be handled uniformly all the year around, and with good results, regardless of climatic changes.

When there is a can only part full of milk some farmers strain in more milk at the next milking to fill the can. This is harmful. It is important that fresh milk and old milk be not mixed, at least

unless the fresh milk is first cooled to the same temperature.

Healthy Cows and Proper Food.—The foregoing in regard to the need of cooling and aerating is written upon the assumption that the cow is perfectly healthy and fed properly. In practice there is a probability that at least a part of the herd for at least a part of the time will not be in absolute health, and then the need of these precautions becomes more apparent. A change from dry feed to green provokes looseness of the bowels, and this affects the milk. A showery time in summer makes the grass "washy" and unusually succulent. This will also cause rank milk. Any slight derangement of the digestive machinery is systematic in scope and affects and extends to the milk secretion and enforces the need of that treatment which will best free the milk from obnoxious gases and hold decomposition in check.

While upon this topic it may be added that a common "stick" is not the best thing for stirring the milk. The dash is a better form, and a good way is to take a tin disc about five inches in diameter and solder a handle about twenty inches long. I have a still different form which I have used for five years and which I like better yet. It is made like a dipper with no bottom; invert it and solder a wire handle to it. The dipper is about five inches wide at the wide end and three inches at the narrow end. The double wire handle is twenty inches long. The cost when made by a tinner will be about fifteen cents. This gives a "maelstrom" motion to the milk and thoroughly mixes it, driving the outside to the middle and the top to the bottom with two or three movements.

Milk should be kept in a room especially used for milk. The common practice of setting it in the barn all winter, covered with a horse blanket, is responsible for much of the low-grade butter. Setting the cans outdoors when the weather is warmer instead of cooling by setting in water is another cause of trouble. Setting the cans by the kitchen stove is another abominable practice. It is not only required that the gases found in the fresh milk be eliminated, but that undesirable odors be kept from being absorbed by the milk after it is cooled.

Sources of Contamination.—Warm milk is said to give out odors; cold milk is said to absorb odors. Whether this is scientifically correct in statement may be a matter for argument, but it at least approximately states well-known facts. Remove the milk from the stable at once. If it is left there until it becomes cool, and then taken away and warmed to about 110 degrees, the odors which it will throw off will bear testimony against it. A farmer killed a skunk beneath the floor of his cow barn. The stench was almost intolerable. But the cows had never been milked outside and would not stand. So he put them in the stable, held his breath as much as possible, and succeeded in milking them. The milk was removed to a non-infected place and butter made from the cream, and there was not a trace of bad odor in the butter.

A skunk was killed beneath the floor of a creamery in this county. Several tubs of butter already made absorbed the odor, and when they arrived in New York the expert salesman reported that the butter had a bad odor caused by letting the cows eat garlic.

Bad flavors are often caused by feeding musty fodder. Especially is this apt to be the case if the feeding is done before milking. If the hay or fodder is dusty it should not be fed until after milking; and, of course, it is still better not to feed that kind at all. Ensilage, turnips and all other feeds with marked volatile odors should be fed after milking instead of before. Feed such foods after milking, and in about ten hours the system will have eliminated the odors and the milk will be unobjectionable.

Among the other causes for trouble are rusty cans, wooden milk pails, unclean habits in milking, and lack of hot water in washing the cans and pails. Cold water will not do the work. Cans must be thoroughly scalded or steamed after they are washed, and they must be free from rust. Rust in a can or pail begets a distinctively fetid odor. Use only tin, and only bright, clean tin, for the pails and cans.

The above applies to milk to be hauled to the cheese factory or the separator creamery. If the cream is raised to be hauled to a gathered cream factory the same holds good, except that the milk should not be stirred when cooling. This will interfere with the rising of the cream. If a farm separator is used, the matter is much simplified. There should be a dairy house just the same, as a matter of convenience, but the milk should be separated at once, and only the can of cream need be set into the tank and cooled to await the coming of the cream hauler.

To recapitulate: Keep pails and cans clean and bright. Remove the milk without delay from the barn, and aerate or cool it in water, leaving off the cover until it is cold. Do not feed anything which imparts obnoxious odors without giving the cow ten hours to work them out of the system. Do not mix warm milk with old milk. Keep the cooled milk isolated from obnoxious odors. See that it reaches the manufacturer before deterioration has injured it for the purpose for which it is intended.—E. C. Bennett, in N. Y. Produce Review.

W. V. EDWARDS, Selkirk Dist., Man.:—"I prize your paper very much. It has been a great help to me in many ways. I wish you every success."

Care of Dairy Utensils in Hot Weather.

The importance of strict cleanliness in all dairy vessels and utensils cannot be too strongly urged or too closely watched, especially during the hot months of summer. Mrs. E. R. Wood, in a recent issue of the "Jersey Bulletin," presented some ideas that may be new to some of our readers and from which we quote the following: "In winter it is a comparatively easy matter to keep the pails, strainers, churn, etc., sweet and clean, but when July comes, with its hot, muggy days (and nights almost as bad), it is altogether a different thing. Eternal vigilance is the price of sweetness then, and to the inexperienced some instruction along these lines may not be amiss. It is much less difficult to keep the dairy utensils smelling sweet than to bring them back to that condition once they have been neglected.

We will suppose the milk to have been just strained through the wire gauze strainer and also through the folded cheese-cloth below it. The pails after being emptied must not be left standing for the milk to dry upon them, but shall be at once either filled with cold water or else rinsed in the same. Once a film of dried milk forms upon the inside of the pail, it is much more difficult of removal.

Never apply hot water to milk vessels of any kind until they have first been rinsed with cold or lukewarm water. The hot water cooks the milk at once, and that is what causes the yellowish formation which is sometimes seen adhering to the pails and strainer. Once on, it is difficult to remove. Dry ashes will remove it if well rubbed on with a cloth. So will baking soda or bath brick. Salt is good to cleanse the wire strainer if the little holes get stopped up. Use a new toothbrush, first removing the handle to make it more convenient in getting at the wire. Persevere until the gauze is perfectly clear. If necessary, use a pin to free the particles. These directions are in case a strainer has been neglected. With proper care they will never become clogged.

After rinsing with cold water, wash with warm water, using a brush rather than a cloth for the purpose, since the former reaches every crack and corner better. Then scald in boiling water, wipe thoroughly dry, and set bottom up—in the sunshine if convenient.

POULTRY.

Feeding the Chickens.

Practically every farm has at this season more or less chickens, and as a rule the more wisdom used in bringing them forward the greater profit will be secured from them. Generally speaking, the farm fowls that pay the best are those in which some one or two members of the family hold an interest. When they simply belong to the farm it is usually everybody's business to take care of them, and what is everybody's business is nobody's business, and the result is, as a rule, few chicks in the fall and poor specimens at that. We are sure, however, there are many readers of the FARMER'S ADVOCATE who do succeed well with their chickens, and many others who try but fail to get satisfactory results. To these latter the experience of the more successful would be a great help, and for that reason we repeat what C. H. Wyckoff, a very successful Leghorn raiser, has written for the *Reliable Poultry Journal* along the line of caring for chickens from the time they are six weeks old. He says:

"When the chicks are six to seven weeks old the brooders are removed and their place taken by perches four inches wide, placed four inches apart. These perches are strips of one-inch board sixteen feet long, laid on benches fifteen inches high. The whole floor under the perches and all is kept well covered with sand and cut straw; the feeding boards are replaced with troughs for the morning feed (ground) and the benches and perches are easily set to one side when cleaning the floor. When chicks are all partly grown and well feathered the yard fences are partly removed and they are allowed free range of a large pear orchard until the pullets are about ready to lay, when they are removed to the laying houses and yards.

"Our first feed for chicks is johnnycake baked from a mixture of two-thirds coarse corn meal and the other third a mixture of wheat, oats, peas and barley ground together. This feed is given often, about five times a day, but is given very sparingly, as there is great danger of overfeeding very young chicks, and I find it a much better plan to keep them somewhat hungry and lively, rather than allow them an opportunity to gorge themselves, as they certainly will do when allowed all they can eat and are closely confined. When they are a week or ten days old and have the run of the floor, a little whole wheat and cracked corn are kept scattered in the cut straw, where they quickly learn to scratch for it, and from this time on all whole or hard feed is fed in the litter, thereby giving them a large amount of exercise, which I consider of the greatest importance in promoting a strong, healthy growth in chicks, as well as indispensable for the health and vigor of mature fowls.

"At about two weeks of age a small portion of well-drained (pressed nearly dry) skim-milk curd is added to the cake when crumbled ready for feeding, and the amount is increased as the chicks get older. After the chicks are three to four weeks old the cake is omitted and the same mixture of corn meal and ground grain is fed raw, slightly moistened

with sour skim milk, one feed early and another about ten o'clock, after which they are allowed all the wheat and cracked corn they will scratch out of the litter. This system is continued until the chicks are near maturity, with the exception that the second morning feed is omitted after they are ten weeks old, when they are fed liberally with the ground feed in the morning and the hard feed scattered in the litter at noon and again late in the afternoon, all they will pick up clean before the next feeding time.

"Green food or vegetables are always given daily after the first week. Early in the season, before clover is sufficiently large to use, beets are cut in half-inch slices, and for very young chicks the surface is hacked with a sharp knife, when they very readily take to picking them and in a very short time learn to eat them without further help than to cut into thin slices and place within their reach. As soon as the green clover is large enough to cut with a scythe, say five or six inches high, it is cut and run through an ordinary feed cutter geared to cut very fine, about one-eighth to one-fourth inch, and this is freely given to chicks of all ages, as also to the older fowls, and is succeeded by Swiss chard beet or sea kale late in the summer, when clover stops growing.

"As the chicks get well toward maturity, the amount of curd being limited, beef scraps are substituted with equally good results, although while very young I greatly prefer the curd. As the combs of the pullets begin to show a fast development, indicating a laying condition, their feed is changed by gradually decreasing the amount of corn in both the ground and whole grain feed, by the addition of wheat, bran and middlings to the corn, and a general mixture of the various grains obtainable to the latter, allowing finally about one-fourth corn in the ground feed and one-fifth in the whole grain. Grit in the form of oyster shells is supplied them from the start, although the sand used upon the floors and in the brooders would no doubt supply this want in the very young chicks."

An Egg-Laying Test with Three Popular Breeds.

It is not long since the writer heard the statement made by a gentleman who spends much of his time travelling among the farmers, that fully two-thirds of farmers' hens are Plymouth Rocks or their crosses. It seems reasonable to suppose that the reason is not that some copy others so much as that Plymouth Rocks have been found to be best suited to the purpose for which they are kept on the farm, or, in other words, they seem to combine the necessary qualities of a good general purpose fowl, being, withal, hardy and good mothers. In the matter of egg-laying they test well beside at least two other breeds, viz., Golden Wyandottes and Brown Leghorns, as has been proved at the Michigan Experiment Station with flocks of 25 of each of the three sorts in a twelve months' test. The conditions and results of the experiment are recorded in Bulletin 158 which has recently been issued.

The experiment commenced on Jan. 1st, 1897, with 20 pullets and 5 yearling hens of each of the three breeds mentioned. Since the hens were of pure blood, a male bird was kept in each of the pens so that the eggs would be fit to set. These were removed on June 18th. The hens were weighed when put in and were found when again weighed at the end of the year that the Wyandottes had made a gain per hen of 2.63 pounds, the Plymouth Rocks 2.37 pounds, and the Leghorns 1.29 pounds each. The feed consumed by the several pens was practically the same, and consisted of corn meal, ground oats, middling, bran, table scraps, cabbage, mangolds, ground bone, wheat, and oyster shells.

The number and weight of eggs by months is recorded in the following table:—

| | Wyandottes. | | Leghorns. | | Ply. Rocks. | |
|--------------------------|-------------|-------|-----------|-------|-------------|-------|
| | No. | Wt. | No. | Wt. | No. | Wt. |
| January | 279 | 34.6 | 205 | 23.2 | 202 | 25.5 |
| February | 368 | 45.9 | 230 | 25.4 | 302 | 37.2 |
| March | 472 | 58.4 | 424 | 51.0 | 491 | 62.9 |
| April | 472 | 59.3 | 458 | 54.5 | 465 | 58.4 |
| May | 504 | 62.4 | 454 | 53.2 | 428 | 53.0 |
| June | 379 | 57.4 | 407 | 47.6 | 326 | 41.0 |
| Total for six months | 2,474 | 318.0 | 2,178 | 254.9 | 2,214 | 278.0 |
| July | 327 | 42.9 | 412 | 50.8 | 336 | 41.5 |
| August | 293 | 36.8 | 318 | 38.2 | 333 | 42.2 |
| September | 190 | 22.9 | 191 | 21.1 | 240 | 29.9 |
| October | 123 | 14.2 | 92 | 9.7 | 120 | 13.6 |
| November | 72 | 8.1 | 13 | 1.3 | 27 | 2.7 |
| December | 76 | 8.9 | 21 | 2.2 | 90 | 11.3 |
| Total for six months | 1,061 | 133.8 | 1,047 | 123.3 | 1,146 | 141.2 |
| Total for year | 3,555 | 451.8 | 3,225 | 322.5 | 3,360 | 419.2 |
| Weight of one dozen eggs | | 1.525 | | 1.20 | | 1.496 |

The method of treating the hens that wanted to sit was to shut them away from the rest for periods ranging from two to six days, when the broody desire left them.

As far as the number of eggs laid in the year is concerned, the pen of Golden Wyandottes takes the lead with 3 555 to its credit. The Plymouth Rocks come next with 3,360, and the Leghorns with 3,225. The same relative position is retained when the weight of the eggs is considered.

GARDEN AND ORCHARD.

Tent Caterpillars.

BY DR. JAMES FLETCHER, DOMINION ENTOMOLOGIST, OTTAWA.

The tent caterpillars have been enormously abundant during this past spring, and serious complaints have been received from many parts of the Dominion, particularly in the Ottawa district, where many acres of forest and orchard have been entirely stripped of their leaves. The trees which have suffered most are Aspen poplars, basswoods, maples, and fruit trees, but hardly any kind of tree or shrub has escaped.

These are two kinds of caterpillars which every year commit serious depredations in our Canadian apple orchards, although, as stated above, they by no means confine their attention to apple trees. These are the caterpillars of the American lackey moths (see cuts), two species of brown moths, which frequently fly into houses at night during July, and draw attention by their headlong, reckless flight, dashing themselves against the ceilings and walls, and very often finishing up by getting into the lamp chimney. Speaking generally, there is a great resemblance between these two insects in appearance and habits, and the same remedies are applicable to both.

When examined carefully, however, they differ considerably in all their stages, and may be easily recognized. They belong to the Bombycidae, or Spinners, a family which contains the silkworm moths and several other thick-bodied, hairy moths, with large wings but small heads, bearing comb-like antennae, and having the mouth-parts imperfect, or, as in those now under consideration, not developed at all. The caterpillars of the Bombycidae are usually hairy or tufted, and when full-grown spin a cocoon for the protection of the short, thick chrysalide.



American or Apple-tree Tent Caterpillar—female moth.



American or Apple-tree Tent Caterpillar—male moth.

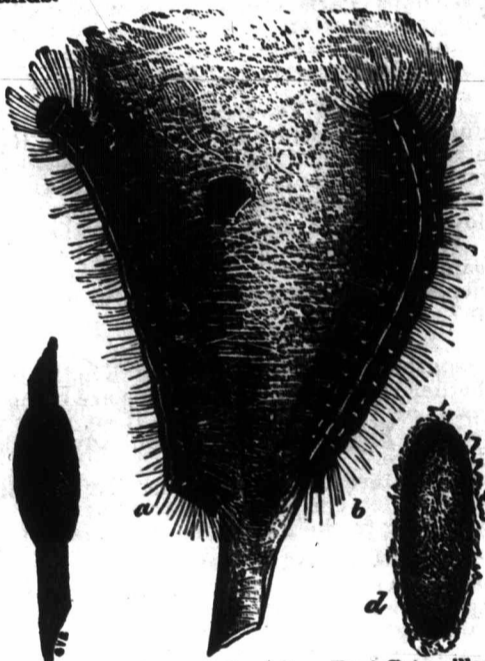


FIG. I.—American or Apple-tree Tent Caterpillar (*Clistocampa Americana*).

At Fig. I. the different stages of the American or apple-tree lackey moth are given. This species appears in the perfect state at the end of June and beginning of July (about a week later than the other species referred to above), which is known by the name of the Forest Tent Caterpillar, *C. disstris*, Hub. (*C. sylvatica*, Har.), and represented at Fig. II. The American lackey moth is a pretty species, of a dull but rich reddish-brown color, having the upper wings crossed obliquely by two



FIG. II.—Forest Tent Caterpillar (*Clistocampa sylvatica*).

clear, whitish, parallel lines. In rare instances these show faintly on the lower wings also. The fringes of the wings are chiefly of the same color as the oblique lines. The space enclosed between the light lines is paler than the rest of the wings in the males, but of the same color or rather darker in the females. On the under side all four wings

are crossed by a well-defined, irregular, whitish bar. The perfect insects, having their mouth-parts undeveloped, partake of no food, but devote the whole period of their short lives to the perpetuation of their kind. As soon as they have paired and the females have laid their eggs they die. The eggs are deposited in rings upon the smaller twigs of various trees, usually within a short distance of the tips. Each egg-cluster contains from 200 to 300 eggs, which, when laid, are covered with a liquid glutinous substance, which soon dries and cements them firmly together and protects them from the weather.

A surprising point in the life history of these insects is that about a month after the eggs are laid the young caterpillar is fully formed inside the egg, and it remains in this condition all through the winter, only eating its way out from the egg in the following spring when the leaves expand. Immediately upon hatching the young caterpillars consume the glutinous covering of the eggs, and then lose no time in attacking the foliage. They at once begin the construction of their tent, which is a web of fine silk, spun in the nearest fork of the twig upon which they were hatched. This tent is increased in size as the caterpillars grow, and if left undisturbed is sometimes nearly a foot in diameter. The caterpillars are very regular in their habits, marching out in regular procession, each following close behind the one in front of it. From the habit of the larvae of this genus of marching out to feed in bodies, they are known in Europe as "Processionary Caterpillars." When their appetites are satisfied they return again to their tents to rest. They do not feed at night nor in stormy weather. They usually do not leave their tent until after nine in the morning, and have all returned before sundown. They are generally inactive also in the middle of the day.

When full-grown the caterpillars are two inches in length, and beautifully marked with black, white, blue, yellow and brown in the pattern shown in Fig. I. b. The continuous stripe down the back is white, and serves as a distinctive mark by which



FIG. III.—Forest Tent Caterpillar.

this species can be known at once from the Forest Tent Caterpillar (Fig. 3), which has this dorsal stripe broken up into spots. This latter also differs in not constructing a tent, but merely spins a mat of silk on the side of a tree, or upon one of the large branches, on and near which it lives, more or less in community, but it has not the same social habit as its relative. Just before they spin their cocoons the caterpillars wander about very much, seeking for a suitable place. The cocoon (Fig. I. d.) is greenish-yellow, and contains a powdery material like finely ground sulphur. The moths emerge in about eighteen or twenty days after the cocoon is made.

Remedies.—The most successful remedies with these insects all come under hand-picking and spraying. During the winter or early spring the egg-clusters can be easily collected and destroyed; they are always laid upon the small twigs and near the tips, so that if a dull day be chosen they can be easily detected against the sky, and can then be cut off and burnt, when, of course, the trees are exempt from attack until eggs are laid again next year. If this precaution is neglected, the nests, which are conspicuous objects before the foliage is fully expanded in spring, must be cut off and destroyed. An invasion from neighboring trees can be prevented by tying a strip of cotton batting, or one of the many mechanical contrivances made of tin or paper, round the trunk. The caterpillars have difficulty in climbing over these obstructions.

Regarding Fruit Shipments.

The following letter has been sent by the Department of Agriculture to the several steamship companies sailing from Montreal and Halifax:—

Last season a lot of early varieties of apples were shipped from Western Ontario to Great Britain. About one-half of the quantity was forwarded in cold storage, and the remainder was sent as ordinary cargo.

Those sent in cold storage were reported to have arrived all in good condition, and to have been sold at an average price of 18s. per barrel.

Those sent as ordinary cargo were reported to have been sold at an average price of 8s. per barrel, and sixty-three per cent. were reported to have been landed in a "wet" or "slack" condition.

For the safe carriage of early varieties of apples, it seems necessary that they should be carried at a temperature at or below 40° Fahr.

On examining the returns from twenty-nine cargoes of apples last year, I find that the same varieties of apples were sold at the same time at prices showing as much as 8s. 6d. per barrel of a difference between the apples which were landed in good condition and the apples which were reported as being landed in a "wet" or "slack" condition.

For the safe carriage of late fall and winter apples, it seems desirable that they should be so carried that they may be thoroughly ventilated, so that the heat produced by the fruit itself will be carried off.

When apples or other fruits are kept at a temperature above 40° Fahr. they continue to ripen or

go towards decay. That process generates heat. The increased temperature thus caused makes the fruit ripen still faster.

For the carriage of apples by your line, could you arrange to have the hold or holds for apples thoroughly ventilated by an air duct leading to the bottom of the hold, and by the use of an electric fan or fans to suck the warm air from the top?

During any particularly warm weather on the voyage the ventilating ducts might be used only during the evenings or nights when the air was cool.

Our Department is calling the attention of growers and shippers of apples to the desirability of packing the fruit in barrels or boxes so constructed as to permit of ventilation through each barrel or box, and packed tight enough to hold each fruit firmly in place.

(Signed) JAMES W. ROBERTSON,
Commissioner of Agriculture and Dairying.

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.

Specific Ophthalmia.

P. C., Elgin Co., Ont.:—"My cattle are going blind. Their eyes run water for a time, and then a white scum grows over them. I have seven or eight out of sixteen all running at pasture. What is the trouble, and what would you prescribe for them?"

[We are unable to give any reason for this outbreak of specific ophthalmia. From enquiries we find that it was very prevalent in Oshawa and the surrounding district last year, and from a visit recently paid find that it is moving eastward this year. It arises from some cause operating primarily on the constitution, and secondarily, on the organ of vision, terminating in an opacity of the cornea. Symptoms are fairly well described by your letter, and the attack generally comes on suddenly, without apparent cause, and in the night. The eye presents signs of weakness, the upper lid droops, the eye seems smaller and drawn into the orbit as far as possible from the light, which the animal cannot bear, tears flow over the lower lid down the face. In some cases it has turned into a cataract, but most of the cases have terminated favorably when treated in a simple manner. After fomenting with warm water for ten minutes apply the following lotion: Liquid plumbi subacetate, 2 drams; tincture of opium, 20 drops; distilled water, 1 ounce. Have sufficient made of this strength to dress all the animals.]

DR. W. MOLE, Toronto.]

Bog Spavin.

D. J., Lambton Co., Ont.:—"I have a valuable mare, five years old. She injured her hock last August. I have blistered it and it seemed to get better until about two months ago, when she became very lame. There is now a large roundish swelling which fluctuates and seems like a blood spavin. Is there any cure for it?"

[In all probability this mare has a bog spavin, and from its length of standing it is questionable whether or not a cure can be effected, but it all depends upon the amount of change which has taken place in the parts. If the articular cartilage has become destroyed she will be permanently lame, as that will not reproduce. Keep her perfectly quiet. Place her on light diet—cut grass, bran and a little oats, and give her a dose of physic: Raw linseed oil (pure), 1 quart; spirits of turpentine, 2 ounces. Drench on an empty stomach, and after it has operated freely on the bowels give one of the following powders each night and morning in her feed: Powdered nitrate of potash and bicarbonate of soda, of each two ounces; powdered colchicum, half ounce; powdered digitalis, two drams. Mix and divide into twelve powders. For the leg apply a large bandage to the hock, and keep wet with ice water until a good deal of the heat has been removed, then rub in the following blister for half an hour, and oil on the third day following and each succeeding third day till the hair starts: Pulverized cantharides, one and a half drams; biniodide of mercury and iodine crystals, of each one dram; lard, one ounce. Mix. Tie her head up short so she can't bite the blister when operating, and keep her in a darkened stable for some time.]

Miscellaneous.

Cow Giving Bloody Milk.

D. R., Bruce Co., Ont.:—"I have a three-year-old heifer (with her first calf) that gives bloody milk. Is there any cure for this? It is ten weeks since she calved. For the first three weeks the milk was apparently all right. First one teat gave bloody milk, then another. Now the four teats give stained milk; in fact, almost pure blood. This heifer is very gentle, in good condition, and is gaining in flesh on the grass, which is the only food she gets."

[There are various causes of cows giving bloody milk, such as injury, eating plants of acrid nature, etc. The heifer in question should be taken in off the grass and given dry feed, which will reduce

the milk flow. Give Epsom salts, one pound; nitrate of potash and ginger, of each half an ounce, dissolved in one quart of hot water. Bathe the udder with cold water and rub in the following liniment: Soap liniment, four ounces; tincture of opium, one ounce; fluid extract of belladonna, half an ounce.]

Serious Trouble Among Chickens.

G. L. L., Prescott Co., Ont.:—"I write to you for any help you can give us in some trouble that has overtaken our chicks. They are half Plymouth Rocks. Last Thursday a lot about five weeks old began dropping off, and on Friday and Saturday between thirty and forty died. To-day (Monday) very few of that lot are sick, but some that are three weeks old are going the same way. It takes the disease about twelve or sixteen hours to kill them. Shortly after they are first seen to droop, they stand off alone and set up a strange, monotonous cheeping, lower the head until they sometimes look as though they would stand on it. A few, when put down after I had examined them, straightened themselves up until they had actually fallen over backwards. Some, when nearly ready to fall over, act as though they were after some insect; they jump partly round very suddenly, or run a few steps, cheeping all the time. At first we fed them all granulated oats, some middlings and bran, then wheat screenings, and a few days before the disease broke out they got some provender (peas and oats ground); about the same time an older flock got some oats, and as I found oats in the crops of the first that died, I thought perhaps the younger ones had tried to eat it too soon. We at once took care that they got nothing coarser than the wheat grains, and stopped the provender, but still a few are dying. They have had lots of sour milk to drink, and seemed to like it; they were free to get all the clean water they wanted, with all the run, shade, and shelter at night that could be needed, and have always been very hearty eaters. They are not lousy, and though the sick ones to-day are gaping, I cannot detect anything wrong with their throats; their droppings are soft. To-day I find some slender raw-meat colored droppings, but do not know whether they are from the sick ones or not. They are all very fat and large for their age. Any information you can give that will check the present trouble, or help us avoid a recurrence of it, will greatly oblige."

[The symptoms, so fully and carefully given, point to some acute infectious disease, or poisoning with perhaps Paris green. We would advise a careful post-mortem examination by a medical man or qualified veterinarian. The food and treatment given them seems faultless.]

Shallow vs. Deep Plowing.

SUBSCRIBER, Norfolk Co., Ont.:—"Mr. Rennie, Farm Superintendent of the O. A. C., states that 'practically, we only plow when breaking sod, and then only four inches in depth, depending on the clover roots and Jack Frost to do the sub-soiling.' Would this shallow cultivation be sufficient for loam or clay soils? Would like to have the experience of others with shallow vs. deep cultivation."

Hampshire Sheep.

SUBSCRIBER, York Co., Ont.:—"Kindly inform me whether Hampshire Down sheep are being bred in Canada or United States, and if so, with what success? I have not seen them advertised or exhibited here."

[Parties interested in this question may find it profitable to let the public know what they have by advertising in the FARMER'S ADVOCATE.]

Mending Grain Bags.

MRS. ELIZABETH DALE, Grund. Mad.:—"I am sending you a sample of the way we have mended our grain bags for years. I first saw the advice in the Uxbridge Journal. There was a cut with a board placed inside the bag, the bag open a little to show how to fix. A thin paste is made of flour and water. One old bag does to cut patches from. The patches are pressed on with a common smoothing iron made as hot as for ironing clothes."

[The sample shows a very neat patch and appears quite strong.]

Reliability of a Company—Solution of Breeding Problem.

W. E., Simcoe Co., Ont.:—"1. We have recently received a circular from _____ Company, offering employment to those who have spare time at home in coloring photographs, etc. They require \$2.50 to be sent to them for outfit. Please inform me through the ADVOCATE as to the reliability of the above company. 2. A mistake is made in the solution of the Breeding Problem given in July 1st issue: the number of cows in the 10th year, 132, is also the total number, not 473; and 473 is the number of whole herd?"

[Regarding all such companies as the one referred to, who demand money for outfits before employment can be commenced, we would warn our readers to have nothing to do with them. The chances are the \$2.50 is an enormous price for the outfit, and by the profits therefrom the company secures its prosperity, not depending upon the results of the work of those whom they endeavor to employ. We had occasion to look into the affairs of this company last year, who were then operating another such scheme, and published the results of our investigation in June 15th issue, page 265. There are too many such concerns operating in this country, and it would be well if

the Government would open a department to suppress such for the protection of unsuspecting persons. Such concerns usually operate various schemes under different names with which to fleece the public, but the general outcome is practically the same.]

SHOWS AND SHOWING.

Exhibitions for 1898.

| | |
|---|----------------------|
| Trans-Mississippi, Omaha..... | June 1 to Nov. 1. |
| Killarney, No. 1..... | June 27 and 28. |
| Shoal Lake..... | July 6 and 7. |
| Winnipeg Industrial..... | July 11 to 16. |
| Portage la Prairie, Man..... | July 18 to 20. |
| Brandon Western Agr. & Arts Ass'n..... | July 19 to 22. |
| Manitou..... | July 21 and 22. |
| Carberry..... | July 21 to 23. |
| Glenboro..... | July 26 and 27. |
| Cypress River..... | July 27 and 28. |
| Stanstead, Rock Island, Que..... | Aug. 24 and 25. |
| Toledo Tri-State..... | Aug. 22 to 27. |
| Toronto Industrial..... | Aug. 29 to Sept. 10. |
| New York, Syracuse..... | Aug. 29 to Sept. 3. |
| Ohio, Columbus..... | Aug. 29 to Sept. 2. |
| Minnesota, Hamline..... | Sept. 5 to 10. |
| Eastern, Sherbrooke..... | Sept. 5 to 10. |
| Metcalfe..... | Sept. 6 and 7. |
| Morrisburg..... | Sept. 6 to 8. |
| London Western..... | Sept. 8 to 17. |
| Indiana, Indianapolis..... | Sept. 12 to 17. |
| Quebec..... | Sept. 12 to 21. |
| Prescott, Vankleek Hill..... | Sept. 13 to 15. |
| Richmond..... | Sept. 13 to 15. |
| New Brunswick, St. John..... | Sept. 13 to 23. |
| Bay of Quinte, Belleville..... | Sept. 14 and 15. |
| Northern, Walkerton..... | Sept. 14 and 15. |
| Renfrew..... | Sept. 15 and 16. |
| Bowmanville..... | Sept. 15 and 16. |
| Ottawa Central..... | Sept. 16 to 24. |
| Brantford..... | Sept. 17 to 22. |
| Wisconsin, Milwaukee..... | Sept. 19 to 23. |
| Napanee..... | Sept. 20 to 21. |
| Northern, Collingwood..... | Sept. 20 to 23. |
| Peninsular, Chatham..... | Sept. 20 to 22. |
| Prescott, Prescott..... | Sept. 20 to 22. |
| St. Thomas..... | Sept. 20 to 22. |
| Lanark, South Perth..... | Sept. 21 to 23. |
| Stratford..... | Sept. 22 and 23. |
| Lindsay..... | Sept. 22 to 24. |
| Halifax..... | Sept. 23 to 29. |
| West Williams and Parkhill, Parkhill..... | Sept. 26 and 27. |
| Illinois, Springfield..... | Sept. 26 to Oct. 1. |
| Lanark, Almonte..... | Sept. 27 to 29. |
| Centre Bruce, Paisley..... | Sept. 27 and 28. |
| Northwestern, Goderich..... | Sept. 27 to 29. |
| Peel, Brampton..... | Sept. 28 and 29. |
| Prince Edward, Picton..... | Sept. 28 and 29. |
| Dalhousie, Ontario..... | Sept. 29 and 30. |
| Oxford, Kempville..... | Sept. 29 and 30. |
| Elgin West, Wallaceston..... | Sept. 29 and 30. |
| Ontario and Durham, Whitby..... | Sept. 29 to Oct. 1. |
| Peterboro, West Peterboro..... | Sept. 29 to Oct. 1. |
| St. Louis, St. Louis, Mo..... | Oct. 3 to 8. |
| Woodstock..... | Oct. 3 to 5. |
| Norfolk, Tilsonburg..... | Oct. 4 and 5. |
| Markham..... | Oct. 5 to 7. |
| New Westminster, B. C..... | Oct. 5 to 13. |
| Caledonia..... | Oct. 6 and 7. |
| Norfolk, Simcoe..... | Oct. 11 to 13. |
| Woodbridge..... | Oct. 18 and 19. |
| Ontario Fat Stock Show, Brantford..... | Nov. 30 to Dec. 2. |

[NOTE.—If Secretaries of Fair Boards will send us dates of their shows we will include them in the lists of succeeding issues of the FARMER'S ADVOCATE.—EDITOR.]

The Forthcoming Exhibition at Toronto.

The title page of Toronto Industrial Prize List promises \$35,000 in premiums, and improvement in all departments. We are satisfied without promise of the latter, for the management of Canada's Great Exposition and Industrial Fair at Toronto never did stand still. Manager Hill has had some interesting comparative tables prepared, which are herewith submitted to our readers.

Amounts offered in prizes at the principal fairs held in Canada and in the United States in 1897 for livestock, poultry, dairy products, and ladies' work:

| CANADA. | | | | |
|-------------------|----------|-----------|---------|---------|
| | Toronto. | Montreal. | Ottawa. | London. |
| Horses..... | \$6325 | \$4008 | \$2843 | \$1973 |
| Cattle..... | 5924 | 3534 | 2663 | 1768 |
| Sheep..... | 2433 | 1295 | 855 | 943 |
| Swine..... | 1882 | 1222 | 618 | 558 |
| Poultry..... | 2097 | 1395 | 635 | 769 |
| Dairy..... | 1173 | 399 | 470 | 466 |
| Ladies' work..... | 782 | 608 | 625 | 322 |
| Total..... | \$20,616 | \$12,461 | \$8,709 | \$6,799 |

| UNITED STATES. | | | | |
|-------------------|-----------|------------|---------|-----------|
| | Illinois. | St. Louis. | Ohio. | New York. |
| Horses..... | \$6185 | \$4375 | \$2779 | \$2758 |
| Cattle..... | 5790 | 3220 | 2660 | 2490 |
| Sheep..... | 1718 | 2000 | 1109 | 639 |
| Swine..... | 1220 | 1490 | 955 | 1740 |
| Poultry..... | 1169 | 1137 | 739 | 1764 |
| Dairy..... | 264 | 223 | 46 | 1000 |
| Ladies' work..... | 853 | 1208 | 664 | 232 |
| Total..... | \$17,139 | \$13,653 | \$8,952 | \$12,623 |

In the great cattle-producing State of Texas the total amount given in premiums for live stock, dairy products, and ladies' work in 1897 was only \$3,033. Toronto thus exceeds the great Illinois State Fair by \$3,000 in these departments, the much-talked-of St. Louis Fair by \$7,000, the Ohio State Fair by \$12,000, New York by \$8,000, and Texas by \$12,000. When it is considered that all these fairs charge 50 cents admission at the gates and charge for everything afterwards, whereas the general admission at Toronto is only 25 cents, it shows not only the popularity of Canada's Great Fair but the splendid management that characterizes it. Toronto Exhibition certainly deserves well of the people of Ontario, and of the agricultural community in particular. It should also be stated

THE QUIET HOUR.

"Larvæ."

My little maiden of four years old (No myth, but a genuine child is she, With her bronze-brown eyes and her curls of gold) Came quite in disgust one day to me. Rubbing her shoulder with rosy palm, As the loathsome touch seemed yet to thrill her, She cried, "O mother, I found on my arm A horrible crawling caterpillar."

Our Next-door Neighbor.

How little we take in or try to act on the command to love our neighbors as ourselves. And yet, if we are pledged to obey the orders of our Lord and Master, this great division of the whole duty of man must not be disregarded.

Let us begin with the very important question: "Who is my neighbor?" The answer to that question, remember, was given in the intensely practical parable of the Good Samaritan, which certainly teaches that the person to whom we have an opportunity of showing a kindness is our neighbor, and has a direct claim on us.

City people sometimes are not acquainted with their next-door neighbors. Well, this is not addressed to city people, so we will not discuss whether that is a right or wrong condition of affairs. You who live in the country can hardly make that excuse for neglecting a neighbor. It is rather a poor excuse anyway, and will hardly be accepted at the last great day of account.

Possibly you don't like your neighbors and have as little to do with them as possible; wish they lived a hundred miles away, and then you wouldn't be bothered with them. But has your personal dislike very much to do with the question? Had the Good Samaritan much reason to like the man who was his bitter enemy? Did he leave him to look after himself for any such reason as that? Did you ever grasp the idea that your neighbors were not placed there by accident, but that God, in bringing them into close connection with you, had a purpose, which you have no right to thwart or ignore?

If you use the opportunity the gain will be both yours and your neighbor's; if you neglect it, then you are refusing the work God has offered you, and the loss will most certainly be great—a loss of influence and happiness.

Of course you will be kindly and helpful when any neighbor is in trouble—sickness or death work wonders in the matter of neighborliness—but cannot the same spirit of friendly sympathy be kept up all the year round? Why is it that so many Christians try to carry out the command to "weep with them that weep," but utterly disregard the direction to rejoice with those who rejoice?

Is there any reason why we farmers should always try to prove that our own orchards, fields or gardens are ahead of those of our neighbors; or, if we cannot imagine them better, feel injured because others have beaten us? A kindly word of appreciation often gives a great deal of pleasure. If a neighbor's child wins a prize at school, show your sympathy warmly. If he wins prizes at the fair, don't forget to congratulate him. There are many ways in which love for one's neighbor may be cultivated, for love grows by use just as many plants flower better when the flowers are picked constantly. A bunch of flowers taken to one, a ride in your buggy offered to another, a basket of fruit or early vegetables to another; if you are on the watch you will find any number of opportunities for doing the little kindnesses "which most leave undone or despise." In giving pleasure you will never fail to find it at the same time, especially the joy of offering little sacrifices of time and trouble to Christ, remembering His word, "Inasmuch as ye have done it unto one of the least of these My brethren, ye have done it unto Me."

We are all guilty of the sins of omission, leaving undone so many kind actions, leaving unsaid so

many kind words, which might have gladdened the lives of others.

"Talk not of feelings, and of frames, When duties round thee lie. They are but empty sounds and names, These a reality. Waste not thy life in idle dreams Of what that life should be. But live it, use it—for it seems With tasks for you and me."

Then there are plenty of ways of being unneighborly, which should be avoided. We have no right to impute motives. There is very little good accomplished by our practice of talking over our neighbor's faults or pulling him to pieces so remorselessly. There are plenty of good points to talk about, and by looking for them, and refusing to dwell on the bad ones, we may encourage them to show themselves more, and so work an improvement. And never forget that, as the unsightly worm develops into the beautiful butterfly, so there may be possibilities of saintliness hidden under the most unpromising exterior.

"Good will! Consider this— What easy, perfect bliss, If, over all the earth the one change spread That Hate and Fraud should die, And all in amity, Let go rapine, and wrath, and wrong, and dread.

What lack of Paradise If in angelic wise, Each unto each, as to himself, were dear! If we in souls deserted, Whatever form might hide, Own brother, and own sister, everywhere!

Till these things come to pass— Nay, if it be—alas!— A vision, let us sleep and dream it true! Or—same and broad awake— For its great sound and sake, Take it, and make it earth's; and peace ensue!

MINNIE MAY'S DEPARTMENT.

MY DEAR NIECES,—The greater social virtues, such as Truth, Purity, Temperance, etc., are like a cloak, which should be embroidered with the minor social graces, such as Courage, Tact, and Refinement. Of Courage we have already spoken: let us now have a chat on tact. Tact is partly the gift of nature, an instinct rather than a cultivated grace; yet it is capable of being developed by observation and experience, and can be artificially encouraged by a little forethought and consideration for others.

Tact has been called the "art of saying or doing the right thing in the right place and in the right way." It is a treasure that never loses luster. It is the oil that makes social wheels run easily, and it will often do more to make a troublesome political, social or religious machine move than the greatest mental, physical or moral strength. It is like a delicate nerve, not seen, but one which feels and which is felt by everybody everywhere, and yet is never too prominent. Tact never oversteps good taste or trespasses on privileges, or is other than graceful under ungraceful circumstances. Affairs often occur to place one in such an awkward position that the slightest touch on the wrong side would overbalance and throw one into utter confusion, and perhaps lead to serious results. It is in a case like this that tact is all-important,—that tact which, being an instinct rather than a forethought, can act on the instinct and avert mischief. Persons who have this quality are quick to see the right mode of action, and not only to see it, but to follow it up successfully. The truest test of tact is being able not only to say or do a happy thing in a happy moment, but to do or say a happy thing in an awkward moment. The former is easy, but the latter is much more difficult. Here is an example of tact from "Recollections of Washington and his Friends":

"Early on a bright December morning, a droll-looking old countryman called to see the President. In the midst of their interview breakfast was announced, and the President invited the visitor, as was his hospitable wont on such occasions, to a seat beside him at the table. The visitor drank his coffee from his saucer, but lest any grief should come to the snowy damask, he laboriously scraped the bottom of his cup on the saucer's edge before setting it down on the tablecloth. He did it with such audible vigor that it attracted my attention, and that of the several young people present, always on the alert for occasions of laughter. We were so indiscreet as to allow our amusement to become obvious. General Washington took in the situation, and immediately adopted his visitor's method of drinking his coffee, making the scrape even more pronounced than the one he reproduced. Our disposition to

laugh was quenched at once."

Tact, too, is a useful friend to Truth, continually preventing the latter from inflicting a wound on someone's feelings. You know the saying, "The truth is not always palatable," and some people take advantage of this to tell what are called *society lies*—that is, hiding one's real opinion for the sake of being pleasant. But, on the other hand, some say, "Tell the truth at all costs," and they proceed to give their opinion on certain things without the slightest regard for one's feelings—each word cutting like a knife and wounding very deeply their hearers' hearts. We all know how we avoid a person like this last. But now our happy little friend Tact comes to our help and smoothes away the harshness and does away with the pleasant (?) society fib. For example, if we are asked our opinion of a friend's dress—perhaps a dress which we cannot sincerely admire—we need not say that it is extremely ugly, or unbecoming or in very bad taste. That would make our friend feel our remarks keenly; but we might, with the aid of tact, speak of the best points in the dress, such as its quality, cut, etc., without being at all insincere.

There are two kinds of tact—the heaven-born tact which help and sympathizes, and the evil tact which deceives and ruins. The latter is found in those men and women who think that breaking hearts is a pastime. What is more despicable than to see a giddy flirt do all in his or her power to win the affection of someone, and then mockingly to cast that one off, utterly regardless of wounded feelings? Surely this is a display of evil tact which they use to deceive their victims; but sooner or later they reap their own reward. The tact that



"A PAINFUL PARTING."

"A Painful Parting."

This picture suggests several interpretations. There is evidently no anger between these two. The adoring sadness in the man's face and the dejected attitude of the weeping girl preclude that surmise. Can they be husband and wife? We think not, for somehow they don't look married, and, besides, husbands do not, as a rule, kiss their wives' hands in that loverlike manner. Here is a romantic theory: A cruel fate is separating these two, and she is obliged to marry someone else in order to perhaps save a home for others. Her lover has come to see her, and she tells him the bitter truth with breaking heart. Even the poor dog seems to enter into the sadness of the scene. Truly, one might weave many theories regarding this "Painful Parting."

And is it true that we must part, We two who have loved so much? I hold your hand in mine, beloved, That hand I scarce may dare to touch.

Yet though cruel Fate has willed it so, That we should meet not after this, Forgive me, love, if now I take, In deepest sorrow, this one kiss.

You weep, and oh! it is for me! But cease to shed those falling tears; Give me one smile to cheer my way Through all the long and bitter years.

Please accept thanks for the beautiful watch won by me in the Great Canadian Puzzle competition. I had no idea I should be a winner against so many, as I am only 12 years of age—but there is nothing like trying. The watch is really a good one. I will do all I can for the ADVOCATE. Again many thanks for your promptness. Yours truly, MORRIS, MAN. FLORENCE R. SWAIN.

helps a neighbor is like an angel's touch, and wins for its possessor the love and respect of others. For the girl or woman who has it and who uses it rightly, tact is a very graceful trinket, making and keeping friends, and disarming foes.

Let us cultivate this heaven-born tact which adds so much to the sweetness of life, and so brighten not only our own lives, but the lives of those with whom we come in contact.

Your loving old auntie—
MINNIE MAY.

Puzzles.

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

1.—CHARADE.

My 1 is a carriage.
My 2 is a track.
My 3 is a vowel.
My 4 is an abbreviation.
Whole is a Mt. range in Europe.
M. BLANCHE MACMURRAY.

2.—BEHREADING.

I am a word of six letters.
Behread me and I am the name of a wheel.
Behread again and I am a headland.
Behread again and I am a mimic.
Transpose and I am the name of a plant.
PETER HYDE.

3.—CHARADES.

1.—1st means nest.
2nd means past.
Whole means a great commercial metropolis in North America.
2.—1st—the indefinite article.
2nd—a small article of food found on our tables.
3rd—a popular amusement.
Whole—plenty.
"MADGE."

4.—TRANSPOSITION.

Oenallsolo
Endes otn eth garfio dal nomneria,
Uth al, ewah dnareudoa, dreanno eth omts.
MURIEL E. DAY.

5.—NUMERICAL.

A ghost was seen the other night,
And 2, 3 went to see the sight.
No. 1, 2, 3 our spirits owed.
Though 4 to 7 scarce spoke aloud,
But as for 6, 7, nothing daunted,
I boldly sought the forest haunted;
And there before our vision plain
A large tree had been rent in twain;
Its loosened bark was swaying wide
And had the children terrified.
Being 4, 5 white where it was riven.
'Twas 1, 2, 3, 4, 5, 6, 7.
"OGMA."

6.—CHARADE.

The watchword of success "I ONE"
With grim defiance scorns defeat;
"I TWO" declares the task is done,
Yet 'twere well (to be COMPLETE)
Had certain tasks not been begun.
"OGMA."

7.—CROSS.

1. A resinous substance.
2. To augment.
3. To be remote.
4. One who steals.
5. "A well-wisher of the AD-
6. Memorials. [VOCATE."
7. To impair.
8. A conjunction.
9. Stir; noise.
MURIEL E. DAY.

8.—CHARADE.

Oh! where is Mr. C. S. E?
That he does not send us any rhyme.
Is it that he is in a FIRST?
Seeking "Klondyke" dime.
Or, perhaps he may have found a SECOND,
That occupies his thoughts and mind.
If such be, 'tis all the THIRD
With those who like the style!
It would not take him very long
To send a few lines to our 'dom.
Complete would be the place for him,
If of "Sugar Loaf" he is fond.
MURIEL E. DAY.

9.—DOUBLE ACROSTIC.

1. An ancient sire.
2. The last letter of an alphabet.
3. A bulbous plant.
4. River in South America.
5. To debate.
Initials and final spell:
An English monk: his fame will tell—
Of hard study through his career,
Fear'd and scorn'd in his lonely cell,
And science owns him for her pioneer.
MURIEL E. DAY.

10.—PROVERBS.

The following contains all the words of seven familiar proverbs. See if you can reconstruct them. "One of the wishes is that you would make the hay, not look a long while before turning it, if summer is late. It were better the does never leap than make beggars eating of pudding ride road horses. Has a swallow no proof the sun shines." "OGMA."

11.—RIVERS IN NORTH AND SOUTH AMERICA.

1. Mtoocap. 7. Manora.
2. Agdalenam. 8. Oocorin.
3. Bossequie. 9. Rapjua.
4. Woatt. 10. Aaptojs.
5. Nuyok. 11. Rrpute.
6. Selonn. 12. Lleeoowytyn. "PINIE."

11.—SQUARE.

1. Allures.
2. Regenerate.
3. Genus of an order of tropical trees.
4. A Swedish lake.
5. Be crowded.
"THE KHAN."

Answers to July 1st Puzzles.

1.—(1) Amy Robert; (2) Cedric the Saxon; (3) Margaret of Arjou; (4) Madge Wildfire; (5) Harry Bertram; (6) Dominic Sampson.

3.—Pa-ken-ham.
2.— F E A S T 4.— M E R I T
E R R O R E L I D E
A R R A Y R I P E N
S O A P S I D E A S
T R Y S T T E N D S

5.—The Great Canadian Puzzle.
6.—President McKinley.
7.—Pansy; Violet; Buttercup; Lily; Primrose; Aster; Morning Glory; Sweet Pea; Orange Lily.
8.—Pond Lily. 9.—Melancholy.
10.—Ta-Ilen-Waa. 11.—Civic.

12.—(1) Sacrifice and self-devotion hallow earth and rule the skies. (2) When the heart is right there is true patriotism. (3) Error wounded writhes in pain and dies among his worshippers.

13.—
I R
Musole
P I
R esor T
E E
S ette R
S A
I nten T
O E
N S

SOLVERS OF JUNE 15TH PUZZLES.

Jessie Hyde; Esther F. Bartlett; Peter Hyde; "Madge"; "Dick"; "Margareta."

SOLVERS OF JUNE 1ST PUZZLES.

(Late for last issue.)
"Margareta"; "Madge"; Muriel E. Day; Jessie Hyde; Peter Hyde.

COUSINLY CHAT.

H. C. G.—Pray, pardon me, I was under the impression that I had acknowledged the souvenir which I was much pleased to receive. If not, it was an oversight which I am certain you are generous enough to excuse. I shall be delighted to have you join our corner. Do you contribute to the chats yet?

"Jessie."—Why do not you send puzzles as well as Peter? "Esther."—Every one says the arithmetic paper was shamefully hard, nevertheless I hope you conquered.

Muriel.—I was delighted to get a real letter from you, and you write a very nice one too. So glad you like it, dearie. Will that "trip" be soon? You must forewarn me, you know.

"Mal."—Aren't you going to write to me any more? Dear me, I know just how busy you are, and can readily excuse you at this time of year.

The Khan.—Welcome back. You are somewhat late, and work is just ready for mailing, so I have not looked over all your puzzles yet.

"Pixie."—Very glad to hear from you, but try to come earlier.

"Margareta" and "Puss."—Have just gotten your letters, but have not read them yet. My! what a hurry I'm in.

"Madge" and "Dick."—Two more old friends come just at the eleventh hour. Glad to see you even then, but your puzzles came a little late.
ADA A.



COUNTRY COUSINS FROM ANIMAL-TOWN.

Christmas in the Forest.
(Continued from page 316.)

The longed-for night arrived, and at the first blast of the golden horn that was to summon them to the feast, the children, dressed in their Sunday clothes, hastened to the forest.

When they reached the castle it was ablaze with light, whilst all around, the tall firs, like giant Christmas-trees, were bright with various colored stars. They crossed the threshold to the sound of a million tinkling bells. Within all was light and glittering splendor. The ground and walls were covered with soft green moss, spangled with violets cut from amethysts and sapphires, whilst the carnations and snowdrops glistening between were cut from rubies and pearls, their tiny leaves, shedding forth rays of dazzling light. A large sun, formed of carbuncles and diamonds, shed over all

a light brighter than day. The children believed it a real sun, and the flowers real flowers. Beneath stood a gigantic fir, its topmost branches almost touching the sun, and seeming every moment as though they would burst into flames. Showers of sparks fell from the sun and, resting like stars on every needle-pointed leaf, there sparkled and glittered. On the branches hung every imaginable fruit, from the tiniest berries to the golden pineapple, all made and molded with exquisite skill of sugar-pastry; no confectioner could have fashioned them more beautifully than had the little fingers of the gnome-cooks. All around fluttered butterflies, dragon flies, and cockchafers, whom the gnomes had awakened from their winter sleep, and who, placed in this beautiful garden, believed that spring had really come, and dived into the petals of the glittering flowers or stole the sweetness from the sugar fruits.

The children moved about on the tips of their toes, holding each other's hands, and murmuring, "How beautiful!" Their guides had departed, and save for the butterflies and cockchafers they were alone. Then strains of sweet music broke the silence; nearer and nearer it came, louder and louder it swelled, as, two by two, a train of little musicians in glittering doublets, blowing and fiddling on tiny instruments, passed through a slit in the wall and formed a circle round the tree. Little men with long beards followed, and after them came the King, in whom George recognized his friend with the golden horn. Beside him walked the Queen, closely veiled. Both wore gold mantles ornamented with precious stones, and had crowns of flame on their heads. Then followed shining carriages drawn by rats and moles. In these sat the gnome ladies, all veiled.

Meanwhile the cooks ran about carrying beautiful cakes and goblets of golden wine. The children enjoyed it exceedingly, although the bites and sips were very small. The dwarfs then climbed the Christmas-tree and threw the fruit to the ladies. The children had their share, and when they could eat no more the King made them fill their pockets.

At length, being tired, they wished to return home. "Yes," said the King, "it is time you departed, for at midnight we return to our home beneath the earth. See, our sun grows pale; it bids us part. Yet, first take these in memory of our feast." And he handed each child a pretty covered basket. "There are little presents inside," he said, smiling; "use them well, and they will bring you happiness all your life long." Paler and paler grew the sun. The musicians departed, playing a sad and plaintive melody.

The children thanked the King for his kindness, wished him good-night, and were led from the castle. As they crossed the threshold their father stepped from behind the trees. He had waited there the whole time, and tried on all sides to enter the castle, but in vain. On their way home the children told of all the music and splendor, and their father marvelled, for he had heard no music and seen no light. To his eyes the castle and the forest trees were black and gloomy as heretofore. But thus it is ever. The older folk gaze into the world with troubled eyes, and thus see only darkness and gloom, where to the children's eyes all is light, happiness, and joy.

In the baskets a fresh surprise awaited them. They contained neither gold nor precious stones, only pretty little tools, dainty and bright as playthings. George and Paul each received every requisite for a shoemaker's trade. John and Karl a tailor's scissors, needle and thimble. Katie and Christel had each a spinning-wheel. The children laughed at the droll little presents, but their parents understood the deeper meaning that lay hidden beneath the apparent pleasantry, for they knew that the gnome is a friend to the industrious worker, and makes his work to prosper.

Years passed. A stately mansion replaced the shoemaker's cottage. Andrew and his wife were the richest people in the village.

This they owed to their children's industry, or rather to the gnomes' presents, for the brothers and sisters always used the tools the King had given them. George and Paul were celebrated shoemakers, and did work enough for four; John and Karl were first-class tailors; whilst Katie and Christel were famed throughout the land for their beautiful spinning.

The villagers said Andrew must have found a treasure whilst taking his Christmas-trees to market; but the shoemaker and his family knew better, and when seated in their new mansion they often spoke with grateful remembrance of the "Gnomes' Christmas Feast."

O the future sky is the bluest sky,
With never a cloud in view;
But the sky to-day is the truest sky,
And that is the sky for you!

For the work you have to do;
For the lives that lean on you;
Or gold, or grey,
'Tis the sky to-day,
And that is the sky for you!

There's a bird that sings to the future sky,
Where the blossoms drip with dew,
But the bird to-day makes the song of May,
And that is the song for you!

For the work you have to do;
For the hearts that cling to you,
'Tis the sweetest song
As it thrills along,
And that is the song for you.

—Frank L. Stanton, in the Chicago Times Herald.

FARM FOR SALE

AND MUST BE SOLD. 190 acres in the banner township of Markham, County of York, being 15 miles from Toronto, 1 mile from Locust Hill Station, C. P. R. There is a grain elevators, creamery, cheese factory, saw and grist mill, schools, churches, post office, blacksmith shop, all within a mile. There are on the farm three barns, two dwelling houses, sheds and other outbuildings; four good wells; well fenced and thoroughly tile drained; 5 acres of choice orchard; 15 acres of good standing hardwood timber. This farm is well adapted for dairying, grain growing or stock raising. The soil is of a rich clay loam and is situated in the best agricultural district of Ontario. It has been tilled for 40 years by one man, who died two years ago. It is leased for \$500 per annum, but must now be sold and divided. This is one of the money-making farms of Ontario. Possession given for plowing Oct. 1. Title indisputable. Parties from a distance will be met at Locust Hill Station by rig if notified and shown over the farm. For further particulars apply to—

C. D. REESOR, Executor, Cedar Grove, Ont.

DeLaval Alpha Separator

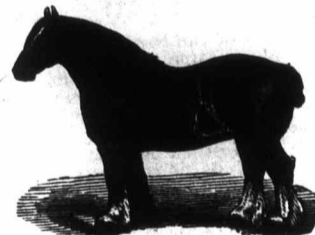


The best and most durable manufactured. FOR INFORMATION APPLY TO THE CANADIAN DAIRY SUPPLY COMPANY, 337 Commissioner's Street, MONTREAL.

AGRICULTURAL COLLEGE

WILL REOPEN ON THE 26th September of this Year. Full courses of lectures with practical instruction in subjects needed by young men who intend to be farmers. Send for circular giving information as to course of study, cost, etc. JAMES MILLS, M. A., President. Guelph, July, 1898.

Clydesdales for Sale



- 1 three-year-old imported stallion, by Prince of Millfield, out of Connie Nairn, by Prince of Wales. 1 four-year old, by Queen's Own, out of Imp. Candour, by Macgregor. 2 imported two-year-old stallions, by Macgregor. 2 two-year-old stallions, by Prince of Quality, out of imported dams. Have also a well-mated team of three-year-old Clyde Fillies, sired by Imp. Energy (7691), out of imp. mares.

These animals are all large size, good quality and sound. Terms reasonable. ROBT. DAVIES, Thorncliffe Stock Farm, TORONTO.

Spring Grove Stock Farm

Shorthorn Cattle and Lincoln Sheep. The noted sires, Golden Robe = 20396 = and Nominee = 19628 =, at the head of the herd. Representatives of this herd won two silver medals and the herd prize at Industrial Fair, Toronto, 1897. Prize-winning Lincoln Sheep are also bred at Spring Grove. Stock of all ages and both sexes for sale. Apply T. E. ROBSON, Ilderton, Ont.

CLYDESDALES



We have several imported Clyde mares 8 and 10 years old for sale at moderate prices. Some of them in foal to Grandeur. An imported Hackney mare in foal to Square Shot. Also Ayrshire bull and Heifer

Calves. Write for prices or come and see D. & O. SORBY, GUELPH, ONT.

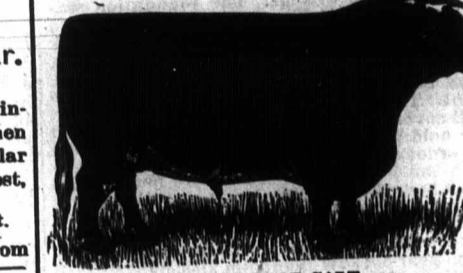
W. D. FLATT, Hamilton P.O. and Telegraph Office,



5 FASHIONABLY-BRED 5 YOUNG SHORTHORN BULLS

Also cows and heifers representing the leading popular families. Imported Golden Fame = 26056 = at head of herd. A few good Roadster horses. Farm six miles from Hamilton. Catalogue sent on application. Visitors met at G. T. R. or C.P.R. if notified.

Arthur Johnston, Greenwood P. O. and Telegraph Office,



40 FORTY PURE-BRED SHORTHORN HEIFERS AND COWS, FEW YOUNG BULLS

Berkshires OF CHOICEST BREEDING AND QUALITY FOR SALE

Good as we have ever had. Also a few young bulls

FOR SALE! Good Young Cows two years old, yearlings and heifer calves out of imported and home-bred cows, and the imported bulls, Royal Member and Rantin Robin. Come and see them, or write, if you want something special.

H. OARGILL & SON, Station on the farm. Cargill Sta. & P.O., Ont.

SPRINGHURST HERD OF SHORTHORNS

Am now in a position to offer a very choice yearling Roan Bull and a few Females of the leading Scotch families. H. SMITH, Hay, Ont. Exeter, G. T. R., 1/2 mile.

OAK PARK STOCK FARM. FOR SALE.—One three-year-old and two young SHORTHORN BULLS. Excellent pedigrees. Also, SIX YOUNG HORSES, sired by Capt. Hunter, Forest Leland and Bookkeeper. Good steppers. CAPT. D. MILLOY, Prop., PARIS, BRANT CO., ONT.

SHORTHORN FEMALES From Clorinda and Nellie females, and sired by the royally-bred Earl Warwick 2288. JAS. TOLTON, WALKERTON, ONT.

NOTICES.

The Government of British Columbia has appointed an Agricultural Commission, composed of Messrs. T. A. Sharpe, Supt. of the Dominion Experimental Station at Agassiz; G. H. Hadwon, a prominent agriculturist; and R. E. Gosnell, Provincial Librarian, who has been a valued contributor to the FARMER'S ADVOCATE. The object of the Commission is to enquire into some difficult agricultural problems of the Province with a view to their solution.

BUCKLEY WATERING DEVICE. The Buckley Watering Device, which is advertised in another column, is manufactured by the Kingston Foundry and Machinery Co. (limited), Kingston, Ont., and as an inside device has many points of excellence to recommend it. The basin is constructed in two patterns, and suitable for box and single stall. Upon examination at their works we found they were using an aluminium valve, which in itself has much to recommend it. Apart from being extremely sensitive (by virtue of its lightness) it will not corrode, and is so simply constructed as to be understood and operated by any one. It also has the special feature of retaining all water that is admitted, the advantage of which will readily be appreciated by a practical man. The water before one animal cannot pass on to the basin in the adjoining or any other stall. At a time when this is by improvement, we consider this one of the strictly up-to-date contrivances now offered to the live-stock public, which can be put in at moderate cost.

A FINE FARM FOR SALE. We direct attention to the advertisement in another column of a fine farm of 190 acres in the splendid agricultural township of Markham. The location for all conveniences and privileges is exceptionally good, and there is no better land anywhere than that in the district where this farm lies.

The Omaha Prize List. The prize list for the live stock section of the Trans-Mississippi Exposition has at last been issued and bears evidence of hearty preparation.

The prizes in the regular class lists are not large, but the specials added by the various breeders' associations are liberal and will make the total offerings quite tempting, the specials alone aggregating nearly \$10,000. The prizes in the regular list are only \$20, \$15 and \$10 for first, second and third in three of the beef breeds, while for the other beef breeds and the dairy breeds they are \$15, \$12 and \$8, the sweepstakes and herd prizes in each class being the same in amount as those in the sections by ages. There are sweepstakes prizes by ages for beef breeds and for general purpose breeds of \$20, \$15 and \$10, and down to \$12 \$9 and \$6; also grand sweepstakes for herds of \$75, \$50 and \$30, open to all best breeds, and same for all general purpose breeds. The premiums for horses are liberal, the first prizes being \$18, \$15 and \$12, and the best prizes for sheep are \$15, \$12 and \$9. The flock prizes are for ram and three ewes, all over two years; for pen of five ewes, two years or over, bred by exhibitor; and pen of two rams and three ewes, under two years, bred by exhibitor; a very unsatisfactory classification to exhibitors, the prizes being \$18, \$12 and \$9. The prizes for hogs are \$20, \$15 and \$12, with herd prizes in six different sections of \$25, \$20 and \$12; also sweepstakes for boar and for sow of the same amount. A full list of prizes for poultry of the various breeds is offered, the money being \$5, \$3 and \$1. Also for fat stock in all the breeds of cattle, sheep and pigs a liberal list of prizes is hung up. Entries close August 10th and stock must be on the ground from October 3rd to October 20th. Ages are computed to August 10th. Prize lists may be obtained by applying to Hon. J. B. Dinsmore, Commissioner, Omaha, Nebraska.

CHAMPION FRUIT EVAPORATOR

Drys all kinds of Fruits and Vegetables, producing a superior quality of clean white fruit. It is made of Galvanized Iron, is fire proof and portable. Used at Central Experimental Farm, Ottawa. CATALOGUE FREE. THE G. H. GRIMM MFG. CO. 84 Wellington Street, - MONTREAL, Que.

MAPLE CITY JERSEYS. 3 JERSEY BULLS FOR SALE 3 Another chance to procure a choice young Bull from that grand stock bull Massena's Son (17608) will be sold cheap if taken at once; also one bull two years old by Hugo Alpha of Oaklawn. W. W. EVERITT, Box 552, Osham, Ont.

M. FRANK CONNOR, B.A. Sc. (McGILL) Analytical Chemist and Assayer. ANALYSES AND ASSAYS OF ORES, METALS, ALLOYS, FUELS, WATERS, AND COMMERCIAL PRODUCTS. CONSULTATION REPORTS -om Bank St. Chambers, Ottawa, Ont.

SHEEP BREEDERS' ASSOCIATIONS. American Shropshire Registry Association, the largest live stock organization in the world. Hon. John Dryden, President, Toronto, Canada. Address correspondence to MORTIMER LEVY-ERLING, Sec., Lafayette, Indiana. 3-17-98

BELLEVILLE

BELLEVILLE BUSINESS COLLEGE

The system of training is Normal, Specific, Thorough, comprising full instruction and practice in I. BOOKKEEPING—Double and Single Entry, Business Papers, Law and Practice. II. SHORTHAND and TYPEWRITING—Office and Court Work. III. CIVIL SERVICE QUALIFICATIONS—Indexing, Precis-Writing, Statistics, English and French Options. This College is OPEN THROUGHOUT THE YEAR. Students may enter at any time. Now is the Time. ROBERT BOGLE, J. FRITH JEFFERS, M. A., PRINCIPALS. WRITE FOR CALENDAR.

2 Shorthorn Bulls 2

Of Canadian Duchesse of Gloster and Laverder breeding, from imported sires. Thos. Allan & Bro. OSKAWA, ONT.

Maple Lodge Stock Farm

One excellent Young Shorthorn Bull from exceedingly good milking dam offered for sale now. A. W. SMITH, Maple Lodge P.O., Ont. HERD ESTABLISHED 1855.

Willow Bank Stock Farm

Offers for sale 16 choice SHORTHORN BULLS, also a number of Heifers, sired by Isabella's Heir = 19550 =. Great milking qualities being a special feature of the herd. Address JAMES DOUGLAS, Caledonia, Ont.

12 SHORTHORN BULLS

from 3 to 16 months, by Indian Statesman; also, 20 heifers, 1, 2, and 3 years old, of the Mars, Fidget, Strathallan, and other equally well-bred families. All in prime shape. W. G. FITTIT, Freeman, P. O. Burlington Station and Telegraph Office.

Shorthorns, Berkshires

A splendid lot of young pigs for sale; also several choice heifers and heifer calves. Prices reasonable. JOHN RACEY, Jr., - Lonnoxville, Que. 17-17-98

4 SHORTHORN BULLS

from 5 to 18 months, by Elvira's Saxon 21624 and from Viola bred dams. R. MITCHELL & SON, Burlington Station, Nelson P. O.

FOR SALE! SHORTHORN, BERKSHIRES, SOUTH-DOWNS AND LEICESTERS. One Yearling Bull and a number of Heifers. Five young Brood Sows and suckers, not akin. Write for prices, or better, come and see. E. JEFFS & SONS, BONDHEAD, ONT.

Hawthorn Herd of Deep-Milking Shorthorns

Stock of both sexes for sale, of choicest breeding and good quality, prices right. WM. GRAINGER & SON, Londonboro, Ont.

ASHTON FRONTVIEW FARM

A. J. WATSON, CASTLEBERG, ONT. Shorthorn heifers, by Statesman; and Berkshires 8 weeks old, by Baron Lee; also one Baron Lee boar 10 months old.

FOR SALE—Shorthorn Bull, HOLD BRITAIN = 20397 =, bred by John Isaac, Markham, sired by Golden Crown (Imp.), first-class in every respect, having headed my herd for the past three years. F. A. GARDNER, BRITANNIA, PEEL COUNTY, ONT.

SPRINGBROOK HOLSTEINS AND TAMWORTHS.

Great bargains in Holstein calves, both sexes, during the month of July. Stock of best breeding and most noted strains; also, one yearling bull and two yearling heifers. A very select lot of Tamworths from two to four months old, by prize-winning imported Nimrod. It will pay you to write at once. A. C. HALLMAN, - New Dundee, Ont.

Maple Hill Holstein-Friesians

(THE GOLD MEDAL HERD OF 1897). SERVICE BULLS: DeKol 2nd's Paul DeKol Duke (Imp.), Sir Pledge DeKol (Imp.).

Can spare a few young things of both sexes from strictly first-class cows of DeKol, Empress Josephine Mechthilde, and other famous butter families. G. W. CLEMONS, ST. GEORGE, ONT.

"Gem Holstein Herd." STOCK FOR SALE!

We only keep and breed registered Holstein-Friesians. We have now some choice young bulls and heifers, also some older animals, all of the very best dairy quality...

HILLIS BROTHERS, BEDFORD PARK P.O., ONT. Shipping Station, Toronto. 7-7-0m

HOLSTEINS FOR SALE

Do you want the blood of DeKold and/or Netherland Hengerveld? These two cows have produced more butter in seven days than any other two cows that have been officially tested...

HENRY STEVENS & SONS, Lacona, Oswego Co., N. Y.

BROOKBANK HOLSTEIN HERD

50—Champions for Milk and Butter—50 A number of desirable young BULLS on hand from eight months to two months old, from our great milkers...

A. & G. BROS. OXFORD CO., ONT. CURRIE'S CROSSING.

ONE FIRST PRIZE BULL

Sire King of Highfield, winner of 1st prize over all Canada; dam, St. Lambert's Kathleen, made 21 lbs. 24 ozs. of butter in 7 days...

J. H. SMITH & SON, Highfield, Ont.

DON JERSEY HERD

NOW OFFERS 3 Yearling Bulls

Fit for service (3 golden-fawn and 1 squirrel-grey), and 1 six months (golden-fawn), by Costa Rica's son. He has 75 per cent. of the blood of Merry Maiden, champion sweepstakes cow...

DAVID DUNCAN, Farm 9 miles from Toronto market. -00 DON P. O., ONT

BRAMPTON JERSEY HERD

Offering high-class A. J. C. O. cows and heifers, also calves; 9 choice young bulls. High-grade cows in calf; and Berkshires.

A. J. C. G. JERSEYS FOR SALE!

Bulls fit for service, bull calves, heifer calves and young cows, from tested cows. Grand individuals. Prices right. Sire St. Lambert of Arofoot, whose sire was 100 Per Cent.

H. B. WILLIAMS, "SUNNYVALE FARM," -0 KNOWLTON, P.Q.

GLEN ROUGE JERSEYS.

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

CHOICE AYRSHIRES and EGGS for sale!

Two fine young Bulls fit for service, sired by Jock Morton, and from heavy milking dams. Also, Eggs for hatching from choice matings in B. Rocks, L. Brahmas, Black Spanish and B. R. Games at \$1.00 per thirteen.

JAS. McCORMACK & SONS, Rockton, Ontario.

FOR SALE.

The celebrated stock bull, Uncle Sam of Trout River 6974, by Baron Renfrew of Mansuraes 5862 (imp.); dam Nellie Osborne 5353 (imp.)...

W. F. STEPHEN, Brook Hill Farm, Trout River, Que.

AYRSHIRE BULLS

We offer for sale the fine bull, Baron Neidpath—2236—calved April 18th, 1896, from imported Bessie 2nd of Auchenbrae, and by Beauty's Style of Auchenbrae (imp.)...

THOS. BALLANTYNE & SON, "Neidpath Stock Farm," STRATFORD, ONT. Farm adjoins city, main line G. T. Ry. -0m

South Brant Stock Farm

T. BROOKS & SONS, BREEDERS OF HIGH-CLASS AYRSHIRES, IMPROVED CHESTER WHITES, AND PURE TAMWORTH FIGS. Young stock in these three lines for sale...

AYRSHIRES AND YORKSHIRES!

AYRSHIRES.—Choice young stock of either sex, from superior milking strains, on hand. YORKSHIRES.—Several litters of young pigs, equal to any we have ever had, ready to ship...

ALEX. HUME & CO., BURMBRAE, ONT. Importers and Breeders. -0 Heard's Station, G.T.R.

AYRSHIRE CATTLE.

KAINS BROS., BYRON, ONTARIO (London Station), now offer some choice females from prize-winning sires and dams, and of a strict business type. Prices right.

Ingleside Herefords.

UP-TO-DATE HERD OF CANADA!

Tamworths Berkshires.

H. D. SMITH, Compton, Que.

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.

Address: SYDNEY FISKE, Alva Farm, Knowlton, P. Q.

EASTVIEW GUERNSEYS

A few Bull Calves out of full sisters of "Ada of Eastview." H. B. BROW, EASTVIEW FARM, CHARLOTTETOWN, P. E. I.

LITTLE'S PATENT FLUID SHEEP DIP AND CATTLE WASH

THE ORIGINAL Non-Poisonous Fluid Dip. Still the favorite dip, as proved by the testimony of our Minister of Agriculture and other large stockmen.

FOR SHEEP:

Kills ticks, maggots; cures scab, heals old sores, wounds, etc.; and greatly increases and improves growth of wool.

CATTLE, HORSES, PIGS, ETC.:

Cleanse the skin from all insects, and makes the coat beautifully soft and glossy. PREVENTS the attack of warble fly.

BEWARE OF IMITATIONS.

Sold in large 75c. Sufficient in each to make five at from 25 to 40 gallons of wash, according to strength required.

Robt. Wightman, OWEN SOUND, ONT. Sole agent for the Dominion. -0m

SMITH EVANS, Gourrock, Ont.

Breeder and importer of registered Oxford-Down Sheep. Selections from some of the best flocks in England.

HENRY ARKELL, ARKELL, ONTARIO.

Registered Oxford Down Sheep. Animals of all ages and both sexes for sale at all times. Price reasonable. -0m

GOSSIP.

The Ontario Agricultural College and Experimental Farm has issued a handsomely illustrated pamphlet descriptive of the work pursued at that institution.

A. C. Hallman, New Dundee, Ont., writes: "My herd of Holsteins are in fine shape and good working order. The stock from my old bull, Flora's Sir Jacoby, of gilt-edge butter breeding, are true models of the dairy type...

R. HONEY'S HOLSTEINS, OTSOWOLDS, AND YORKSHIRES.

The hundred-acre farm of Mr. R. Honey, at Brickley, Ont., is situated some four and a half miles from the Village of Warkworth, in East Northumberland Co. and six miles from Hastings station on the Peterboro and Belleville branch of the G. T. R.

At the head of the Yorkshire herd is the stock bull Bluecock 2620, by Jock 2094 and out of Lady Nora 2676. He is a strong, smoothly made yearling that is proving himself a satily factory sire.

F. W. TAYLOR'S AYRSHIRES.

A short run over Mr. Taylor's farm, near Wellman's Corners, brought us to view the Ayrshire herd, in as fine form as we ever saw them and at present containing some finely bred, strongly-constituted young females and bull calves.

BRITISH ADVERTISEMENTS.

HAMPSHIRE DOWN SHEEP

Splendid mutton, good wool, great weight. This highly valuable ENGLISH BREED OF SHEEP is unrivaled in its rapid and WONDERFULLY EARLY MATURITY.

MUTTON AND LARGE PROPORTION OF LEAN MEAT, IT IS UNSURPASSED.

At the great Smithfield Club Show in London, December, 1897, Hampshire Down sheep held their own, the class for wether lambs with 30 entries exceeding in numbers that of any other breed...

JAMES E. RAWLENCE, Secretary, Hampshire Down Sheep Breeders' Association, Salisbury, England.

ALL PEDIGREE STOCK BREEDERS

should keep in touch with Herd, Flock and Stud movements by reading the Farmer and Stock-Breeder

The best, most complete and attractive agricultural and live-stock newspaper. Enlarged to 36 pages weekly. Frequent special issues, 40 to 48 pages.

Intending Purchasers of British Purebred Stock should send us particulars of their requirements, large shipments and extensive connections...

FARMER & STOCK-BREEDER, LONDON, ENGLAND

J. E. CASSWELL, Laughton, Folkingham, Lines., breeder of Lincoln Long-wool Sheep, Flock No. 46. The flock was in the possession of the present owner's great-grandfather in 1785...

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.

WE ARE NOW BOOKING ORDERS FOR SELECT YEARLING SHROPSHIRE RAMS

HEAVY WEIGHTS, STYLISH FORM, QUICK FEEDERS.

Also lambs of both sexes, sired by "Bonny Royal," bred by Mr. Mansell, England. Address JOHN DRYDEN, Brooklin, Ont.

20 COTSWOLD RAM LAMBS 20

Three shearlings and one aged ram; also a few females, all ages. FITZGERALD BROS., MOUNT ST. LOUIS, ONT.

LEICESTERS

Four Shearling Rams; also this season's crop of Ram Lambs. C. & E. WOOD, - FREEMAN P. O. Burlington Station. -0

Shropshire Sheep AND Chester White Hogs

W. E. WRIGHT, 0 GLANWORTH, ONTARIO.

Five Styles Threshing Engines

LOCOMOTIVE STYLE TRACTIONS,
LOCOMOTIVE STYLE PORTABLES,
RETURN TUBE PORTABLES,
RETURN TUBE TRACTIONS,

MOUNTED ON WATER TUBE BOILERS OR STANDARD RETURN TUBE BOILERS.

High Grade, High Speed,
Up to Date.

Send for Illustrated Circulars.



TWO STYLES OF SEPARATORS

NEW CHALLENGE SEPARATORS,
ADVANCE SEPARATORS.

THE BEST ASSORTMENT TO CHOOSE FROM IN CANADA.

If you want to get a first-class outfit call and see us.

THE GEORGE WHITE & SONS CO., Limited, London, Ont., Canada.

GOSSIP.

JOHN PULFER'S JERSEYS.

A brief call recently at Spring Valley Farm, one mile from Brampton, Ont., on the G. T. R. and C. P. R., served to satisfy us that the herd of Jerseys maintained there by Mr. John Pulfer and his son are being kept well up to the standard and are doing good work in the dairy. At the head of the herd stands the fine three-year-old bull Queen's Kaiser, a son of Kaiser Fritz, one of the prize winners at the Toronto Exhibition last year and a grandson of the celebrated King Coffee, with a long list of daughters in the charmed circle having records high up in the twenties. Prominent among the females in the herd is Hugo's Delight 74162, a Coomassie bred cow, a handsome lemon-fawn daughter of St. George's Heroine by Count St. George, first prize winner at the Royal Jersey Show, sold for \$2,600, and sire of Countess Madge 24726, with a record of 25 pounds in fourteen days as a two-year-old. Hugo's Delight is a granddaughter of Khedive, a son of imp. Coomassie and sire of Princess 2nd with her marvelous record of 46 lbs. 12 oz. in seven days, the highest score in the history of the race. Another striking feature in the herd is the maternally Spring Valley's Pride, a daughter of the imported Island bred Black Queen of Diamonds, with a record of 15 lbs. 8 oz., full sister to the great Island prize bull Welcome 166, and grandsire of Oakland's Cora, who tested 19 lbs. 9 oz. in midwinter and whose dam tested at the Provincial Fair at Guelph in 1898, in public competition, 2 lbs. 11 oz. in one day, or at the rate of 28 lbs. in seven days. Orange Dinah 80747, a richly colored and milky looking cow by Orange Carlo, is another of the pillars of the herd. She is a granddaughter of Le Brocq's Glory, by Farmer's Glory, first prize winner over all Jersey, and at the English Royal Show; sire of Beniah de Gruchy, with a record of 25 lbs. 2 oz. in one day, and of several other cows testing from 15 lbs. to 19 lbs. in a week. Two elegant daughters of this cow, Signal's Dinah and Dinah of Spring Valley, grace the herd, as well as several other young cows sired by the richly bred stock bull Yankee's Pogie 2248, for several years at the head of the herd, a son of the pure St. Lambert bull One Hundred Per Cent, sire of the champion bull at Toronto, London and Ottawa in 1897, and full brother in blood to the great Stoke Pogie 3rd, sire of 27 cows in the list averaging over 30 lbs. in seven days. Among the younger cows is Carlo's Stella, a lemon-fawn daughter of the great show bull Carlo of Arkian, three times champion over all Canada, and son of the imp. Island bred Brownay of Hillhurst, progenitor of a long list of prize winners at Provincial fairs. A bevy of beautiful yearling heifers and heifer calves bred from these cows, and a particularly promising whole fawn 5-week-old bull calf, by Queen's Kaiser, and out of Dinah of Spring Valley, completes one of the most thrifty and typical herds of Jerseys we have seen, of which a few of the younger things, as well as some richly bred and useful high-grade cows and heifers, are held for sale. Tamworth hogs are also bred on the farm, the stock being based on a Bell-bred boar and an O. A. C. sow of the most approved bacon type.

CHAMPION WINNERS AT THE ROYAL SHOW.

Following is a list of the winners of the champion and special prizes offered at the Royal Show at Birmingham. Champion prizes are not offered in all classes, most of these offers being provided for by the various breeders' associations, which accounts for some breeds not being included:

Hunters Improvement Society's gold medal for best hunter filly, B. G. H. Gee (Fancy Free); Hackney Horse Society's gold medal for best Hackney stallion, Sir Walter Gilbey, Bart. (Gay Danegolt); Hackney Horse Society's gold medal for best Hackney mare or filly, W. Waterhouse (Bury Daisy); Shire Horse Society's gold medal for best Shire stallion, A. Henderson (Buscot Harold); Shire Horse Society's gold medal for best Shire mare or filly, Lord Wantage (Hendre Crown Princess).

Shorthorn Society's prize for best male Shorthorn, P. L. Mills (Marengo); Shorthorn Society's prize for best female Shorthorn, C. W. Briarly (Jewel 2nd). Polled Cattle Society's gold medal for best Aberdeen-Angus animal, Earl of Roseberry (Edenhall).

Lincoln Long-wool Sheep Breeders' Association prize for best Lincoln ram, H. Dudding; Shropshire Flock Book Society's gold medal for best Shropshire ram, D. Buttar; Suffolk Sheep Society's gold medal for best Suffolk ram, Earl of Ellesmere.

National Pig Breeders' Association's gold medal for best Large White pig, P. L. Mills (Ruddington Lad); National Pig Breeders' Association's gold medal for best Middle White pig, A. C. Twentyman (Castlecroft Royal Emperor); National Pig Breeders' Association's gold medal for best Small White pig, D. Gibson (Metchley Fairy); British Berkshire Society's prize for best Berkshire pig, Earl of Carnarvon (for sow); National Pig Breeders' Association's gold medal for best Tamworth pig, J. Norman (Cliff Crocodile).

NOTICE.

THOM'S PNEUMATIC AND PROPELLER ELEVATOR ENLARGED CUTTER.

Possibly no invention in the farm machinery or implement line has given rise to as much criticism as the Blower, Enlarger White. There is now, however, no room left to doubt the success of the machine as made by Thom's Implement Works, of Watford. This being their third year of manufacture, this fact alone ought to convince everyone, as no reliable firm would continue to manufacture a machine that was not a success, and the Watford firm has been over twenty years in business, and has hundreds of Blower machines out, backed up by testimonials from reliable farmers. The introduction of this machine is working a revolution in the style of feed cutting machinery. The Blower Elevator is simple in construction and not liable to get out of order. Our readers, however, require to guard against imitations, as Thom's Blowers are covered by patents in both Canada and the United States. Already some imitations have been made and sold, but owing to defective construction have proved failures. For further information write Thom's Implement Works, Watford, Ont.

GOSSIP.

Mr. W. D. Flatt, Hamilton, Ont., reports the sale from his Trout Creek herd of Shorthorns to the E. S. Butler Co., Ridgeway, Ohio, of the nine months old red heifer calf Beatrice 3rd, by Royal Standard 23381, and the red five-year-old cow Missie of Neidpath 15th and her bull calf. This cow was sired by Indian Prince 13014, a son of the imported Victoria bull Indian Chief, and of imported Nonpareil of Kinellar. The dam of Missie of Neidpath 15th was imported Missie 7th, bred by Mr. W. S. Marr, of Uppermill, and was of the same family as Marengo, the champion bull at the Royal Show at Birmingham last month, he being bred by Mr. Duthie, of Collynie, sired by Scottish Archer, and out of Missie 11th.

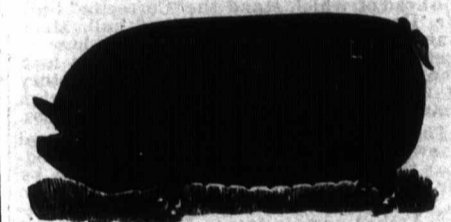
JAS. TOLTON'S SHORTHORNS, OXFORDS, AND BRONZE TURKEYS.

While in Bruce County, a FARMER'S ADVOCATE representative paid a visit to a widely-known breeding establishment, which justly stands in high repute. We found all parts of Mr. Tolton's comfortable homestead and the farm at Walkerton, Ont., in particularly good condition. The Shorthorn stock is in fully better shape than a year ago, and is made up of a dozen cows, three two-year-old and four yearling heifers, and this season's crop of calves, among which we notice three very choice bulls. The herd was originally founded upon Nellie, tracing to Helena, by imp. Baron Solway, imported by the late John Snell, and Florida, descended from imported Hart, by Colling's Wellington. The present stock bull, Earl Warwick 22886, by Earl of Moray 16188 and out of Melody 21792, by imported President, has developed into a good animal, which, from the history of his ancestors both in and out of the showing, cannot fail to be an impressive factor in this herd of strong, useful cows, which possess an abundance of quality and are capital milkers. Another somewhat noted family of Shorthorns is represented in two cows and two heifers descended from Fancy Rose, and tracing back to Princess, a branch of the noted Bates family. They are good individuals, and have been regular breeders. Since our visit to the farm last year, the grand cow, Cleopatra 1st 11011 (imported), by Gravesend (46461), and out of Cleopatra by British Flag, was added to the herd, and is in calf to imported Blue Ribbon. Her last calf, by War Eagle, sold for the highest price of any female of its age at Mr. C. M. Simmons dispersion sale. The old cow looks well, and with luck, her calf should be a good one. Mr. Tolton informed us that he could spare a few young females by Earl of Warwick, which, with few exceptions, are coming solid reds, and from what we saw are growing up very even and full of quality; in fact, one rarely sees animals of their value offered this year for sale.

The Oxford Down flock of sheep are in their usual bloom, and this crop of lambs have not only added numbers but the quality of the flock is also considerably strengthened, and Mr. Tolton reports an increasing demand for good young rams.

This we found the home of a very fine flock of Bronze turkeys. The flock was founded upon only the best blood obtainable. The present ton was purchased from Mr. W. H. Beattie, of his Farmers Daughter strain. Many of the hens were purchased from Mr. Bell's flock, and we were informed that a limited number of eggs would be shipped this year.

ENGLISH BERKSHIRES !!



Come to headquarters for pigs of either sex if you want Berkshires that will make you money. Orders taken for spring pigs.

Write for Prices to J. G. SNELL, SNELGROVE, ONT.

ROSE HILL FARM.

JAMES DORRANCE, SEAFORTH, ONT. BREEDER OF

REGISTERED - BERKSHIRES

Of the most approved type. Choice young stock always for sale. Write at once and secure a bargain. 18-2-y-om

LARGE ENGLISH BERKSHIRES.

Imp. Knight of Riverside, Bright Star, and Canada's Glory at head of herd. Boars ready for service and choice pigs two months old. Write to H. BENNETT & SON, St. Williams, Ont.

ENGLISH BERKSHIRES AND CHESTER WHITES.

Young boars fit for service; sows ready to breed. Also young stock of either sex ready to ship.

CAMPBELL & MARTINSON, Near Lewisville, G.T.R. -o Northwood, Ont.

English Berkshires.

Herd headed by three first-prize boars. Large size, strong bone, fine quality, and a choice lot of breeding sows. Orders booked for spring pigs.

GEORGE GREEN, Fairview P.O., Ontario. Stratford Station and Telegraph Office.

BERKSHIRES

One yearling boar, 1 boar pig, 3 mths. A few young sows. GEO. N. HARRIS, LYNDEN, ONT.

BERKSHIRES, BERKSHIRES, BERKSHIRES

My herd contains such blood as Baron Lee, Varna Duke, and other imported strains, with the celebrated sire, First Prize, at the head. 2-2-yo WM. McALLISTER, VARNA, ONT.

Harding's Sanitary Hog Trough, No. 27



IS INDESTRUCTIBLE, PORTABLE, SANITARY, CHEAP,

and answers all requirements of a desirable Hog Trough. One price only, 60 cents per foot. VOKES HARDWARE CO., Limited, 111 Yonge St., Toronto.

A CHOICE LOT OF lengthly, large English Berkshires from six weeks to three months old. Pairs supplied not skin.



YORKSHIRE Sows in pig of good breeding. Boars and sows, 3 months old, not skin, from prize-winning stock. Write H. J. DAVIS, Box 290, Woodstock, Ont., breeder of Yorkshires, Berkshires, Shorthorns, and Shropshires.

OAK LODGE HERD OF YORKSHIRES



Highest quality of bacon hogs, profitable to the feeder, and correct type for the packers. Orders now being taken for young pigs suitable for exhibition purposes. Largest herd in Canada to select from. Write for prices. J. E. BRETHOUR, BURFORD, BRANT CO.

YORKSHIRES AND COTSWOLDS!

Young Boars and Sows on hand now; also well-covered shearing and two-shear Rams, and half a dozen Ram Lambs. R. HONEY, WARKWORTH, ONT.

DURING July we offer York. or Berk. boars and sows, 2 months old, at \$6. Two York. boars, weighing close to 200 pounds, growly fellows, at \$14. We have also a choice Jersey bull to exchange for heifer of same breed. W. R. BOWMAN, Mt. Forest, Ontario.

FOR SALE.

Thirty-one bound volumes Coates' Shorthorn Herd Book; also five volumes Canadian Shorthorn Herd Book. Address—E. C. ATTRIL, CODERICH, ONT.

ESTABLISHED . . . 1868
INCORPORATED . . . 1887

OUR SILVER JUBILEE

25th Annual Western Fair
Besides 6 Provincial Fairs

THE WESTERN FAIR

London, Ontario, September 8th to 17th, 1898

THE OLDEST AND MOST SUCCESSFUL FAIR IN CANADA. AS A LIVE STOCK AND AGRICULTURAL EXHIBITION
WE ARE SECOND TO NONE.

THIS YEAR'S IMPROVEMENTS:

Seventy-nine Box Stalls added in the Horse Barns; Hospitals for Sick Animals; Several important additions in the Prize List; Fine New Art Annex, latest design; 5,000 square feet built to Carriage Building; Special Excursion Train Arrangements on ALL lines of Railway. Entries positively close in all classes on September 7th. Stabling and Space allotted as Entries are received. Prize Lists now ready, free.

LT.-COL. W. M. GARTSHORE,
President.

THOS. A. BROWNE,
Secretary.

HEADQUARTERS FOR
DUROC-JERSEY SWINE

Our herd secured nine of the first prizes out of the eleven offered at Toronto Exhibition, and a similar portion at London and Ottawa. We are justified in saying we have the best herd in Canada. First-class stock of all kinds for sale at all times. Address—TAPE BROS.,
Ridgeway, Ont.

E. D. GEORGE

PUTNAM, ONT.
Importer and Breeder of
The largest and oldest established registered herd in Canada. I make this breed a specialty, and furnish a good pig at a fair price. Write for prices.
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MERTON LODGE
Herd of Chesters and Tamworths are in full bloom, and are offering choice stock of
both breeds and sexes. Also booking orders for coming spring stock.
H. GEORGE & SON
CRAMPTON P. O., ONT.

THE AVON HERD of Chesters
Are in fine form. Orders are now being booked for April litters from notable strains.
Henry Herron,
Avon P. O., Ont.

IF YOU WANT
CHESTER WHITES
Write me for particulars. The imported sires, John A. 751 and Nonsuch 910, at head of herd.
JOS. CAIRNS,
LAMBTON CO. CAMLACHIE P. O.

BORNHOLM HERD
IMP. CHESTER WHITES!
Stock for sale at all times, all ages. Nothing but first-class stock shipped. Inspection invited. Correspondence promptly answered.
D. DeCOURGEY, BORNHOLM P. O., ONT.

HERMANVILLE TAMWORTHS.
\$100—Parkhill Mab—\$100
HER LITTER FOR SALE, FARROWED
JUNE 30TH, 1898.

A grand opportunity to high-class breeders to secure diamond-edged stock. Quality of dam and sire considered, no such litter has ever been offered to the swine breeders of the Dominion. Parkhill Mab's sire is O. A. C. 115-439; dam, O. A. C. 110-497. Her litter is sired by the St. Dunstan's College stock boar, King George—318—probably the greatest Tamworth boar in the Lower Provinces. Parkhill Mab—772—is herself a magnificent animal, thirteen months old, weighs 400 lbs., and is an ideal of the breed. Will receive orders for this litter, to be shipped about Aug. 1st, at \$10 to \$15 each, f. o. b., according to size and quality.
Hermanville Farm, Hermanville, P. E. I.

FOUR MONTHS
3 TAMWORTH BOARS 3
By a Bell-bred boar, and out of an O. A. C. bred sow. Prices right.
JOHN PULFER & SON, CRAMPTON, ONT.

GOSSIP.

The champion Hereford bull at the Royal at Birmingham was Mr. J. H. Arkwright's Red Cross, by Ross Cross Snd. The winner looked well, and has great depth, whilst he almost touches the ground, combining symmetry with substance in a marked degree, and is very evenly fleshed as well as very broad in front.

Among the purchases of the week at the Royal Show was that of the Shorthorn bull, Brilliant 68288, by Man-of-War. He was shown in the old bull class by Mr. Robert Taylor, Philive, Carnoustie, and was bred by Mr. J. Martine Graham, Haskelby, Rosseton. The price currently reported was £500, and his destination Buenos Ayres. This bull, it may be stated, was passed over by the judges.

English papers announce that Mr. J. Bowen Jones, of Eveson House, Montford Bridge, intends to dispose of his herd of Herefords, and flock of Shropshire sheep, in September. It is greatly to be regretted that the pressure of other business has been responsible for this step. Shropshire breeders will miss a sterling supporter of the breed who has long held a leading place in the showyard.

Mr. E. D. Smith, Ingleside Farm, Compton, Que. has issued a very handsome and complete catalogue of his excellent herd of Herefords. It is liberally illustrated with engravings of representative animals in the herd, at the head of which stand the "Corrector" bull, Sir Horace, and the "Eureka" bull, Mark Hanna. The females in the herd show in their tabulated pedigrees the blood of a long line of the most celebrated sires in the history of the breed, which accounts for the high character of the Ingleside herd of white-faces.

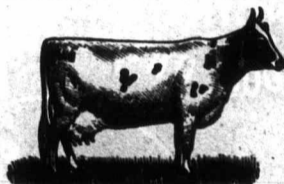
The champion Shorthorn bull at the Royal Show at Birmingham last month was the red-roan three-year-old, Marengo (60668), bred by Mr. Duthie, of Collynie, and shown by Mr. Philo L. Mills, Ruddington. He was sired by Scottish Archer, and his dam is Missie 118th, bred by Mr. Marr, of Upperrill, and got by William of Orange. The reserve number for the championship was the first prize yearling bull, Ingram's Style, shown by Mr. John Handley. He is a descendant of the famous champion, Sir Arthur Ingram, bred by the late Mr. Linton, of Sherriff Hutton.

From recent Australian exchanges we learn that the prospects of the sheep industry in that colony are indeed gloomy and discouraging. It is said that millions of sheep have perished this season. From the western Australia, Victoria, and New South Wales, the reports are very disheartening. Feed and water have become so scarce as to reduce the stock to starvation, and they are rapidly diminishing in numbers. Thousands of men are employed in cutting boughs from the trees for food for starving sheep, and in skinning the animals that perish in the mud at the watering places.

W. W. Everitt, Chatham, Ontario, writes:—"Jerseys doing fine; have just shipped Massena's Son (1769) to Mr. Valentine Planz, of Newstadt. I sold a son of this bull (Everitt Massena) to a Mr. Ryan, of Aytun, and he is so well pleased with him he has induced Mr. Planz to purchase Massena's Son, which speaks well for his stock. I have still two choice young bulls at present fit to head any herd, of good pedigree and excellent dairy qualities. We are constantly receiving correspondence through our advertisement in the FARMER'S ADVOCATE, and expect to clean out all we have for sale in a short time."

LIBERAL SPECIAL PRIZES.
The American Shorthorn Breeders' Association has issued a circular (No. 12) in which is announced their offer of a large number of liberal special cash prizes for Shorthorns in competition with other breeders at several State and other leading fairs for 1898. These are generally a duplication of the prizes offered in the schedule of the various exhibitions named, and range from \$20, \$15 and \$10 for first, second and third prizes, respectively, in the regular sections of the class, to \$50, \$25 and \$15 for sweepstakes by ages, and \$200, \$100 and \$50, to \$500, \$300 and \$200 for grand sweepstakes herd prizes if won by Shorthorns. The only conditions of entry for these prizes is that the pedigrees of the animals be recorded or accepted for recording in the American Shorthorn Herd Book. Parties interested should address the secretary, Mr. J. H. Pickersell, Springfield, Ill., for a copy of the circular.

SHORTHORN BREEDERS, TAKE NOTICE!
The Secretary of the American Shorthorn Breeders' Association gives notice that after January 1st, 1900, a fee of \$25 shall be charged for recording in the American Shorthorn Herd Book the pedigree of an animal over four years of age.



W. C. EDWARDS
AND COMPANY,
IMPORTERS AND BREEDERS

Laurentian Stock
and Dairy Farm,
NORTH NATION MILLS, P. Q.

Ayrshires, Jerseys,
Shropshires, Berkshires.

Our excellent aged herd of Ayrshires is headed by our noted imported bull Cyclone. Tam Glen heads the young herd, and Lisgar Pogie of St. Anne's heads the Jerseys. The young stock are all from time-tried dams.
ED. McLEAN, Manager.

We can be reached either by steamboat, the C. P. R., or C. A. R.; the C. A. R. making connections with the G. T. R. at Coteau Junction. Rockland is our station on all lines.

DENTONIA PARK FARM

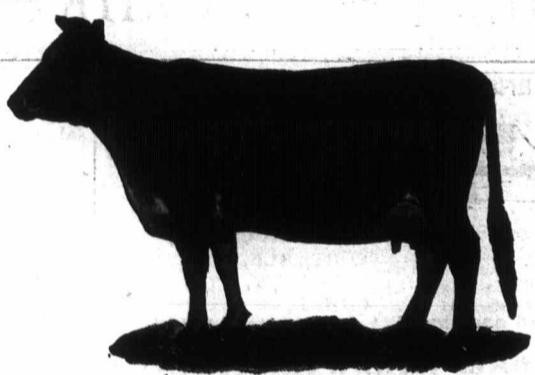
W. E. H. MASSEY, Proprietor.

HIGH-CLASS REGISTERED
JERSEYS

The following offered for sale to make room for additional imported stock soon to arrive:
A FEW GOOD COWS Also some
HEIFER AND BULL CALVES.

Prospective buyers should visit the farm. Full information given on request. Apply—

WM. PATTON, Supt., Coleman P. O., Ontario.
Farm located near East Toronto.



Mrs. E. M. Jones

OFFERS A FEW CHOICE JERSEYS OF RARE BREEDING.

Two Yearlings, in calf. Three Bulls, 2 to 18 months old.
Three Heifers, 1 to 9 months old.
MRS. E. M. JONES, Box 324, BROCKVILLE, ONTARIO, CAN.

WILD BRINO 10073. Record 2:19 1/2



WILD WOOD STOCK FARM.
DETROIT, MICH.

With ordinary mares in Canada, Wild Brino has demonstrated his ability to sire extreme speed. Among his get are: Little Jim 2:13 1/2, Dorothe S. 2:19 1/2, Eugenia 2:19 1/2, Attar 2:19 1/2, Collin 2:20 1/2, Surena 2:20 1/2, Sweet Violet 2:21 1/2, Mo S 2:22 1/2 and Wildcrocus 2:23 1/2 as two year olds, and many others with records of 2:30 and better. At the great Toronto exhibition of 1897 five of his get raced, two winning first money and three second money. Five others were exhibited in the show ring, three took first prize and the other two second prize. At the Breeders Meeting at Hamilton, Ont. same year, five of Wild Brino's get raced, three taking first money and two second money.
At Windsor, Ont. Thursday of each week. Terms \$25.00 cash with usual return privileges. Special attention given to mares while with us but at owners risk only. Write us when and how you ship and our men will meet boat or train.
Write for tabulated pedigree of Wild Brino. We also have the best bred thoroughbred stallion this side of Kentucky, "KAHBAR." Terms \$10.00 cash, return privileges. Tabulated pedigree on application.

WILDWOOD STOCK FARM,
85 & 87 Congress St., West, Detroit, Mich.

TAMWORTHS

My stock was founded on Hallman & George bred females, with Spruce Grove Model 465 at the head. Young boars and sows now ready for shipment, and other sows to farrow.
R. O. MORROW, - HILTON P. O.
NORTHUMBERLAND CO., ONT.

MENTION THE FARMER'S ADVOCATE

I HAVE NOW ON HAND A CHOICE LOT OF YOUNG

TAMWORTH SOWS
IN FIG. WRITE FOR PARTICULARS AND PRICES.
CHRIS. FAHNER,
CREDITON, ONT.

OAK HILL HERD OF TAMWORTHS.

Two choice young BOARS and one Sow ready for breeding; also young stock of both sexes. Write or call on
R. J. & A. LAURIE, - WOLVERTON, ONT.

THE NEW 14 H.-P. WATEROUS ENGINE FOR 1898



SO GREAT A FAVORITE in 1897, were unable to fill all orders.

Lightest engine for its power—5,300 lbs. Strongest for weight—handles 18 H. P. on the brake.

Ample Boiler Blows off under easy firing at heaviest work.

Economical on fuel and water. Said by all to be the

Handsome Engine on the market.

BUILT IN 14 and 16 H.-P. PLAIN AND TRACTION.

WRITE US FOR PARTICULARS OR SEE OUR NEAREST AGENT.

WATEROUS, BRANTFORD, CANADA.

REBUILT ENGINES, NEARLY EVERY MAKE, FOR SALE.

MAXWELL WEEDER!



A new implement, thoroughly tested and endorsed by prominent agriculturists. The most labor-saving tool on a farm. Send for catalogue.

David Maxwell & Sons, St. Mary's, Ontario.

TANWORTHS OF HIGHEST QUALITY!



I have the largest herd in Canada of different strains. Choice Boars and Sows from six weeks to three and four months old.

Orders booked for pigs from 14 sows and 4 boars. Prices reasonable. Write to J. H. SIMONTON, Box 304, CHATHAM, ONT.

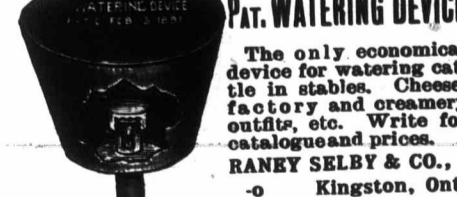
Oxford Herd of Winning Poland-Chinas.

Having won the herd prizes at Toronto, London, Ottawa, and Brantford Fat Stock Show, we feel justified in stating that we are in a position to offer you what you may ask for from gilt-edge prize-winning stock. W. & H. JONES, Mt. Elgin.

OXFORD CO. Mt. ELGIN.

Poland-China, Duroc-Jersey, Tamworth Swine. Oxford Sheep, Collie Dogs, Pekin Ducks, White Holland and Bronze Turkeys. A. ELLIOTT, POND MILLS P.O., ONT.

BUCKLEY'S PAT. WATERING DEVICE



The only economical device for watering cattle in stables. Cheese-factory and creamery outfits, etc. Write for catalogue and prices. RANEY SELBY & CO., Kingston, Ont.

Poultry.

L. and D. Brahmas, B. and W. Rocks, S. and W. Wyandottes, Black Minorcas, Indian Game and Red Caps. Young stock and eggs from above breeds. Eggs, \$1.25 for 13; \$2 for 26. Satisfaction guaranteed. JACOB S. SNIDER, German Mills.

ANNUAL SPRING SALE OF POULTRY.

Fifty Barred Rock Hens, bred to produce brown eggs. Price to suit the farmers. Also a few S. C. Leghorn Cockrocks. Eggs from B. P. Rocks, Silver Wyandottes and S. C. Leghorns, \$1.00 per 13. Pekin Ducks, \$1.00 per 11. W. R. GRAHAM, Bayside, Ont. Send 15c. for Poultry Annual and Almanac for 1898 to C. C. Shoemaker, Freeport, Ill., U.S.A.

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JOSEPH YUILL & SONS, Carleton Place, Ont., breeder of Ayrshire Cattle, Shropshire Sheep, and Berkshire Swine. Young stock for sale.

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GOSSIP.

The Jersey cow Halle Kinloch 80148, owned by C. E. Still, Kirkville, Mo., is reported to have made on a test for the week ending June 28th, 33 lbs. 15 ozs. of salted butter. The test is said to have been made under the supervision of a doubting Thomas, who offered to bet that no cow living could make 30 lbs. of butter in a week, but who has since made affidavit that this cow did the trick to his entire satisfaction. Her largest day's work was 7 lbs. 1 oz. In a six-week test she averaged 42 lbs. milk daily, and 26 lbs. butter weekly.

THREE CALVES AT A BIRTH. A very remarkable, if not unique, event in cattle breeding occurred on Tuesday last at Paddock Farm, Harwich, when an Irish cow belonging to Mr. Wm. Harris, of West Southfield, gave birth to three calves, all of which are quite strong and nearly the usual size. The cow and her little ones are going on well.—Farmers' Gazette.

CHAMPION HOGS AT THE ROYAL SHOW. The championship winner in the class of Large Royal Show at Birmingham was Mr. Philo L. Mills' boar, Ruddington Lad. The champion Berkshire was a sow shown by the Earl of Carnarvon, name not given. The champion gold medal for the best Tamworth went to the first prize sow, Mr. Norman's "Chief Crocodile."

DEATH OF MR. WILLIAM RODDEN. A Montreal despatch announces the death of Mr. William Rodden, at Plantagenet Springs, Quebec, on July 4th, at the age of 59 years. Mr. Rodden was formerly a very prominent business man in Montreal, having been for many years engaged in the iron foundry business, and for a long term an alderman of the city. He took a deep interest in agricultural matters, and devoted much of his time and means to the development of these interests. For many years he carried on one of the best stock farms in the Province of Quebec, being especially interested in Ayrshire cattle. He took an active part in connection with the establishment of a herd book for the registry of Ayrshires in Quebec, and, if we mistake not, was editor of the herd book.

D. H. DALE'S SALE OF SOUTHDOWNS. The fixture of a sale of sheep in the dogdays was a venture which few men would have dared to make, and the outcome was as we expected, a small but select company at the Glendale sale of Southdowns on July 7th. Among these present and who were buyers were Messrs. Geo. McKarrow, Sussex, Wis.; John Jackson, Abington; T. C. Douglas, Galt; A. Simenton, Blackheath; James Scott, Aberfoyle; George Telfer, Paris; R. McKown, Byron; W. H. Beattie, Wilton Grove; R. Pinkham, Lambeth; and John Dale, Glendale. The highest prices were: For single ram, \$30.50; for single ewe, \$18.50; yearling ewe, \$19.50; and for ewe lamb, \$22.50. There were not buyers enough present to take all the stock offered, even at prices which the average farmer could safely have invested in animals of such excellent quality and breeding, and the result is that Mr. Dale has still the nucleus of a nice flock left, which are good stock to have, and which will go on to make him money.

PROPOSED FLOCK-BOOK FOR BORDER LEICESTERS IN GREAT BRITAIN.

At a meeting of Border Leicester breeders who are interested themselves in the proposed Flock-book Society for Border Leicester sheep, held in the Edinburgh show-yard, Mr. W. S. Ferguson, on behalf of the sub-committee to which was remitted the task of drawing up a constitution and rules, submitted a printed draft of what they proposed. They also submitted a draft of proposed regulations for entry in the flock-book, the features of which were that there were to be three forms of registration, viz.: (1) flock, (2) ram, and (3) ewe. Flocks, it was proposed, should be registered under a number to be known as the flock number. Rams would be registered individually under a number to be known as the ram number, while ewes would also be registered individually, but only under the flock number. The rules as well as the entry regulations were given over *seriatim*, the former being generally adopted, with only an occasional verbal alteration. Considerable discussion took place in regard to the proposed flock-book regulations. The sub-committee was authorized to have the proposed regulations carried out, and to call a general meeting of breeders for the second day of the Kelso show, when the Society will be formally constituted and a council appointed.—Farmers' Gazette.

FIREWORKS CHANGED HANDS.

The well-known Hackney stallion Fireworks, imported, owned, and exhibited for a number of years by Horace N. Crossley, Sandy Bay Farm, Rossau, Muskoka, has changed hands, and now has his home at St. Catharines, Ont., where his services should be highly valued by owners of mares fit to mother high-class harness stock. While in Mr. Crossley's possession, he won two first, four second, three third, and three highly commended awards, including in three high commended awards, including in three high commended awards, including in three high commended awards, including in three high commended awards.

A NEWLY IMPORTED SHIRE STALLION.

Mr. H. N. Crossley has just imported the Shire stallion Rossau Royal Albert, bred by Patricia (10143), who traces back to Lincolnshire Lad II. dam Althorpe Dewdrop 17668, by Sampson; second dam Damsel, by Royal Albert. It will thus be easily seen that Rossau Royal Albert combines in his breeding the best blood of the Shire horses. Though only a two-year-old, he girthed 6 ft. 4 in. after landing from the vessel. He is 26 in. round the arm, has 12 in. of bone below the knee, and stands 16 hands. He is a rich dark bay, with two white hind pasterns and star on forehead. He is a good actor and walker, and has every appearance of making a good horse. His third dam is of the John Bull strain, being Star, by John Bull 1180. He won in England as a foal nine first and three second prizes. He also won prizes as a yearling and some sweepstake prizes against all age.

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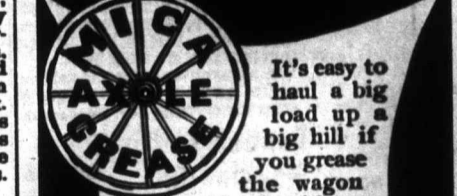
TESTIMONIAL: Crossed, N. W. S., Jan. 20th, 1898. Dear Sir— I have used several bottles of Fleming's Lump Jaw Cure, and on every of it to a cure cure every time I applied before the lump is too far advanced. I have cured the lump on one and old cattle. One application will cure any case at an early stage. Two applications never fail. It is no longer necessary for farmers to prospect to shoot their lump jaw. All that is necessary is Fleming's Lump Jaw Cure, and a little elbow grease to rub it in. Yours truly, JOHN CLARK, JR. Address: FLEMING BROS. ST. GEORGE, ONTARIO.

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GOSSIP.

Write to advertisers, mention the "Farmer's Advocate."

Referring to Prof. Henry's work on "Feeds and Feeding," which we offer elsewhere for sale and as a premium, the London (Eng.) Live Stock Journal says: "Probably the best book on stock feeding now before the public." The volume can be cordially recommended, and is certain to occupy a leading place as one of the most able and exhaustive that has appeared.

Mr. A. W. Smith, Maple Lodge, Ontario, writes:—"In mentioning in your issue of June 15th the sale of our stock bull Calithness to Hon. Mr. Greenway, the name of his dam was not given in full. She is Second Countess of Maple Lodge, by Conqueror—8327—, of Cruickshank's Clipper family. This cow is making an enviable reputation for herself as a breeder. Her first calf won first prize as a three-year-old at the Provincial Fat Stock Show, Guelph, 1896. Calithness is her second calf. Her third calf has not been shown, but is at the head of H. G. Arnold & Son's herd, of Maidstone, and gives great satisfaction as a sire. Her fourth calf was first-prize bull calf at Toronto last fall, and is now at the head of the Agricultural College herd at Guelph. Her fifth calf, a heifer, accompanied Calithness to the West to try for honors there. And in addition to good breeding qualities, she is like all our Constance family of cows, an excellent milker, giving us over 50 lbs. of milk per day. We have some young Constance bulls now growing up quite as promising as Calithness."

EASTVIEW, A NOTED DAIRY FARM IN P. E. I.

Through the kindness of the genial proprietor, Mr. E. R. Brow, we were driven out from Charlottetown to the above-named farm, and had the pleasure of looking over his beautiful herd of Guernseys, which have won a reputation for themselves at many of the leading shows in Canada. This farm is situated four miles east of Charlottetown, and being somewhat elevated takes its name from the splendid view to be had of the country lying to the eastward. It contains 210 acres of good arable land. The soil is a sharp clay, and is naturally well drained, and produces good crops of grain and roots. The buildings are well adapted for a dairy farm. The cattle barn is a commodious structure, with the stables and storage for roots in the basement. There were thirty-five milch cows in the stables at the time of our visit, thirteen of which are pure-bred Guernseys of one of the best milking strains in Canada. The balance of the herd consists of high-grade Guernseys and Jerseys, together with a lot of young pedigreed stock. Isaleigh Conqueror is the stock bull used at present. He was bred at Isaleigh Grange, Quebec, and is a grand dairy sire of good Guernsey type, plenty of size and good constitution. The young stock from him are vigorous and thrifty. Among the other noted Guernseys that have been and are still at "Eastview," we might mention the following: Adele III. (imp.), dam of the sweepstakes cow (Ada of Eastview) at Toronto in 1895 and 1897, owned since 1896 by McNish Bros., Ont. Mr. Brow considers Adele the best cow he ever had. She died of milk fever in 1896. There is still on the farm a daughter of Adele's, Azelle of Eastview—4906— (full sister to Ada, above mentioned), and several granddaughters. Mr. Brow considers Azelle fully the equal of Ada. She is certainly a grand cow, true to type, with a splendidly developed udder, very strong in fore-quarter. Another grand cow is Linda of Eastview—4904—, imported as a calf in 1889 from the herd of the late Sir John Abbot. She is out of Columbine 2434, and by Juno's Presto—1628—, and has in her back pedigree such sires as Presto of Free—571—, thought by some to be the best bull ever exported from Guernsey. This cow was dam of Estelle of Eastview—2329—, sweepstakes at Montreal in 1896; also of Liddy of Eastview—7523—, and Linda II. of Eastview—8213—, all first-prize winners at the leading shows during the last three years. Another good one is Liddy II. of Eastview—2324—, out of Liddy, and got by Adele's Gypsy—2333—, a son of imported Adele III. This is a two-year-old, and dropped her first calf last November, and is now giving 30 lbs. milk per day, and gives promise of developing into a record breaker at maturity. A beautiful yearling is Burnice of Eastview 9911. She is out of Azelle, and by Adele's Gypsy—a very handsome, typical Guernsey that will be heard from in showings in the near future. A full sister to the above, Gem of Eastview, a last year's calf, took first for heifer calf, at last sweepstakes female at Halifax exhibition last fall. Mr. F. S. Peer of Mt. Morris, New York, the expert dairy judge, who is at present in the Channel Islands, is selecting a heifer for this farm, which is to be the best that can be got. Mr. Brow is also about importing a bull from the herd of the Hon. Sidney Fisher, Adele of Eastview, Liddy of Eastview, and Presto's Linda of Eastview. That figured so conspicuously at the Toronto Industrial in 1897, and which are now owned by McNish Bros., went from this farm.

Mr. Brow is one of the most intelligent and enthusiastic breeders we ever met, and has unbounded faith in the Guernsey as a milk and butter producer. We feel that his success is assured, as he has founded Eastview herd on the best of Guernsey blood, and is continually infusing new blood that will bring it up to a still higher standard. Such breeders are a great benefit to a country, as they provide the means for grading up the common dairy stock to a paying level. Mr. Brow advertises in this issue a few bull calves out of sisters of the sweepstakes cow Ada of Eastview.

PETER ARKELL'S OXFORDS.

The Oxford Down flock of Peter Arkell, Teeswater, Ont., now number some 300 animals, one-third of which are breeding ewes either directly imported from England or bred from imported stock. The rams employed in the flock last season were bred by Wm. Arkell, Kempford, England, and imported last fall. They were first and second wherever shown, and from the appearance of the youngsters their value is not wholly confined to their showing ability. Mr. Arkell has always taken an active part in the large best premium competitions for many years; many of the show rings winning for many years; many of the best premiums competed for. This season's crop of lambs will bring out upwards of sixty odd rams, among which of course will be a choice but all equally well bred, and are a strong, well-covered, even lot.



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