

**PAGES
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FARMER'S ADVOCATE

AND HOME MAGAZINE

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

Vol. XXXII.

LONDON, ONT., AND WINNIPEG, MAN., OCTOBER 15, 1897.

No. 440.

EDITORIAL.

Notes from the British Association for the Advancement of Science—Fence Wire Lightning Rods.

To the Editor FARMER'S ADVOCATE:

In answer to your request for notes on points of special interest to agriculturists in connection with the recent meeting of the British Science Association in Toronto, I may say that much was said and done of direct and indirect interest and benefit to all classes of the community. The Association was divided up and worked in eleven sections, holding their meetings in different rooms and buildings. On an average about eight leading addresses were made each day in each section, or between eighty and one hundred addresses on each of the five chief days. Only two papers treated specially of agricultural subjects. These were both very interesting and useful. One was an illustrated address showing the results of fifty years' experimenting at Rothamsted, England, on the absolute and relative values of different kinds of manures and different combinations and rotations of manures upon the cereals during a period of fifty years, by Dr. Armstrong, F. R. S., a leading analytical chemist. I suggest that when his paper is published you quote it at length. Readers of agricultural chemistry will find considerable that is new in matter and method, and to every farmer it will be interesting and useful. Dr. Saunders, F. R. C. S., Ottawa, read a paper on experiments in cross-fertilization. It was made specially interesting to those present by his showing the parent plants and pointing out the combination of the peculiarities of the parents as displayed in their progeny.

I had the opportunity of discussing Mr. Baty's fence-wire lightning rod with Professor Lodge, D. Sc., of Liverpool. He is an eminent physicist, and the author of "Lightning and Lightning Guards," the standard English work on the subject of which it treats. He said that with proper ground connection Mr. Baty's plan would work well; the conductors, to be effective, must terminate below in water or damp earth; and that well-galvanized fence wire is an excellent conductor, much better than copper or its compounds. He disapproved of twisting the wires tightly: two loose cables of three wires each are far better than one tight one of a half-dozen strands. Provided the ground connection be proper, the wires may be stapled to the building without insulation. He saw no objection to Mr. Baty's plan of attachment. He seemed to think that a building whose highest lines and all projecting points were thus protected by single wires or loose cables terminating in damp ground would be well guarded.

J. DEARNESS, I. P. S.

Our Butter Trade.

BY F. J. SLEIGHTHOLM, B. S. A., PRINCIPAL OF WESTERN ONTARIO DAIRY SCHOOL.

Our butter trade is growing faster than our knowledge concerning it. Our Governments are doing handsome things to help us in developing the industry, but they do not seem able to make many good buttermakers; nor to teach creamery owners that well-constructed buildings, trained buttermakers, and a competent executive board, etc., are positively paying investments; nor to instill ambition into those who make our butter; nor to convince those who supply the milk that theirs is the chiefest end of the industry; nor even to prove that skim milk has a dollar and cents value above the price received by some of our Western creameries for that article manufactured into "curd." In consequence, we presume that our Governments think that these matters are for individuals and for companies to consider and to develop; and who will not agree?

Our market quotations give abundant proof of our behindhandedness in buttermaking education. Why should there be any "creamery seconds"? Why should not all our butter be "fancy fresh"? In Canada it should not be truthful that "a buyer wanted 100 boxes of fine creamery to fill a shipment order, but failed to get it," while in the same paragraph "undergrades were plentiful, but slow sale," and that at two and three cents less than choice would bring.

And again, "very little choice creamery is offered," and "market bare of really good stuff, no lack of secondary and inferior stuff, and its presence keeps rates down." And such quotations as these have been, and are, very common in the Canadian journals of trade. And this state of affairs is the result of the work done at the farm and the factory. The former we leave for the present. There is a prevailing idea even among makers of butter in creameries that it does not require very much training to make good butter. Our cheese industry stands where it does as a result of the persistent training of makers in uniform, up-to-date methods of manufacture. Our butter trade will attain to similar eminence *only* as a result of similar training. Men, or women either, do not grow up with an inherent knowledge of how to make good butter any more than with an inherent knowledge of how to make a good cheese or a good self-binder, or a sideboard or an electric motor.

A second proof of our buttermaking inability may be seen in our exhibits, or, rather, lack of exhibits, at our fall exhibitions. Several causes combine to produce this result, but the chiefest is lack of ability in the maker. The prizes offered at Toronto—our best exhibition—were quite high enough to act as bait to the progressive man, but the butter was not there—indeed it was one of the most belittling exhibitions of creamery butter that a stranger could gaze upon. If buttermakers had faith in the excellence of their product they would be heard from at our exhibitions. And, too, while some makers get along fairly well in cold weather, the hot weather draws out the skill, if there is any. Summer buttermaking has been but little studied in this country, and is not equal to the demands made upon it. It must be remembered, too, that many of our makers have been accustomed to make only for a Canadian trade; but now, when by our refrigerator system we are bringing English markets close, it behooves us to remember that the Englishman has been long trained in judging butter and will not accept, at such prices as we desire, anything but a choice and regularly uniform article.

And here we come to the pith of our butter trade—the possible extension of our industry with England. The most stringent regulations with respect to the branding of our products as "Canadian," and the prevention of any one, Canadian or American, using such brand on anything but Canadian goods, may, we believe, be left to the governing power. Some—a considerable amount, we believe—of our prestige in the land across the water must, and will, be gained by the trademark "Made in Canada," and may infringements be prosecuted with fullest Canadian justice. None of our chiefest agricultural money-producing exports—cheese, bacon, wheat, beef (and butter in the not distant future)—have ever gained, but lost, in bearing identification or keeping company with American goods.

We are in some danger here. Many are troubled that our excellent cold storage carrying capacity has not been more fully used. Acting on this and trying to fill up with something, good or bad, is to be deprecated inasmuch as quantity is secondary to quality and will never gain us any desirable place on the English market. Far better that space should go unused than be ill-used. It is to be deplored that much of the milk made up in the

private dairy could not be diverted to the co-operative creamery, and thus relieve the market of the great mass of stuff that so utterly demoralizes the trade and leaves so little profit in its wake. But we cannot stay to think here.

Cheese is the great competitor of the butter trade as regards the raw material, and will continue to be, but it will be less so when farmers think more. Cheese and whey vs. butter, buttermilk and skim milk is a subject worth some thought. When more thought is expended upon it, more butter will be made and less cheese proportionately. Sixteen to seventeen cents *net* for butter-fat and 95 pounds of by-product per 100 of whole milk is a desirable situation for a farmer to occupy, even in the face of the present price of cheese. At the present (and past) price of veal and pork, such by-product is worth 25 cents per 100 pounds. But this is not all. The first and chiefest basis of all profitable herd rearing is skim milk. When cheese is made there is no skim milk, and therefore the first and chiefest basis for the successful rearing of a dairy herd is not available.

Whey as usually available is not in any sense a substitute for skim milk in this particular. Proof abundant and eye-offending awaits the unbeliever in the farmyard of any cheese factory district. What of it! One of three things. First, factories must operate the year 'round, making butter during winter, and the cows whose calves are to be reared must freshen at the opening of the butter season. Secondly, where cheese factories operate, farmers must make butter in winter and rear the needed calves at that period. Thirdly, make butter the whole year.

To show how mercenary-minded some dairymen (?) are, we need but to mention that the patrons of some few creameries in Western Ontario, not knowing the value of skim milk, have sold it to make "curd," realizing about 15 to 18 cents per 100 pounds. Surely whey is good enough for such, and Canada has little to expect from them by way of improvement of her industry. We are pleased to know that a number of factories that were approached could not be caught by the chaff of curdmaking. The foes of our butter trade are not few. We mention these things by way of offering a protest against the extravagant waste practiced by many factory patrons. If the cheque the patron receives monthly from the factory is his only revenue, our butter trade receives but secondary support. The right and intelligent support of this growing trade finds its beginning and chiefest mainstay in the intelligent, systematic, continuing development of the dairy herd; while the development of the dairy herd, which is the outcome of well-directed brain power, will also be largely the outcome of our growing butter trade.

In conclusion, the butter trade of Canada has already entered upon a great revival. If education keeps pace for the next decade, Canada's butter will have no superior in the world's markets. The raw material that makes the best cheese in the world will also make the best butter, if the requisite skill and training be brought to bear upon it. But there must be scholastic training, and it must come now. It would seem to the writer that it would be well to have one of our dairy schools devote its entire energy to this one branch of the dairy industry. A recognition of the importance of this trade in this way would give us prestige with the outside world, and accrue to us financial good through years to come.

Premiums.

We assure our readers they need not hesitate to try for any of the valuable premiums offered in this issue (page 463), as we have always maintained the practice of sending out articles exactly as represented, and give the very best value possible in every case. We have to thank you for the good work you are already doing in procuring for us so many new subscribers. Write for agent's outfit.

THE FARMER'S ADVOCATE AND HOME MAGAZINE.

THE LEADING AGRICULTURAL JOURNAL IN
THE DOMINION.

PUBLISHED BY
THE WILLIAM WELD COMPANY (LIMITED),
LONDON, ONTARIO, AND WINNIPEG, MANITOBA.

JOHN WELD, MANAGER.

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Co-operation Amongst French Farmers.

Co-operation amongst European farmers is of recent development, and originated in Switzerland about 1888, but its extension in that country has been such that there are now some 300 working societies. In practice the system usually adopted is as follows: Some fifteen or twenty peasants in a parish combine together to purchase a pure-bred bull, which becomes their collective property. A herd book is opened and each member of the society is expected to register for service the name of at least one breeding cow of pure blood, recognized as such by a committee of experts. The finest of the calves thus procured are inscribed in the herd book as breeding animals, the others are sold. The expert committee periodically inspects the breeding animals to see that they are well kept and that the young animals are properly reared. By such means the value of the herd is materially increased. A somewhat similar system, as outlined by the British Journal of Agriculture, more in favor in French societies, appears to be the purchase of stallions and bulls of good quality, which are put up to auction among the members. The use of these animals for service is also generally either limited to the members of the society or else only available to outsiders upon a payment of a higher fee.

A curious instance of association for the common ownership of a herd is recorded from Castellar, near the Italian frontier. The care of the collective herd (which consists of draft oxen, she asses, and some milch cows) devolves upon each of the members in turn for one week, he during that time enjoying the service and produce of the herd. The animals are pastured on the land belonging to the members of the commune, or on private enclosures where the owner permits. When a member dies or retires from the Association the herd is divided up and the society re-formed. If an animal is sold or dies the price or loss is divided among the members in proportion to the interest of each in the herd. Mutual insurance of cattle has considerably developed of late years in France, and in one department alone fifty-five associations have been established for the purpose.

In several districts in France agriculturists have succeeded in dispensing with the services of the miller by the formation of co-operative milling associations. The charge made by the society for threshing, winnowing, and milling the grain is about six and three-quarter pence per hundred-weight of grain. The net profits at the end of the year are divided as follows: Twenty per cent. is placed to the reserve fund, five per cent. goes to the shareholders or associates who have spent eight shillings at least in milling or other work. Under the existing arrangements each member receives

back the flour made from his own grain, but it is hoped that in the future it may be possible to put all the grain into a common stock. In another society twenty-five per cent. of the profits is divided among the shareholders proportionately to the amount of grain delivered during the year, and a further twenty-five per cent. is divided among the co-operative and other bakeries which have affiliated themselves to the mill in order to insure a sufficient outlet for the flour. Co-operative bakeries are numerous in France. Generally speaking, they are consumers' associations buying the flour required; but there are some country districts where these associations receive the farmer's wheat as is necessary for the food of his family and give an equivalent of bread in return: whatever the price of grain, the member receives sixty-five pounds of bread for every seventy-eight pounds of wheat. A second syndicate, the members of which pay no subscription, takes the wheat from the farmer, grades it, and passes it on to the miller. The wheat is valued once a month according to current quotations, and the farmer receives a ticket for bread to the value placed on his wheat. The price of bread is also determined once a month, by a committee, based on the net results of the month's trading.

In many districts of France the farmers have found it necessary to have recourse to combined action to protect their growing crops from destruction by insect and fungoid attacks. Usually the members of a syndicate contribute to its funds in proportion to the area they cultivate, while children are paid by the association to collect the grubs and mature insects—a halfpenny per pound being a not uncommon price. Other plans of destruction exist by means of sulphate of copper solutions. The destruction by frost is combated by burning some material yielding a heavy, thick smoke, and so cover the vineyards, etc., with an artificial cloud. Other syndicates exist for protecting the crops against the depredations of game, for maintaining country roads in good order, and other purposes. Mutual insurance by co-operation among the inhabitants of a locality against the destruction of crops by hail is not considered practicable, on account of the heavy risks and the too limited area covered by such associations. But syndicates can usefully negotiate with hail insurance companies to secure advantageous terms for their members, and this has been successfully done in many districts.

Preservation of fruits and vegetables on a co-operative basis is also in vogue, either by evaporation or by canning. The manufacture of wool, too, is done on a co-operative basis. Each member receives a ticket, on which is entered the quantity of greasy wool delivered by him to the manufacturer; the wool is washed, and the weight of the washed wool is also entered on the ticket, as well as the quality. In June or soon after the manufacturer submits a number of patterns to the committee of the syndicate, who decide on the types to be reproduced, and the wool is then worked up into the various kinds of cloth selected for reproduction. The quantity of cloth made in 1894-5 was about 1,200 yards. The syndicate is endeavoring to form a reserve fund, which will allow of prompt payment upon delivery of the wool to such flock owners as stand in need of it.

Fair Management Discussed.

To the Editor FARMER'S ADVOCATE:

SIR,—Pardon me for not sooner writing to express my high appreciation of the very valuable and interesting reports of the leading fairs which have appeared in the FARMER'S ADVOCATE during the last two months. The report of our fair was admirably written, and I have heard it highly spoken of in many quarters. I have just been reading the article on "Fair Management" in your issue of 1st October, and I heartily concur in many of the remarks contained therein. What you say in regard to judges and judging is very appropriate, for I can assure you that a fair management usually goes to a good deal of trouble to secure honest, capable, and impartial judges. I hope that many exhibitors will read your article on this subject, because it contains the best of advice. I note what you say in regard to a circuit. Do you not think that inasmuch as the weather gets cold down here earlier than it does in Toronto or London, that for that reason the Montreal Exhibition should precede that of either London or Toronto? I know that there is a serious difficulty on the part of exhibitors from the West in coming to Montreal first; but, on the other hand, we have nearly always had unfavorable weather when our exhibition was held in September; and more than this, we have had cold weather, which is always a great drawback to our exhibitions. I thoroughly agree with you, however, that there should be a definite understanding in order that exhibitors who prepare stock might

have an opportunity of getting from one exhibition to the other without loss of time and with the least possible delay. It is proposed next year to hold an exhibition in Quebec, and it has been proposed to me that some arrangement might be made whereby Montreal, Sherbrooke, Quebec, and Three Rivers might make a circuit, with Ottawa coming afterwards; but in any case the matter should be carefully considered before dates are fixed, and I am glad that you have drawn attention to this subject. The greatest difficulty that we experience is in getting exhibitors to make their entries in proper time, and although our entries closed only a week before the opening of the exhibition this year, nearly three-quarters of the entries were received after the date fixed for closing. This delay causes us a great deal of trouble and renders it impossible to publish a reliable catalogue, which we would so much like to do. Do you not think it would be fair to charge exhibitors who are thus tardy double entry fees? Unquestionably much good is effected by means of exhibitions, and they exert a valuable educational influence; but I would like if you would kindly aid us in securing a large number of exhibitors from the farming classes, properly so-called. My observation leads me to the conclusion that the ordinary farmer is more and more withdrawing, and that exhibiting is left to what I might call the professional exhibitor or breeder. While these men go to great trouble and expense to produce fine specimens in each breed, it is sometimes a question if our exhibitions are bringing out the average farmer and showing what he is doing as much as they ought. Excuse me for writing such a long letter. I wished merely to express my thanks for your articles on exhibitions. Yours very truly,

S. C. STEVENSON,
Manager and Secretary Montreal Exposition,
October 5th, 1897.

[NOTE.—The subject dealt with by Mr. Stevenson in the foregoing letter is one of very great importance, that will bear considerable additional discussion by others interested, both exhibitors and those upon whom devolves the responsibility of managing the larger exhibitions. We desire—and this was our object in taking up the question at the outset—to see such arrangements made as will be mutually as advantageous as possible for all concerned, and Mr. Stevenson is entitled to thanks for the fair and suggestive way in which he has opened the discussion. We shall be glad to hear from others on the subject. In so far as the Winnipeg Industrial and other large Manitoba summer shows are concerned, dates do not conflict with those in the East, as the former are held in July or early August.—EDITOR.]

The Impending Deficiency of Breadstuffs.

As the relation of supply to demand very largely influences the price of any commodity, in order to arrive at the probable condition of future price of breadstuffs, such as wheat, rye, etc., a view of the situation as it is revealed by universal statistical evidence should cast considerable light upon the future condition of agriculture. In the *Forum* for October Mr. C. Wood Davis points out, in an exhaustive article, that the production of breadstuffs is rapidly falling behind the rate at which the "bread-eating" population of the world is increasing.

The population of European lineage has increased since 1871 37.5 per cent. Owing to the cessation of war among the nations of European blood, greater freedom from destructive epidemics and improved sanitary conditions, the bread-eaters are increasing at a much greater rate than ever, and annual additions are nearly one-half greater than twenty-five years ago. Such an increase of the consuming element necessitates progressively greater annual additions to the areas employed in growing the bread-making grains, and current additions, instead of being nil, as they have been during the last thirteen years, should be nearly one-half greater than in the earlier seventies. Of the greater populations, those of the United States, Russia, Hungary, Germany, Great Britain and Ireland, Austria, Italy, and France increase at rates diminishing in the order named. With the notable exception of Russia, and possibly Turkey, the economic condition of the "bread-eating" populations has improved in all Europe since 1870. In the United Kingdom, for instance, the dietary of the industrial classes has long been a comparatively high one, yet unit consumption of wheat has there been four per cent. greater in the six years ending 1895 than in the preceding six; while unit consumption of meats, fruits and dairy products has increased in even greater measure. At the same time unit consumption of potatoes and other low or cheap forms of food has diminished in a relative degree. In France the unit consumption of wheat rose from 7.2 bushels per annum, in the eighth decade, to 8.01 bushels for the five years ending with 1895; while the consumption of rye, maslin, buckwheat, and potatoes declined in unit consumption in much the same measure.

Since 1871 Europe's population has increased 30 per cent., while European rye fields have shrunk 15 per cent.; those under spelt and maslin 23 per cent., and buckwheat 40 per cent., while the average of potatoes has increased 27 per cent. All Scandinavia has been exceptionally prosperous, and shows great advance in the quality of food

consumed, annual unit consumption of wheat having increased about 100 per cent. within twenty-five years. In Belgium the situation is much the same as in Scandinavia, while in Italy little change in unit consumption has taken place.

In Russia the unit consumption of wheat has declined 14 per cent. and that of rye 13.5 per cent. since the close of the eighth decade. On the other hand, the unit consumption of maize and potatoes has increased, of the latter some 13.5 per cent.

In relation to the consumption of the bread-making grains in Argentina, Brazil, Uruguay, and Chili, few satisfactory data are available, but the recent European emigration has doubtless increased the proportion of wheat and diminished that of maize in the dietaries of Argentina and Uruguay, while Chilean wheat consumption has long been relatively to population, but little below that of Belgium. In Brazil emancipation and higher prices for coffee have stimulated the use of wheat and other high forms of food. Australian consumption of wheat per unit is the greatest known. There is little reason to believe that any considerable change in unit consumption has taken place in the United States for a number of years.

Investigations pursued concurrently with the assembling of data relating to population, acreage and production show that unit consumption of wheat by the "bread-eating" world has increased steadily since 1870, while unit consumption of rye, spelt, maslin and buckwheat (grains grown as exclusively for bread as is wheat) has steadily declined, and in much the same measure as unit consumption of wheat increased. So marked has been the change in the acreage under bread-making grains, relatively to the consuming population, that the area employed in growing breadstuffs is now over two million acres less than fifteen years ago, and but twenty million acres greater than in 1871. Had the rate of area increase equalled the 37.5 per cent. at which the "bread-eaters" increased, additions to the bread-grain area since 1871 would have aggregated much more than 80,000,000 acres, instead of the meager 20,000,000. That the acreage was not excessive in the early part of the eighth decade is evident from prices then obtained and the absence of unmanageable surpluses of grain. The "bread-eating" population increased from 1871 to 1897 37.5 per cent., while the increase of wheat during the last twenty-five years has been 25.6 per cent., of rye a decrease of 4.1, spelt and maslin a decrease of 22 per cent., and buckwheat a decrease of 40.8 per cent.; a total average increase of 7.6 per cent. The wheat area of the countries inhabited by "bread-eaters" who procure less than one per cent. of their supplies from Asia and North Africa is shown to have increased in twenty-five years 25.6 per cent., as against a population increase of 37.5 per cent. Outside the regions inhabited by the "bread-eaters" there are in Asia, Persia, Asiatic Turkey, and North Africa some 40,000,000 acres employed in growing wheat; but exports from all such regions aggregate in recent years less than 20,000,000 bushels per annum, and decline gradually as the population of such countries increase; hence for the bread required the populations of European lineage must rely for more than 99 per cent. upon the "contributory areas" they occupy. The wheat-growing area of the United States in 1897 is quite 3,000,000 acres less than fifteen years earlier. It is noteworthy when the United States ceased adding to its wheat fields those of the world ceased to keep pace with the increase of the "bread-eating" population, and are now greatly deficient. So great is the deficit that, with acre yields no greater than the average of 12.7 bushels of the last twenty-six harvests from "contributory areas," the output would be 275,000,000 bushels—or the net product from some 27,000,000 acres—less than the present needs.

Argentina and Uruguay alone promise material additions to the world's wheat-bearing area, and together they have an area potentially wheat-bearing about equal to three or four of the Central American States. For years to come development must be slow, as the essentials of population is lacking, a dearth of laborers being yearly experienced at seed time as well as during harvest.

Mr. Davis, after reviewing the prices obtained for wheat at various dates during the last 200 years, shows that the low prices of recent years were due to a succession of good crops since 1832, which added to the visible supply an immense amount of wheat as well as rye. Reserves have now been reduced to the lowest point consistent with safety. The United States is credited with a crop of 525,000,000 bushels, but official indications point to one of only 460,000,000 bushels. Moreover, Asia and Africa are credited with ability to export 10,000,000 bushels, but such exports, if made, must in a large part result from crops not yet sown. Summing up the universal situation the writer shows that but three-fourths of the required bread can be provided, unless larger drafts than now seem possible can be made upon reserves reduced to the lowest point consistent with the safety of exporting nations.

The situation will be brought into clear relief by stating that in the last six years Europe has grown and imported an annual average of 1,655,000,000 bushels of wheat, of which some 210,000,000 bushels yearly have been used as seed, the remaining 1,445,000,000 bushels for food; the annual average unit supply having been 3.8 bushels. This year there are 392,000,000 European units to be fed, requiring 1,490,000,000 bushels of wheat. The present situation shows that after Europe shall have exhausted

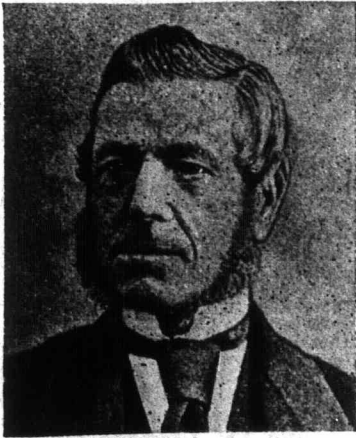
all possible supplies from harvests of 1897, and such crops as may be harvested prior to July, 1898, there will apparently be a deficit of the equivalent of 700,000,000 bushels of the bread-making grains, with no resource except meager reminders from former harvests, and with no substitution possible except Europeans can be induced to eat corn bread.

Mr. Davis concludes by saying that to meet each year's increasing requirements the world must annually add one-half more acres than ever before. And what is likely to be the situation if the world should again harvest in succession three such crops as those of 1879, 1880, and 1881, crops which gave acre yields materially below that which now results in a deficit of one-fifth, or possibly one-fourth, the bread required?

Death of Jas. S. Smith.

It is with regret it devolves upon us to chronicle the demise of Mr. James S. Smith, on Oct. 4th, at his late residence, Maple Lodge, Ont. His activities in the business world have been cut off for some time owing to failing vigor, so that his end was not unexpected.

Mr. Smith was born in Caithness, Scotland, in 1816. To him his native land was always "home," and he was laid at rest with a sprig of heather fresh from the hills he often trod laid upon his breast. He came to this country in 1842, settled in Toronto, and until 1846 was in the employ of Ogilvy, Michie & Co. It was during this period that many friendships were formed with those who afterwards were leaders in political and social life, and in the trade and business of the country. During this time Hon. George Brown began his editorial work in Canada, and Mr. Smith assisted him in turning the press when the first copy of *The Banner* was printed. He had lived in the Township of McGillivray for 41 years, where for a long period he was a leader in every movement for the advancement of common good of the community. Mr. Smith's liberal views and his anxiety that every man should have an equal chance caused him to fight, and with success, for free education when it was indeed a battle. In 1860 he organized the McGillivray Agricultural Society, and held the office of president for sixteen years. In 1863 he was



THE LATE JAMES S. SMITH.

elected reeve of McGillivray, and held the office till 1866, being one of the county councillors at the time McGillivray was detached from Huron and added to Middlesex. Since then, as long as he was able, Mr. Smith has always taken a lively interest in municipal affairs. For two Parliaments—from Confederation till 1875—he sat in the Ontario Legislature for North Middlesex. He was recognized by the Hon. Edward Blake and other leaders of the Liberal party as an able representative, being especially valued in the House committees, and because of his varied experience he gave valuable aid in the shaping of legislation. As a farmer, Mr. Smith was recognized as a leader among those who held progressive views, and was one of the most successful stock raisers and exhibitors in Ontario, taking a great pride in his flocks and herds of Leicesters and Shorthorns. Until his death, ever since the organization of the Ontario Agricultural College, Mr. Smith has been a member of its Advisory Board. He was of kindly disposition. Few could "welcome the coming and speed the departing guest" as he could. His many friends will not soon forget his dauntless courage, his fearless, honest expression of opinion, his warm sympathy with any one's distress, his appreciation and struggle for truth and right, and his hearty satisfaction in a friend's success. After an extensive business relationship and long intimate acquaintance, the *FARMER'S ADVOCATE* can bear testimony to his honorable business principles and genial personality. He was a staunch Presbyterian, in which church he was for many years a devoted member and elder and an unceasing worker. A reformer in politics, in business, and in the church courts as well, he was an active spirit during "the disruption," and his heart thrilled as he recounted the events of 1843; but he loved the old forms of worship, and was very jealous of any changes. His estimable wife and family of one son and four daughters still survive him. The farm and stock business will still be continued by Mr. A. W. Smith, who has borne the responsibility during his father's illness. The funeral, conducted by the Rev. George Sutherland, Fingal; Rev. Alex. Grant, St. Mary's; Rev. W. G. Jordan, Strathroy; and Rev. Mr. Coutts, Ailsa Craig, was attended by a large concourse of friends and acquaintances on Oct. 6th. His remains were interred in Carlisle cemetery.

STOCK.

Raising and Feeding Steers for Profit.

It appears to be the general opinion among farmers this year that any person who is lucky enough to own a number of steers cannot fail to make a profit out of his stock, either by selling them off for stockers or feeding for Christmas or the spring markets. No doubt there is a greater opportunity to make a profit on stockers this season than there has been for some years past. The prospects for those who stall-feed cattle this coming winter are, to say the least, very encouraging. But there are a few matters that require attention at all times in raising and feeding steers for profit.

The dairy industry having proved so profitable throughout the country has induced many farmers to breed and feed their stock in such a way as to develop the milking qualities of the herd. It has also been found that beef breeds are usually unsuitable for their business, and cows of the various dairy breeds have been substituted to a great extent. Our only remark is, "Proceed with the good work." But while doing so remember that steers of the dairy breeds are just as unsuitable to feed for beef. By this we mean grades of the dairy breeds, for we do not suppose there are many pure-breeds raised for this purpose. Steer calves of this class may be kept as slick and good looking for the first two or three months of their life as those of beef breeds; afterwards they begin to show their breeding, and if beef is the object they are in most cases kept at a loss to their owner. As they make very good veal at this age it is a suitable time to dispose of them. Then arises the question, "How can dairy farmers raise young stock to consume the coarse foods raised on the farm?" In years past it has been the custom with a number of farmers who raised grade stock of the beef breeds to destroy when young or send to the block at six or eight weeks of age their surplus stock of calves, especially if they were engaged in mixed farming or dairying. If this system is continued, which is not probable, owing to the shortage in stockers at present, it will be an opportunity for those who handle the dairy breeds to procure calves to raise for beef. Otherwise it will be advisable to purchase stockers (grades of beef breeds) to consume the surplus food and convert it into beef. Although they are rather scarce at present, still there are numbers of lean cattle sent to the shambles every week, many of which might be profitably fed for beef and thus avoid glutting the market with inferior stock. Among them are to be found grades of the various dairy breeds. These are what dealers usually class as "scrubs." It is almost certain that they are a source of profit to no person, from the man who raises them until they are served as second-class fare on the tables of the inhabitants of towns and cities throughout the country. The late Professor Stewart, author of "Feeding Animals," estimates two-thirds of a full ration as required for the food of support. This being the case, it shows how unprofitable it is to raise and sell lean stock, as they have received too little beyond the food of support from which the profit is derived. In order to leave a fair margin for profit they should realize almost the same price per pound as finished cattle. But only in times of scarcity do they command anything like the price of beef, except for first-class animals. Under proper management the practice of purchasing stockers to feed should be a profitable business. Of course if the man who raises stockers for others' profit does not succeed in life he may rest with an easy conscience that he may at least be remembered by the next generation as a philanthropist.

It is an undisputed fact among the best stock-raisers that the system of early maturity is the only method by which success may be attained. The stock require to be maintained in a healthy condition and kept growing steadily. It is not considered advisable to feed much grain until the cattle are being finished for market. The greatest importance should be attached to feeding a ration suitable to secure rapid growth. The bulky part may consist of oat straw, ensilage or corn fodder and chaff, with sufficient roots to assist digestion and increase the appetite. Clover hay may be fed to advantage in place of the oat straw for one or more of the daily meals, especially in the case of yearlings. In fitting for beef much the same food may be used, with the addition of ground oats and peas. The grain should be fed sparingly at first and gradually increased until they are getting all they can digest properly. This is the critical period. The greatest gain in flesh and weight is now required at the least possible cost. There is a difference in the constitutions of individual animals, and one pound too much grain may put an animal off its feed, and at this stage it is not likely to thrive so well afterwards. When clover hay is not too expensive it may be fed largely in place of the straw and chaff, but a little variety in the bulky ration is always satisfactory to the animals. If it is convenient to run the coarse fodder through a cutting box it may be made more palatable by mixing with the grain and pulped roots. But under no consideration should the grain be fed separately. By adopting a careful system along these lines the stock may be marketed at least a year earlier than otherwise.

Lamb Feeding Experiment No. 2 Conducted at the Iowa Experiment Station.

In the *FARMER'S ADVOCATE* of May 15th, 1896, the details of an extensive experiment in lamb feeding were given by Prof. C. F. Curtiss, of Iowa Experiment Station, who conducted the work. In order to still further determine the relative economy of producing mutton and wool, compared with other farm products, their value on the market, the requirements of the markets, and the age at which it is most profitable to feed and sell, rather than to point out breed distinctions, a second feeding test has been conducted with lambs of the following breeds and numbers: 10 Shropshire ewes, 10 Southdown wethers, and 9 wethers each of Shropshire, Oxford, Suffolk, Lincoln, Leicester, Cotswold, Dorset, and 8 Merinos.

The lambs used were the best representative specimens of the various breeds procurable, and were purchased, with the exception of 5 Suffolks, 8 Merinos, and 4 Shropshire ewes, from leading Canadian flocks, "owing," says Prof. Curtiss, "to greater convenience in finding suitable representatives, due to larger and more numerous well-kept flocks, and a greater variety of breeds." Most of the lambs used were rams when purchased, and were afterwards operated on by the method used with the lambs in the first experiment (twisting and turning the testicle) soon after they arrived at the Station. This operation was quite satisfactory, so far as the feeding results were concerned, and has the advantage of being much safer with large lambs, but it did not make the lambs as smooth as they are after castration.

The lambs were taken from grass September 1st and separated according to breed and put into quarters for the feeding test. These quarters consisted of plain board shed room 12 x 14 feet and an open yard adjoining, about 12 x 30 for each breed. All of these apartments faced the south, and the conditions were as nearly uniform as could be made. Hay was fed in racks inside the shed, and grain in troughs in the open yard. A liberal supply of bedding was kept in both shed and yard, and the doorways always kept open, except in case of one or two driving storms. The sheds were arranged so as to prevent injurious drafts of air. A box of salt was constantly accessible in each pen. Hay was fed first morning and evening, and the grain followed. Water was given about 9 or 10 o'clock a. m. each day. All feed was carefully weighed in, and everything left uneaten was weighed back and deducted. But very little feed was left, however, as the amount was so regulated it was usually cleaned up promptly. Each breed was carefully fed up to its full capacity on a ration uniform in composition to all.

The preliminary feeding continued through the first fifteen days of September. Prof. Curtiss remarks in bulletin No. 35, just issued, describing the test, that "lambs need to be led up to full feeding very gradually and with a great deal of caution. When once successfully started, the critical period is past; but overfeeding and irregularity should be carefully guarded against at all times."

The first and final weights and gain of the one hundred and six day test period were as follows:

	Weight Sept. 16.	Weight Jan. 1.	Total Gain.
10 Southdown lambs.....	646	1024	378
9 Shropshire lambs.....	739	1133	344
9 Oxford lambs.....	8-3	1240	387
9 Suffolk lambs.....	8-25	1210	385
9 Lincoln lambs.....	848	1292	444
9 Leicester lambs.....	772	1197	425
9 Cotswold lambs.....	767	1246	479
9 Dorset lambs.....	741	1155	414
8 Merino lambs.....	695	907	312
10 Shropshire ewes.....	667	1000	333
	7503	11404	3901

The grains used were evenly mixed and fed in that condition each day. During the first fifteen days the ration mixture consisted of 50 pounds of bran, 100 of oats, and 100 of shelled corn; then the ration was changed to 25 pounds of oil meal, 50 of bran, 200 of oats, and 200 of shelled corn, and this was continued to the 20th of October, when 10 pounds more oil meal was added to the mixture and continued to the close of the experiment. Each lot was fed to its full capacity of this grain ration together with roots and hay. At the beginning of the test period the lambs were eating from one pound to one and a half pounds per head daily. At the close, Jan. 1st, the daily grain ration ranged from one and a half to two and one-fourth pounds per head daily.

THE EWES AND WETHERS COMPARED.

The ewe lambs were light eaters. Their gains were also comparatively light, but the cost of production was not much greater than the average by the wethers in this second experiment. On the market the ewes sold five cents higher than the wethers of the same breed, and in the slaughter test they dressed 1.67 per cent. more net carcass. On the block they showed slightly more fat, but their fine bone and plump, neat carcasses made them attractive and profitable. The price put on them by the buyers clearly indicates that there is no discrimination against ewe lambs, as there formerly was against the heifer. It should be mentioned incidentally, however, that after the ewes are a year old they are not as desirable as wethers, owing to the fact that the joints do not break as readily. Free, clean breaking of the front pastern is the test applied by meat dealers to distinguish between a lamb and a sheep. One that breaks is a lamb; one that does not is a sheep, regardless of actual age.

THE BREEDS COMPARED IN FEEDING.

The average gains made by the lambs are neither as large nor as economically produced in the second as in the first experiment, though the difference is not great. This distinction is doubtless due to several causes, among which are the prevalence of intestinal worms, the unfavorable weather, and a poorer quality of grain.

The relative rank of the breeds in the comparison and cost of gains is much the same in both tests. The Cotswolds again lead, with Lincolns and Leicesters closely following. The general average of the Southdowns and Shropshires is the same and their rank is next to the long-wooled breeds for economy of production, and in this they are followed closely by the Dorsets and then in turn by the Oxfords and Suffolks. The Merinos have quite materially improved their feeding record in the second experiment, due no doubt to the Rambouillets used being larger and more growthy than the Merinos used in the first experiment.

RATE AND COST OF GAIN.

The whole number of lambs, 109, in the first experiment, and 91 in the second, not including the ewes, made a total gain of 8,246 pounds from 69,134 pounds (dry matter) of feed—a rate of one pound of gain for 8.38 pounds of dry matter in the feed consumed, and an average of .448 pounds per head daily for the entire lot. The total gain of 8,246 pounds was made at a cost of \$245.69 for feed consumed, or an average cost of 2.97 cents per pound of mutton produced in both experiments. This calculation makes no allowance for value of fleece, except as it entered into the gain, nor does it take into account the value of manure or expense of labor in feeding.

THE MARKET COMPARISON.

The second shipment of lambs was loaded at the Station yards about noon January 4, and arrived at the Chicago stock yards about 5 a. m. the following day. They were sold and weighed up in the forenoon at the following weights and prices:

	Weight.	Price.
10 Southdown lambs.....	950	\$5 75
9 Shropshire lambs.....	1040	5 00
9 Oxford lambs.....	1140	5 40
9 Suffolk lambs.....	1110	5 00
9 Lincoln lambs.....	1200	5 25
9 Leicester lambs.....	1120	5 25
9 Cotswold lambs.....	1140	5 25
9 Dorset lambs.....	1070	5 50
8 Merino lambs.....	880	5 00
10 Shropshire ewes.....	900	5 65

The lambs were killed on the following day, and dressed out the respective percentages of mutton given below:

	Per cent.
10 Southdowns.....	55.26
9 Shropshires.....	52.38
9 Oxfords.....	50.08
9 Suffolks.....	52.52
9 Lincolns.....	51.08
9 Leicesters.....	51.87
9 Cotswolds.....	51.31
9 Dorsets.....	54.11
8 Rambouillets.....	49.27
10 Shropshire ewes.....	54.55

Total 91..... 52.29 average.

Reasons for Lighter Hogs.

"It is not an easy matter to cater to the public," remarked a farmer, who had raised and fed a fine lot of hogs for market, when he was informed that though his hogs presented a good appearance they were too fat and too heavy for the packers. If he had consulted the packers before he had fed so much grain and other foods, or asked the consumers in the town what kind of pork they favored, or even consulted his own household, he would have been informed that they had lost their appetite for fat pork. The large packing houses are continually warning farmers against raising heavy hogs. They give as reasons that the English market calls for long, lean bacon, and such is the case. But if the English market were not consulted at all, we have sufficient reason for going out of the business of raising heavy hogs.

Whether hogs are bought alive or dressed by the packing houses, the price per pound is reckoned on both pork and lard. Now we have a substitute for lard placed on the market, composed of mutton, beef tallow and cottonseed oil, which can be sold cheaper than the genuine article. It is not considered as good as the lard, but it appears to "fill the bill," and it is not to be wondered at that packers are calling for less fat pork.

In coming to the producer's part of the question, we have many times endeavored to prove that a pound of pork can be produced cheaper on hogs under 200 pounds in weight than after they have passed that stage. Small-sized hogs are also more suitable for the dairy farmer, as he can utilize the waste products from the dairy to better advantage. Experiments have proved that hogs can be raised as cheaply on skim milk, shorts and peas as on corn when it is fed alone. The corn, being rich in carbohydrates, produces fat pork, while the milk ration is rich in protein, and produces more lean meat. At the same time it is preferable for young hogs in building a large frame, and makes stronger bone and muscle. Corn-fed hogs have a weak constitution and are more subject to disease.

The position in which the farmers of this country are placed for producing light, lean pork, and the tastes of the consumer happily running in the same direction, which circumstances are quite in keeping with the many other advantages which, taken together, serve to make our business as farmers more prosperous.

Attend to the Calves.

Fortunate is the man who taught his calves that were dropped last spring to eat meal when they were young. If he supplies them with proper food now that the milk ration has been discontinued, he will have no difficulty to keep them in a thrifty condition. Otherwise they will go into winter quarters in a condition that it would have been better for their owner, in many cases, had he raised them when quite young with a small quantity of gun powder. There is no sadder spectacle than a meek-eyed calf carrying a barrel large enough for two. It will require at least two or three months pampering to get such calves in growing condition; while very often they are stunted for the remainder of their natural days. The changing from milk to dry food is a critical period. As the pastures have become very dry this season, other green succulent food must be provided. A field that was seeded with clover last spring is a suitable place for the calves to run in the autumn, but it is unwise to allow them to eat frosted clover. The stable is the most inviting place for them to lie at night after this date. If they are given a dry bed and a good ration of the most appetizing foods available, they will acknowledge the attentions in a way that will be satisfactory to the owner.

The Foal Merits Attention.

It seems to be in England as on this side the water, the foals are frequently neglected and allowed to lose their milk flesh at this season of the year. One C. A. has the following to say in the *English Live Stock Journal*:

"In their natural and proper desire for economy many stockowners postpone the (so-considered) evil day when autumnal assistance in grain foods must be commenced; hence the animals get thin as the winter coat grows, until, for very shame, the oats, the corn, the bran, and the roots are at last allowed. During the delay, what has happened to mare and foal? The glossy coat of the mare, which indicated that she was again in foal, has turned dull and rough, and both she and the once playful foal have lost their lively energies, and move about in dull and stately depression. The supply of winter food, which at one time was more or less optional, has now become compulsory, if the owner is to be in possession of a healthy mare and yearling next May Day; and the food must be not only regular but very liberal.

"Now contrast this late and compulsory winter feeding with the early and optional autumnal beginning, and the advantages of the latter will be apparent to all. The early coming of the foal puts and keeps his digestive organs in such an efficient state that it will make a horse of him at eighteen months old, and during succeeding winters he will do well if fed mainly on the refuse of the farm; and at the marketable age of four he will be far better and more valuable than if raised by the niggard method, whilst the cost of the early-feeding plan will have been far less. I have tried and seen carried out many times both these methods of management, and I am confident in my statements. If the mare gets poor during the winter she may suffer abortion, which is a serious loss to the owner, but, if matters are not so bad as that, she will still be shorter of milk for the next foal, and expenses will accrue in consequence.

"No animal on the farm is neglected like the ordinary brood mare, and if a farmer can bring his mind to a sense of liberality only to the working horses he would do better not to breed horses at all. Ordinary horses pay slowly enough even when well fed, and when half-starved they must be a source of serious loss."

St. John, N. B., Exhibition.

The most exciting event of the first day, and perhaps during the whole period of the exhibition, was the opening ceremonies by Hon. Sir Wilfred Laurier, when an immense crowd rallied around the grand stand to welcome the Premier.

The first herd of cattle visited by your correspondent was owned by D. M. McKenzie, of Nerepis Station, New Brunswick. It constituted an exhibit of twelve head of Holsteins. At the head of the herd stands a bull of exceptional merit. One of his progeny, a year-old heifer, attracted special attention. The judge, Dr. Twitchell, said she was the most wonderful animal of her age he had ever seen. Mr. McKenzie captured eleven Holstein prizes. N. M. Black, Amherst, N. S., had present a very fine herd of Herefords. Sonnet, the leader of this herd, tips the scale at 1,970 pounds, and is a splendid type of the breed. Mr. Black carried away ten prizes with this herd. Messrs. Guy Carr, Compton, Quebec; D. M. Wilson, Moe's River, Quebec; J. E. Page & Son, Amherst, also showed some very fine cattle in this class, securing a good share of the prizes. In Polled Angus there were two excellent herds exhibited by Messrs. D. M. Wilson, Moe's River, Quebec, and R. H. Pope, Cookshire, Quebec. In taking note of the prize list we find the awards pretty evenly divided between these two herds. D. Ferguson and John A. Ferguson, of Charlottetown, P. E. I., were on hand with their beautiful herds of Galloways. These shaggy-coated bovines show care and intelligence in their breeders. R. Robinson, of Compton, Quebec, had on exhibition several head of typical Devons. In this class he had no competition. In the Jersey class there was strong competition, including our best breeders from Quebec and the Maritime Provinces. E. B. Elderkin, Amherst, Nova Scotia, took the lead in this class, closely followed by E. P. Ball, Rock Island, Quebec; S. Creighton, Silver Falls; R. H. Pope, Cookshire, Quebec; Mrs. E. A. Colpitts, Robt. J. Melvin, St. John; D. B. Warner, Wm. Mullin, St. John; J. R. Hayes, Hampton, N. B.; and W. M. Thurott, Manguerville, N. B. In the Guernsey class Isaleigh Grange, Danville, Quebec, captured twelve prizes. The other competitors were F. S. Wetherall and R. H. Pope, Cookshire, Quebec. In the Ayrshire class the judge was heard to say it was the best collection of this breed he had seen outside of Chicago World's Fair. The prizes were pretty evenly distributed between the exhibitors—Messrs. R. Robertson, Compton, Quebec; Isaleigh Grange; S. Creighton, Silver Falls, St. John, N. B.; F. S. Black; W. Donovan, Coldbrook, N. B.; S. G. Frost & Son, Hampton, N. B.; C. A. Archibald, Truro, N. S.; Mr. Robertson taking 1st on the herd; C. A. Archibald 2nd on the herd; Isaleigh Grange 3rd on the herd.

In sheep there was an excellent showing. The successful winner in Cotswolds was Donald Innis, Tobique River, N. B. In Leicesters M. H. Parlee, Sussex, led off, closely followed by H. E. Harrison, W. M. Thurott, Mangerville, and W. Mullin, St. John. Mr. Parlee had in his exhibit one of the finest rams ever shown in N. B. The Cheviot class was represented by the Eastern Stock Farm, Quebec; and F. S. Wetherall, Cookshire, Quebec. The prizes in the Shropshire class were pretty evenly divided between D. Ferguson, Charlottetown, P. E. I.; W. Donovan, Coldbrook; R. & W. Hubbard, Sunbury; and Isaleigh Grange, Quebec. In Southdowns there was strong competition. The prize winners were: Guy Carr, Compton, Quebec; F. S. Wetherall, Cookshire, Quebec; Robt. Shaw & Son, Quebec.

In swine there were some exceedingly fine specimens of the several different breeds, representing the Improved Berkshires, Tamworths, Yorkshires, Chester Whites, Poland-Chinas, Essex, and Duroc-Jerseys. Messrs. Page & Son, of Amherst, were awarded the prize offered for the best type of pig for English bacon.

The class for horses was well filled, and looking them over we found some excellent types of the breeds represented. Although the competition was close the awards were distributed quite evenly.

The center of gravity in the exhibition enclosure seemed to be the poultry building. Here we found the most extensive exhibit of poultry ever seen in the Province. The judge was loath to believe that they were the production of N. B. We found in this class over 900 entries, and the birds, with but few exceptions, were close to the standard.

Inspecting the dairy exhibit we found a very large entry of cheese and butter. In colored cheese there were twenty-five entries, in white eighteen entries. In colored cheese the prize-winning entries scored upwards of 85 points, a number running over 90. In white cheese 97 points were reached, while several exhibits scored 92 and over. The whole exhibit of butter was above the average of former years. Private dairy butter scored from 89 to 93 points, while creamery entries reached 97 points.

Among visitors to the exhibition from a distance we noticed Messrs. Arthur Johnston, Greenwood; Henry Wade, Toronto; and Wm. Linton, Aurora, Ont.

Nova Scotia Provincial Exhibition.

(REPORTED BY OUR SPECIAL CORRESPONDENT.)

This exhibition was held in its new quarters in the city of Halifax, and opened on October 28th. The buildings are entirely new and very suitable for exhibition purposes. They consist of the main exhibition building, agricultural hall, horticultural hall, transportation hall, and manufacturer's building, all of which are commodious and solid structures. The horse and cattle barns are very roomy, and the stalls are ranged on either side with a wide passage between, affording excellent facilities for seeing the stock.

The opening day was wet and cold, and the attendance small. The formal opening took place at 3 o'clock, when Lord and Lady Aberdeen, accompanied by Lord Kelvin, Admiral Fisher, and other distinguished persons, occupied seats in the gallery. Addresses were delivered by Lord Aberdeen, Lord Kelvin, and the Governor of N. S. The exhibits were not all in place in the different buildings, and stock was constantly arriving. On the second day everything was in order and the attendance about 8,000. Thursday was the big day of the show. The turnstiles registered over 20,000 admissions. This was the day of cheap excursions, as well as of the visit of Canada's Premier, Sir Wilfred Laurier.

The space in the main building was entirely taken up with exhibits representing the manufactures of the Province, and its rich natural resources of iron, coal, and gold. Of the latter there were some specimens of gold bearing quartz rich enough to vie with Klondyke. The exhibits were tastefully arranged, and were well calculated to impress one with the great resources of the Province and the spirit of enterprise possessed by the people. The exhibits in the agricultural hall fairly represented the agricultural capabilities of Nova Scotia. Here were to be seen nicely-arranged exhibits from Nappan Experimental Farm, and the Nova Scotia Government's Model Farm at Truro. Potatoes and garden truck were good. Field roots and much of the grain was not up to the mark. This Province imports largely of grain, and is not much of a grain producer. The dairy exhibit was small, especially so in cheese. It impressed us that the cheese shown would not be very suitable for export, as they were not of a uniform size or appearance. They were, however, of a good quality, and suited the local trade. The butter was mostly good, some creameries and private dairies showing excellent samples. There was a working dairy in the building, where lessons were given in separating, testing, churning, and packing butter. Mr. Fuller, of the Model Farm, and Mr. Hopkins, of Nappan, were in charge.

Horticultural hall contained a magnificent display of plants, flowers, and fruit. The show of the products of the orchard gives one an idea of the grand capabilities of the Province in this particular line. Each county has its own exhibit, and they compete within themselves and not against each other. Though this is an off year for fruit, the exhibit

was large and tastefully arranged. King's County showed a collection of 207 varieties in apples, plums, and pears. Some of the other counties were not far behind. Fruit is the great source of wealth in Western Nova Scotia, as coal and iron are in the eastern part. R. W. Starr, of Starr's Point, was superintendent in this department, and was ever ready to give information concerning the exhibits.

Transportation hall was completely filled with samples of the work of the carriage builders and bicycle makers of the Maritime as well as the Upper Provinces. The carriages were a beautifully finished lot, reflecting great credit on the makers. Mr. De Wolfe, of De Wolfe, Sons & Co'y, informed us that many of their carriages were built to order for residents in the Bermudas, West Indies, and South America, at a cost of \$400 each. In the manufacturers' building many kinds of agricultural, manufacturing and mining as well as electrical machinery was shown in motion. Here could be seen the binder, mower, hay tapper, and all the different kinds of modern farm machinery and implements. The Massey-Harris and Frost & Wood Companies had very complete and extensive exhibits in this line. Binders are not much used here, and are quite a curiosity to many of the visitors. There were also a number of steam drills in motion drilling granite, and a machine for crushing quartz and washing out the gold was an object of great interest. This building also contained the exhibit of electrical apparatus, and stoves.

STOCK.

The entries in the live stock department were numerous. In horses there were 251 entries; in pure-bred cattle, 399; in grade cattle, 189; in fat cattle, 77. The entries in sheep and swine were numerous. The carriage classes were pretty

steers. One pair shown by G. H. Madill, Hants Co., were estimated by good judges to weigh 5,000 lbs.

The show of sheep was very large, but very many of the animals were inferior. In quality the sheep shown here does not come near up to Charlottetown. The P. E. Island exhibitors got the lion's share of the red tickets, and would have done still better if they had drawn larger from their herds so that they could have competed in all sections. In Leicesters Albert Boswell, P. E. I., got all the red tickets and a good many of the blue and white ones. S. P. Goudey, Yarmouth, was his only competitor. In Border Leicesters Wm. Clark, North Wiltshire, P. E. I., got all the red tickets except two. These were for shearing ram and pair of ewes, which went to M. H. Parlee, Sussex, N. B. S. P. Goudey, Yarmouth, was also a competitor in this class and got some third prizes. In Shropshires a Nova Scotia flock owned by Logan & Harris, Pictou, took most of the first prizes; Boswell and Ferguson, of P. E. I., taking most of the remaining ones. D. R. McKay, Hopewell, N. S., and R. D. Ross divided the awards. Mr. A. Fisher, of Pictou, showed a flock of Horned Dorsets, the only one shown. Flocks of Merinos, Cheviots, Cotswolds, and Oxford Downes were on exhibition, but there was little competition except in Oxford, where the prizes were divided between E. Edwards and E. Dunlop, with Gay's River Agricultural Society first for ram two shears and over.

The hog pens contained some very fine Berkshires, Yorkshires, Chesters, and Duroc-Jerseys. We did not see any Tamworths. As the pigs were not judged when we left, we do not know who the prize winners were. The show of poultry was large and very choice. We saw some of the largest geese and turkeys that we have ever seen at any exhibition.

NOTES.

This is not a very good year for Nova Scotia farmers, as the fruit is not more than half a crop and potatoes are a serious failure in most of the Province.

The exhibition, which was to have closed on Friday, October 1st, was extended till Tuesday, the 5th, but considerable of the stock was removed on Friday, especially that from P. E. I.

Nova Scotia is a province rich in natural resources of mine and forest. Its agricultural capabilities are also good. As a stock-raising country it has many advantages, possessing as it does a great amount of interval land which excels in the production of hay. As a fruit-producing country the counties of King's and Annapolis have no superior on the continent.

The racing was well patronized by visitors, but the track was new and too soft for fast time.

Thanks are due to the manager and secretary of the exhibition company for kindness received and information supplied to your correspondent.

As at other exhibitions, we found many of the leading stockmen and farmers—who were appreciative readers—ready to acknowledge the great help the FARMER'S ADVOCATE had been in assisting them to solve the different agricultural problems that have from time to time presented themselves for solution.

Treatment of Fitted Stock After the Shows.

The opinion has long held sway that the usefulness of highly fitted animals was, to a large extent, impaired for future breeding purposes. This may be to some extent true when the animals are not wisely treated, which is most likely to be the case in the hands of incompetent stockmen. This year fitted animals changed hands to an extent as perhaps never before at the larger shows. In order to assist such persons and many beginners in the showing to make the most of their fitted animals, we publish below a number of letters from leading annual exhibitors revealing their methods of treating their show stock after returning from the circuit. These, we believe, will be of great value to many readers. We trust other breeders will follow the example, and send us at an early date their system of handling fitted animals in order to make the most of them as breeders.

Turned Out with the Field Ewes, and Brought In at Night.

To the Editor FARMER'S ADVOCATE:

In regard to the treatment of the show flock after the show, we consider they should have better treatment than the field sheep, but at the same time think it wise to let them lose some of their flesh, especially the aged and shearing ewes; that is, if it is the intention to breed them; and as the best of the flock is generally taken of these for show purposes, it is far from being profitable not to breed them. They are turned out with the field ewes, and are brought in at night, so they may be fed a small ration of grain (oats and bran), with a little clover hay. Of aged rams and shearings we very seldom have any left over from the shows, but if we have we still keep them going on steadily. As to the lambs, if it can be so arranged to have a



BOYDSTON LASS 7TH.

KATE HILL 3RD.

First Prize and Champion Premium Winners at the Toronto Industrial. Owned by Jas. I. Davidson & Son, Balsam, Ont.

The two beautiful mares herewith illustrated were bred by their owners, Messrs. James I. Davidson & Son, Balsam, Ont. They are each three years old, and sired by Westfield Stamp (imp.) [1819], (9467). Boydston Lass 7th 2286 is out of Boydston Lass 3rd, a winner of many good premiums. Boydston Lass won at the Toronto Industrial, in the imported Clydesdale class, 1st as a foal, 1st as a two-year-old, and also as a three-year-old, in strong competition on each occasion. Kate Hill 3rd 2221 is out of Kate Hill (imp.) (4129). As a two-year-old she won 1st prize in the Canadian draft class; this year she won 1st in the three-year-old section, as well as the championship female award for best mare any age.

well filled, and contained some very handsome roadsters and many speedy trotters. The show of draft stock was not so large, but included some good animals. On entering the beef cattle barn the first thing to attract attention was the splendid herd of Herefords, 14 in number, shown by W. W. Black, Amherst. The bull at the head of this herd is about the blockiest and heaviest Hereford we have seen, and would show well anywhere. This was the only herd of this breed shown. In Shorthorns there was keen competition. Charles Holmes showed a herd of 20 animals; E. & O. Chase, Port Williams, showed 14 head; C. H. Archibald, Truro, 10 head. For bull over three years old, C. Dickie, Canard, got first, and J. Lane, P. E. I., second. The other prizes in this class were pretty evenly divided between E. & O. Chase, C. W. Holmes, C. A. Archibald, A. Boswell, and Everett Kinsman. Herbert Stair, Cornwallis, showed a herd of Polled Angus in fine condition. This was the only herd of these cattle shown, and they attracted much attention on account of their smooth appearance and good beefing qualities. The bull at the head of the herd was a splendid representative of the breed. Mr. Stair also showed a bunch of fat cattle of this breed, which were finished in a style to suit the English market. In the dairy breeds E. B. Elderkin, Amherst, and B. W. Chipman were among the exhibitors of Jerseys; C. H. Archibald, Truro; W. F. Bergmer, Pugwash; J. A. Ferguson, P. E. I., were among the Ayrshire exhibitors. D. W. McKenzie, Nerepis Station, N. B., and S. Dickie, Onslow, showed Holstein herds. E. R. Brown, Charlottetown, P. E. I., showed his fine herd of Guernseys, and won first, with K. S. Miller, of Truro, second. Shuban Acadie Agricultural Society got first for aged Guernsey bull, and Peter Innis first for Ayrshire bull over three years old. Senator Ferguson, P. E. I., exhibited the only herd of Galloways on exhibition. There was a very large exhibit of fat oxen and

piece of rape for the different sexes, we find it answers a good purpose, as they will come in good shape for the winter. With shearing ewes, wethers and lambs intended for the Fat Stock Show there is no let-up, but we push them on for all they will stand, and find if they have been well cared for at the fall shows they will gain more in one month after than two of the preceding months. This, to some extent, we attribute to cool weather.

Wellington Co., Ont.

W. WHITELAW.

Treatment of Fitted Brood Sows After the Shows.

To the Editor FARMER'S ADVOCATE:

On getting my sows that were in pig home from the shows they were turned into a grass field with a spring creek running through it, so they were sure of plenty of water. I gave them no feed till one or two days before farrowing, then I gave them a little slop made principally of bran and water with a little shorts added till after farrowing. Then they were fed very sparingly with about two-thirds bran and one-third shorts made into slop with water for a few days. After the third or fourth day I increase the shorts in their feed, but am careful not to give too much for at least a week after farrowing. After that time some meal might be added. I generally feed barley meal, but I suppose almost any kind would answer the purpose. I have had three sows farrow since the Industrial Fair at Toronto, and have not lost a pig, and they are all doing splendidly now, both sows and pigs. I know a great many people would say the change is too sudden after feeding heavy before the shows. However, I have pursued that course for some years, and have never lost a sow farrowing, nor had any trouble with her afterwards. Sows not in farrow, that I intend for breeders, are treated similarly; that is, turned out on either grass or rape and not given any other feed. Young pigs I would treat differently; would turn them out during the day on grass or rape, and feed night and morning rather sparingly. I might mention that the three sows that farrowed since the Fair were two of them under a year and one under two years of age.

York Co., Ont.

THOMAS TEASDALE.

"Rest" After the Shows.

To the Editor FARMER'S ADVOCATE:

When the cattle are brought home after some weeks' showing, where they have been kept on their feet most of the day by the persuasion of umbrellas or walking canes in the hands of curious or thoughtless visitors, and when travelling by train are nearly dashed to pieces by careless trainmen who knock the cars together, forgetful of (or not caring) what the poor brutes tied in the cars suffer from such usage, what can they enjoy more than rest for a day or two? Then if the weather is fine they should be turned out during the day on short pasture for a few days until they get used to the change of feed, as there is nothing more dangerous than too sudden a change. The quantity of grain should now be lessened gradually, but not withheld altogether. By following this plan the cattle go into their winter quarters with their blood cooled and ready to respond to a liberal allowance of rougher food than they were accustomed to before the shows, not forgetting to give them plenty of roots. This plan we follow with cattle of all ages, calves as well as grown stock. But those intended for the butcher must be handled differently, as no time nor flesh should be lost; and as their life will be short they must be pushed along and fed all they will take. Cattle with good constitutions will stand a lot of showing, as we call it.

Wellington Co., Ont.

W. B. WATT.

Care of Young Dairy Stock.

To the Editor FARMER'S ADVOCATE:

It is our aim in fitting young stock for exhibition not to force them or have them become too fat, so that when the shows are over it is not necessary to put them on a starvation ration, although in some cases we do slack up and feed lighter. I prefer, however, to give more exercise. Our calves are not allowed to grass the first summer, but are turned out at nights in a bare lot to exercise. After the shows in the fall we turn out all old enough to do without milk to grass in the daytime. My idea in caring for dairy heifers is to keep them growing right along and develop by regular and generous ration their digestive organs, and fix in them a habit so that they may assimilate and digest their food; to have, in fact, the largest possible constitutional vigor. Cows do not make their milk out of nothing. In feeding cows, there is the food for support, then the more above this we can train the cow to eat and digest, the larger is our profit. Constitution is the main thing in a cow. Without this all other so-called "points in a dairy cow" are useless. While I believe it is possible to injure a dairy heifer by feeding too heavy, thus giving them a habit of putting their food to fat, I am sure to one overfed there are ten, perhaps one hundred, underfed. Alternate starving and stuffing is bad for man or beast. Those fine heifers we showed had skim milk after three weeks old, with flaxseed jelly added; bran, oat chop and hay as their appetites grew.

Oxford Co., Ont.

GEO. RICE.

E. J. DUFFY, Wentworth Co., Ont.:—"I appreciate your efforts to make the FARMER'S ADVOCATE the leading agricultural paper of Canada."

Reduce the Fat, but Retain the Vitality.

To the Editor FARMER'S ADVOCATE:

The best treatment of show sheep after the fairs will depend entirely upon the condition of the flock. If young sheep are not overdone but little more than ordinary attention will be required. Rams that are very fat, especially those that have been fitted without much exercise, in close stables, are often sluggish and refuse to work. These are often very annoying. In such cases I have found nothing better than to shear close, give plenty of exercise, and several doses of salts. Stop all oil cake and heating feed, but give in place thereof oats and bran. Try to reduce the internal fat by physic and exercise without reducing his strength or vitality. Lambs seldom require this treatment, reducing grain feed, and exercise, will be all that is necessary.

As to the ewe flock, the fat old ewes seldom pay to bother with; salts, exercise, and lessening the strong food being the course usually adopted. All changes must be gradual, and be careful in reducing the grain ration not to do it too suddenly so as to weaken the vital forces. Strong, healthy, vigorous lambs are produced by strong, healthy, vigorous parents.

RICHARD GIBSON.

"Belvoir Farm," Middlesex Co., Ont.

Dairy Stock Should Never be in High Flesh.

To the Editor FARMER'S ADVOCATE:

SIR,—As I am not a believer in having a dairy herd in high flesh, I do not have much difficulty in keeping the Maple Hill Holsteins in the thrifty condition in which they were shown at the large fairs. I make it a point to show at several of our local shows, and consequently try to carry my stock along nicely, so that they arrive in their winter quarters in fine condition. My bulls on arriving home are put in their winter quarters, and with a ration of oat chop and bran (slightly decreased from their show feeding) and clover hay, come along as nicely as could be desired. My calves are also stabled on arriving home, and with a generous amount of bran and skim milk, with nice clover hay by way of dessert, suffer no diminution in flesh. The cows, three-year-olds and two-year-olds, all being in milk, receive the same treatment. They are turned on good clover pasture during the day and are warmly stabled at night, receiving morning and night a ration consisting of two quarts of bran, two quarts of oat chops, and all the hay they can eat. Under this treatment they gain perceptibly in milk and make a slight gain in flesh. In winter ensilage is substituted for the hay in the cows' rations. The yearlings are gradually accustomed to the change from stable to pasture field, and in a week or two are doing finely without any grain ration. The treatment outlined above keeps the Maple Hill herd in such fine condition that visitors are delighted with the shapely animals that are contained in the gold medal herd of 1897.

Brant Co., Ont.

G. W. CLEMONS.

Sheep -- Cross-Breeding and Results.

(From an Institute paper by John Renton, Deloraine.)

It appears to me that a great deal that has been written and said on the subject of cross-breeding is based largely upon theory. Theory may be made to appear very plausible as theory, but when brought down to actual practice it is often found to be very disappointing. I am therefore not going to talk a great deal of theory, but to speak principally from my own experience and observation.

Sheep, like all the other domestic animals, have been very much improved within the past fifty or a hundred years. We have frequently heard it said that the man that causes two blades of grass to grow where formerly only one grew is a benefactor to his country. I think no less so is the man who, by his enterprise and sound judgment in selection and careful breeding, so improves the stock of his country that one animal is rendered of more value than two or three formerly were. I think there are few that will deny this statement. To Bakewell we are largely indebted for the great improvement made in Leicester sheep. How Bakewell brought about this improvement, or along what lines he worked to obtain his success, we are left somewhat in the dark. True, we are told that by selecting from the best sheep in his neighborhood and careful breeding he succeeded in raising the Leicester sheep up to a high state of excellence, but whatever means he took to attain this, about all we know is that Bakewell died, and the secret of his success died with him. This is in some respects unfortunate, for had it been known along what lines he had been working when he laid down the work, some others might have taken it up and still made further improvement.

Some years ago a number of our Canadian sheep breeders thought that they would improve upon Bakewell's work by crossing the Leicester sheep with some of the larger breeds, and by so doing get a larger sheep and more wool. The Leicester is not as large as some of the other breeds, but while it is not one of the largest sheep, it has many good points, being a good breeder and an excellent feeder, and the wool, though classed as coarse wool, is of a fine silky fiber, and therefore useful for several kinds of goods. Some of the breeders tried the Cotswold cross. This, I thought, was a mistake at the time, because it would be difficult to improve a breed with an inferior animal. The Cotswold, though a larger sheep and with more wool than the

Leicester, has some defects. Perhaps I will be told that every breed has defects. While this may be true to some extent, I will point out some of the defects of the Cotswold, which has for a large, heavy sheep a light hind quarter. This is a very serious defect, for the leg of mutton is a very important part in the carcass of a sheep. Another: the mutton is said to be coarse and not very good in flavor; the wool is very coarse, and only fit to make into the coarsest material; but the most serious defect is that the Cotswold is a poor feeder. I do not say that they will not consume a large quantity of food, because they will, and if forced lambs can be made of immense size, but I do say that if turned out to rustle for a living in the summer, the same as other sheep, they soon get down poor. We are told that they do well in England. That may be true, but in Canada I have never known the Cotswold to do well without it was forced. I have known many that purchased high-priced Cotswolds, expecting that they were going to breed sheep just like them, but it was not long before they saw their mistake, and it was not long before they had a rather poor, weedy lot of sheep.

The Cotswold cross, when well fed, increased the size and the quantity of wool, but were harder to feed, and on the whole not a success. I could give many cases in proof of this, but will just give one—an old friend of mine, a very successful breeder and exhibitor of Leicester sheep. After crossing breeds he began to exhibit in the Leicester class, but found that he was not so successful. We are told that if we live in Rome we must do as the people of Rome do, so acting upon this principle he went to Guelph and purchased a Cotswold ram from F. W. Stone, paying \$90 for him, and used him upon his flock. A few years after he told me that had he thrown the \$90 into the stove instead of purchasing the Cotswold ram he would have been many \$90s in pocket. He was so thoroughly disappointed with the result of the cross that he cleared them all out and began again with a few old ewes.

Another cross that was tried was with the Lincoln; this was somewhat better than the Cotswold for the reason that the Lincoln and Leicester were more alike. I have seen some good sheep from this cross, but in nearly all cases they were coarse in the head; the most of the Lincolns have big, strong, coarse heads. Of course you can buy a sheep's head in any butcher shop for a York shilling, but a sheep's head in a butcher shop and a sheep's head on a sheep's body are two very different things; the head is an important part of any animal, and is generally the first point looked at, whether it is a horse, a cow, or a sheep. But though I have seen some good sheep from both the Cotswold and the Lincoln cross, neither was a success. But, you ask, how was it that the cross-bred sheep were allowed to exhibit in the Leicester class, and how was it, if the cross was not a success, that the cross-bred sheep took the prizes away from the pure-bred Leicesters? To the first question I would say that the sheep were not required to have pedigrees at that time; they could exhibit in any class the owners saw fit. To the second I would say that for a time there was a craze for size and wool, and public opinion ran so strongly in this direction that judges had to go with public opinion, and in many cases gave their decision contrary to their better judgment. We are told that the Leicester has done much in the past to improve the Cotswolds and the Lincolns, but it does not follow that the Cotswold or Lincoln will improve the Leicester.

I will now refer to the South or Sussex Down. We are told that they were found in the hilly or mountainous part of the county of Sussex, England; a rather indifferent breed of small sheep with dark or smutty faces and legs, and had horns, but that they were very much improved by John Ellman and others. But it was left for Jonas Webb and to some others to bring the Southdown up to that high state of excellence that we find to-day. Jonas Webb spared neither time nor money in improving the Southdown. I suppose that he had set up an ideal sheep and worked on towards that ideal until he made it a success. There is one point about his breeding that I wish to call attention to. We are often warned against what is called inbreeding; but, strange as it may appear, Jonas Webb never went outside of his own flock for sheep to breed from. True, he had a large flock to select from. But some of our Canadian breeders thought that they could improve upon his work, so they crossed the Southdown with the Hampshire. It proved a poor cross, and was soon discontinued. The cross-breds were larger than the pure Southdown, but they were coarse. A cross that has done well is a cross between the Southdown and Leicester. There is a theory in connection with this cross, but I think it is only theory, that to make this cross a success the female must be the largest. In this case it would be the Leicester ewe and the Southdown ram. Now, while I have seen some excellent sheep bred in this way, I have seen just as good, if not better, bred the other way; that is, the Southdown ewe and the Leicester ram.

As fine a flock of sheep as I ever saw for wool and mutton—and that, I think, is what most people breed sheep for—was bred in this way; they were of good size, with good wool, and always in condition. Another theory in connection with cross-breeding is, that it is all right for sheep to sell to the butcher. This I consider all rot, for the very flock of sheep that I have just mentioned bred very successfully, just as well as the pure-breds. The Shropshire is a good sheep for Mani-

toba, both for wool and mutton. I have often been asked the question both in Ontario and in Manitoba by parties who intended going into sheep breeding: What breed would you advise? I have always said the breed you like the best, because a person will likely be most successful with the breed he likes best. But if a person is going to breed just for dollars and cents, not caring anything about exhibiting or breeding or selling for breeding purposes, then my advice is, buy some good strong grade ewes. Give Merinos a wide berth; I don't think them suited for Canada. Buy a good ram. Don't take some poor scrub because you can buy him for little money. Such a sheep would be dear at any price, while it is difficult to estimate the value of a good ram. You cannot take too much pains or scarcely pay too high a price for a ram. Whatever breed you start with, keep breeding along the same line, and if you are guided by my advice you will soon have a flock of sheep that you will be proud of.

[NOTE.—It is just possible that other breeders have had experience in crossing different breeds of sheep, and do not agree with Mr. Renton in all he says. We would like to hear from such.—EDITOR F. A.]

Crossing Buffalo with Domestic Cattle.

On Lord Steathcona's estate at Silver Heights, St. James, just west of the City of Winnipeg, a herd of buffalo (a representative group of which was portrayed in our Jubilee issue of June 15th last) has for a number of years been maintained. They are confined in a fine large park on the estate. Mr. Traill's experience in crossing them with domestic cattle will be read with interest:

To the Editor FARMER'S ADVOCATE:

DEAR SIR,—In reply to your letter of inquiry as to how far our experience here corresponds with that of Mr. Goodnight, of Texas, in crossing domestic cattle with buffalo, as detailed in the FARMER'S ADVOCATE of the 1st ult. I find, after perusal of the article referred to, that my experience in this line, though of a very limited degree, differs somewhat from that of Mr. Goodnight. I have never yet succeeded in raising a true first cross between the two races, the nearest to it being a bull calf by a three-quarter-bred bull, out of a domestic cow, which was slipped about six weeks before time and only lived a few minutes. This does not bear out Mr. Goodnight's conclusion that three-quarter-bred bulls cannot breed. The bull in question was raised here out of a half-breed cow, which we have still, bred by the late Mr. Bedson, at Stoney Mountain, and who, by the way, also had a half-breed bull, but out of which breed of cattle I do not know. Mr. Goodnight says his pure buffaloes breed only every second year, while ours breed every year, occasionally, of course, missing a year; but we have had three calves from one cow in three consecutive years, and it is the exception when they do not have a calf each year. The great difficulty in raising a first cross between buffaloes and domestic cattle is the inability of the cow to carry the calf to its proper time, as in the vast majority of cases she either dies herself or slips the calf a month or two too soon.

R. M. TRAILL.

FARM.

Fall Care of Meadows.

On grass land that is to be kept for a meadow next season, it is important that the grass get sufficient headway to protect the roots from winter frosts, and also enable it to get an earlier start next spring. The long drouth has no doubt produced a scarcity of pasture for stock in many districts, which may lead farmers to allow the herd to graze too long upon the best fields. As all farmers know, there is at the root of each stalk of timothy a small bulb something in appearance to a diminutive onion. After the hay is cut other small bulbs form from which next year's crop of hay will grow. If the aftermath is cropped closely at this season the roots will be injured, which will result in a lighter crop of hay next year. It is waste economy for the sake of a few weeks' pasture to allow the stock to graze the meadow bare. There is an abundance of food on nearly every farm at present, and if farmers seize the opportunity to give the fields a chance this season by housing the stock early, they will be amply repaid by the larger returns next year. The land requires to be shaded as much at this season as at any other time. When frosty nights are followed by hot sun in daytime the effects are perhaps even worse than during the summer months, as there is nothing that will draw the moisture out of the soil quicker.

A top dressing of manure will add greatly to the fertility if applied at this season or during the winter. If applied now it will protect the roots where the grass has been cropped too closely. The effects of it will also be noticed in the following crop, and it will increase the root growth as well, so that when the sod is plowed under for another crop there is a larger amount of humus made from the decayed roots in the soil.

Good Agents.

We want a good agent in every township to secure new subscribers to the FARMER'S ADVOCATE. Send for sample copies.

Care of Farm Horses.

On many farms the horses present such an unthrifty appearance as to tend to lead one to believe that they were half starved. This, however, is seldom the case, as the horses usually receive the best food the farm affords. But the manner of feeding, as well as the other management in the way of providing sufficient light and proper ventilation in the stables, is worthy of the attention of every horse owner throughout the country. The old style of bank barn, with low stables and very few windows, is a most unhealthy habitation for horses. Where wooden flooring is used with no underdrainage there will accumulate in a short time enough of the soilage from the stable to keep the horses unhealthy and hard looking, no matter how well they are otherwise cared for. In the modern stables more care has been given to the floors and windows; but only in a few cases is to be seen a proper system of ventilation. Without a sufficient supply of fresh air the blood cannot be kept in a proper state, and when the horse exhales the carbonic acid of the blood is given off into the air. Carbonic acid cannot accumulate where a circulation of air is provided, and this should be accomplished without causing a draft to strike the animals. In attempting to ventilate by windows a draft is often created, as ingress must be provided for fresh air and an exit for the foul air. In order to get a properly ventilated stable it is necessary to have apertures at the roof to allow the foul air to escape, and openings lower down to permit of the ingress of fresh air. When the stables are vacant the windows and doors should all be opened to admit of a supply of pure air.

There is a great difference of opinion in feeding among horse owners, but as digestion begins at the mouth, it is necessary to prepare the food in a way that it will be thoroughly masticated. This is especially necessary in the case of working horses, as they require to masticate their food in as short a time as possible, in order to get sufficient time for rest. The harder the work the more the bulk of food should be diminished, and its nutritiousness increased. To ensure this the hay should be reduced in quantity and the oats increased in proportion, always remembering, however, that a certain amount of bulk is necessary, and the horse cannot live upon oats alone. Chopped hay and crushed oats dispense with an immense amount of mastication, while thorough assimilation is secured, waste averted, and strength and time saved. Many years ago the London Omnibus Company tried an experiment on 6,000 horses with cut and uncut hay, ground and unground grain. Half the horses were fed ground oats, cut hay and straw, the others got uncut hay and unground oats. The horses which had twenty-six pounds of ground oats, cut hay and straw did the same work as well and kept in as good condition as those that had thirty-two pounds of uncut hay and unground oats. This was a saving of six pounds of feed per day to each horse, and was estimated at five cents per day per horse, or \$300 per day on the 6,000 horses. On the average Canadian farm the saving by such a system would amount to quite an item at the end of a year. It is considered that as the horse is forced to chew everything thoroughly there is less danger of overloading the stomach. This is very important, as it is the ruin of many horses, causing rupture of the air cells of the lungs, if they are put to work at once, resulting in broken wind and heaves. A veterinary surgeon, of Limerick, Ireland, Mr. R. H. Dyer, in an article on "Preparing Food for Horses," in the *Farmer's Gazette*, referring to the size of the horse's stomach, says:

"It is not much larger than the human stomach, comparatively. It is singular that there is so little knowledge of structure of the interior of the horse. It may be asserted that the second large intestine is so constructed that it contains a very large proportion of solid food, regulated in such a manner that it enters in a small degree with other parts of the digestive system, and, consequently, from its position, very little with the contents of the chest. It is an admirable and wonderful arrangement."

On the preparation of food, he says:

"During my youth chaff of hay and straw was cut by men, who carried it about from stable to stable. Since that time machinists invented a chaff-cutting machine, as well as one to bruise or crush oats and beans, which were expensive, unless purchased by persons keeping several horses, which saved labor, &c. Nowadays a mixture is sold by dealers—known as chops—composed of hay, straw, oats, beans, peas, Indian corn, &c., prepared for the purpose of feeding. The advantages are several, viz., cheapness, and proper quantities supplied to the horses, which latter is a vast improvement upon the usual system of throwing large quantities of hay into racks, which would enable them to consume a larger quantity than there was need of. It is always better to know the precise quantity a horse can digest properly than the hazardous act of days gone by. I am not aware that any improvement can be effected on chops. Bags containing one cwt. are sold at from 6s. to 7s. each, so that the humblest horse owner is able to purchase. I am aware that car owners have discovered the value of chops. Race horses and hunters are also supplied with a certain proportion of the chop mixture, which ensures, it may be asserted, good health."

It is customary among many good Canadian feeders to mix bran with the oats to assist in mastication, but if it is fed for no other purpose it will be found preferable to feed chopped hay and ground oats. Where carrots or turnips are grown they may be used as a laxative, as they are usually cheaper than bran. Though clover hay has a higher feeding value than timothy, it is often rejected on the ground that it may develop heaves. If it is cut up and mixed with the grain, and fed in a damp condition, it will not affect the lungs. Farm horses kept in this way, and not overworked, should present as bright and healthy an appearance as a person could desire.

Fall Cultivation of the Soil.

BY WM. RENNIE, FARM SUPERINTENDENT, O. A. C.

Much depends on the fall cultivation for the success of the following season's crop. It is important to have the land in the very best shape at time of freezing up, so that the crops can be sown early in spring with the soil in the best condition.

At the Ontario Experimental Farm we are following a four years' rotation as follows: Two years grass (hay or pasture); 3rd year, corn, roots, rape and peas; 4th year, grain, and at the same time we seed down. Half of the grass land is plowed early in fall, about three inches deep, thoroughly harrowed and pulverized with a disk cultivator, or, if sufficiently rotted, a spring-tooth cultivator, and again harrowed. This will help decompose the vegetable matter, and on the surface where it is required. About the end of October we spread all the barnyard manure that can be gathered on that portion of the land intended for corn and roots. We then cover it with a double moldboard plow, making drills about 21 inches wide. These drills are easily leveled down in spring by harrowing and cultivating. Land prepared in this way leaves the animal and vegetable matter mixed on the surface in the best shape for plant food.

Preparing the Corn, Root, and Pea Land for Grain.—The pea land is gang plowed lightly, and thoroughly harrowed and pulverized with a disk cultivator before sowing fall wheat. The decomposed vegetable matter on the surface retains sufficient moisture, so that the wheat is not effected with drouth. The corn and root land is not plowed, but cultivated, and drilled with the double moldboard plow, about 21 inches wide. The turnip land is drilled without being cultivated, turning the tops into center of the drills. By this method the decomposed vegetable matter is saved from leaching or evaporation. In spring these drills are simply harrowed and cultivated down, leaving the decomposed vegetable matter on the surface where it is available for plant food, in order that the grain and grass seed may get an abundant supply. Land that is drilled only requires cross furrows in low places to carry off the surface water.

Preparing Land for Spring Crops.

To the Editor FARMER'S ADVOCATE:

The question as to what condition our plowed land should be left in at the time of freezing is one of great importance, more particularly so on our heavier clay and clay loam soils. With light sandy soils it is not so necessary that they be well plowed in the fall, as we often find farmers situated on those lands who have good results from spring plowing. I presume, however, that your enquiry refers more particularly to our heavier soils.

Our plowed lands, with the exception of those fields where we have had corn and roots, should, after having been gang-plowed lightly, harrowed and rolled directly after harvest, be plowed a good furrow in depth during the fall, and the drier the soil when it is done the better, so long as we are able to do the work satisfactorily. Plow the land well; have it in a loose, open condition in order that the frost of winter (which is the most effective pulverizing agent we have) may be enabled to do its work more thoroughly and you have the land in the best condition for winter. When spring comes we confine ourselves exclusively to surface cultivation, as this surface soil, which has been thoroughly pulverized by the frost, is in the very best condition for receiving the seed, starting germination and furnishing the tender rootlets with that nourishment which will ensure its rapid and continuous growth.

Upon our corn and root land, however, which we have manured on the surface the previous winter and kept thoroughly cultivated during the growth of these crops, we do nothing in the fall but perhaps cultivate on the surface with the scuffler, as this surface soil which has received the manure the previous winter and been kept as a mulch during summer is the very best soil we have for receiving the seed and grass seeds in the spring.

Huron Co., Ont.

THOS. McMILLAN.

Training Collie Dogs.

It would be difficult to estimate the value of a properly trained Collie dog on a farm where stock is kept. While it will be largely influenced by the judgment of the owner and the number of boys he has to do herding, etc., a good dog is a treasure, while a useless one is a continual annoyance and a curse. Since we commenced giving Collie dogs as premiums for the securing of new subscribers we have sent out a large number of beautiful puppies upon whose training their usefulness will largely depend. We are anxious that not one of these shall be spoiled in training, nor allowed to grow up useless, and therefore give the following good advice as we find it in the *Country Gentleman*:

"The best sheep-dogs are trained from early puppyhood, and it is a difficult matter to begin with a full-grown dog and make him serviceable. In England and Scotland, where they are trained to the greatest perfection, the pups are reared in the sheepfold, and sometimes are suckled by a ewe. They grow up with a perfect acquaintance existing between the sheep and themselves. They see the daily work of their mother or of other dogs with the flocks, and by imitation they soon take part in it themselves. When half-grown the shepherd

takes one at a time to the pastures, where the first lesson is to follow at his heel. Very easily all the rest is learned in constant daily practice.

"To train a dog that has not had such advantages from heredity and environment requires knowledge of what is to be done, skill in its application, quick perception, constant kindness and much patience. Kindness may sometimes inflict punishment. The dog should be rather underfed, so as not to be too fresh and impetuous. His movements should be controlled by a light but stout cord which will stand a sharp jerk, and of a length suited to the lesson being taught. The first is 'heel,' which is to follow at your foot. The next is to follow the sheep without running or dashing among them. To do this slowly is of great practical importance. Then he is taught to go to the right or the left by a motion of the hand or by a word, and so on, step by step. The trainer should always remember the slow progress he made in learning to read, and he must not expect his dog to advance three or four times as rapidly as he did. This is a grievous and a common fault with most dog and colt trainers.

"Punishment should be used with sound judgment. The dog is very sensitive to kind or harsh words, and these should be the chief expression of your satisfaction or dissatisfaction with what he does. The jerk of the cord is an excellent reminder. The whip is sometimes necessary, and the more seldom it is used the more influence it has when applied. When he does well he should be patted on the head, and by his own pleasure made to feel the approval of his master. After an hour's good work he should be rewarded with food, but when he has been willful and disobedient it should be temporarily withheld. Rewards and punishments are important agents in instruction.

"The instructor must observe the tendencies and peculiarities of his pupil and adapt his training to them. Under no circumstances should he lose the complete control of his temper.

"Training cannot be successfully accomplished intermittently at the convenience of the trainer. It must be regular, systematic and persistent."

Some Common Poisonous Plants.

(Compiled from a paper by Prof. V. K. Chestnut, Assistant, Division of Botany, U. S. Department of Agriculture.)

The plants commonly looked upon as poisonous are those which through general experience, history or tradition are known to produce some ill effect upon animal life. The literature of Europe contains the names of over three hundred and fifty plants which in that quarter of the globe have been known to produce ill effects upon man or animals, while in North America there are only a few which have been generally recognized as poisonous, and these grow mostly in the eastern and more thickly-settled part of the continent.

In the absence of statistics, objection is made to an increase of ill-reputed species, for æsthetic reasons and on the ground that plants exist for the consumption of animals and cannot therefore be poisonous. These ideas are wholly without scientific foundation and are deplorably misleading. A full acquaintance, however, with the preparation of drugs, and with their action upon animals, removes many of these uncertain factors.

In the widest sense, all plants should be classed as poisonous which have ever produced ill effects accidentally, and not those alone which the combined knowledge of the botanist, the chemist, and the animal expert have proved to be such. Especially should this view be taken in a new country, and in the case of plants likely to tempt the appetite. By this cautious attitude the dangerous plants can be ascertained and antidotes be determined without repeated sacrifice of life and property.

POISON IVY (*Rhus radicans*).

Poison ivy occurs abundantly throughout Canada and the United States, especially east of the

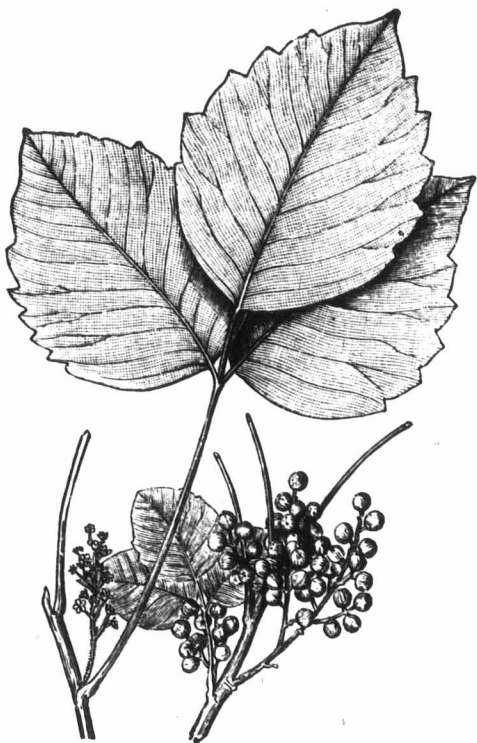


FIG. I.—POISON IVY (*Rhus radicans*).

Great Plains. It grows in the open brush, in ravines, and on the borders of woods, and it spreads along roadsides and cultivated fields from seeds carried by crows and other birds which feed upon its fruit. It is generally a climbing vine, but if no support is at hand it either trails along the ground or sends up short, vertical shoots. (Fig. 1.)

Besides one near relative, which is almost as poisonous, there are no other plants which resemble it closely except the non-poisonous box elder, the leaves of which bear a close resemblance to those of the ivy. It is only in its seedling stage, however, and when growing beside hedges, that the box elder could be taken for ivy. The Virginia creeper, also non-poisonous, is sometimes mistaken for the poison ivy, but it is easily distinguished by having five, instead of three, leaflets, all of which spread out from a common point, like the fingers of a hand.

The effects of poison ivy upon the skin are generally familiar. Numerous experiments show that when the smallest amount of this oil is applied to the skin it is very gradually absorbed in the course of a few days, and that within certain limits the longer it remains on the skin the greater will be the irritation produced. Some of its other common names are poison oak, poison vine and mercury. Its nearest relative is a plant known to botanists as *Rhus diversiloba*, poison oak (fig. 2), which grows in similar situations at low altitudes throughout the Pacific Coast from Lower California to Canada and northward. Western people call it poison oak because the leaves, though very unlike those of Eastern oaks, bear a considerable resemblance to the common species of the West. The leaves differ in size as well as in shape from those of poison ivy. Ranked together in the same genus are two other poisonous plants which, although they produce the same effects upon the skin, are yet totally different in their gross appear-



FIG. II.—POISON OAK (*Rhus diversiloba*).

ance, being thus more closely allied to the sumac or non-poisonous species of the group. Only one of these is at all common, and that is the poison sumac (*Rhus vernix*) (fig. 3), which is found growing in swamps from Florida well north through the temperate zone and eastward to the Mississippi valley. It is a shrub or small tree six to eighteen feet in height, with long pinnate leaves having seven to thirteen smoothly-polished leaflets. It is also commonly known as poison dogwood, poison ash, and poison elder.

Poison ivy has long been regarded by the ignorant with a degree of awe akin to superstition. Mysterious principles were relied upon to explain the phenomena, and up to the present time the common belief has been that the poisonous constituent was really an exhalation from the plant, and by more enlightened persons it has been attributed more concretely to a specific gas, a volatile alkaloid, and a volatile acid like formic acid. Experiments have seemed to verify these ideas in turn, but the falsity of all has at last been proved by the discovery of a more tangible compound. In January, 1895, Dr. Franz Pfaff, of Harvard University, announced that the poison is in reality a non-volatile oil. Numerous experiments have been performed with the purified oil, and it has been shown to produce exactly the same effect as the plant itself. It is found in all parts of the plant, even in the wood after long drying. Like all oils, it is insoluble in water, and therefore cannot be washed from the skin with water alone. Alcohol dissolves it readily. Alkalies saponify it and thus render it inert, but this result is more easily obtained by an alcoholic solution of the sugar of lead (lead acetate), which, if applied early, will give immediate and permanent relief. It is not desirable to use strong alcohol, which is apt to be too irritating, but a weaker grade of from 50 to 75 per cent. should be preferred, and to this the powdered sugar of lead is to be added until no more will dissolve. The milky fluid should then be

well rubbed into the affected skin, and the operation repeated several times during the course of a few days. This remedy is poison when taken into the mouth.



FIG. III.—POISON SUMAC (*Rhus vernix*).

The American Water Hemlock (*Cicuta maculata*) (fig. 4) is by far the most virulent plant native of North America. It is found growing at low elevations, along streams and ponds, and in marshy ground throughout the eastern portion of the continent, not extending apparently very far west of the Great Lakes. It is perennial in duration, and grows to a height of from four to eight feet. In some river marshes it is so extremely abundant that in early summer the landscape is whitened by its bloom. It belongs to the well-known parsley family, and may easily be distinguished by its fasciated, spindle-shaped roots, which are from one and one-half to three inches in length, and by the trellised structure of the underground portion of its main stem. Both of these parts are strongly impregnated with a yellow, aromatic oily fluid, which has odor resembling that of the parsnip. It has been commonly known in various localities by the following names: water hemlock, wild hemlock, beaver poison, musquash root, cowbane and children's-bane. It is frequently mentioned in the newspapers under the erroneous name of "wild parsnip."

The victims of this class of plants are chiefly herbivorous animals. The underground portions are the most poisonous, and as these are often washed, frozen or dug out of the soil during winter and early spring they are sometimes eaten by children or by animals, the former taking them for horse-radish, parsnips, artichokes, etc.; the animals eating the various kinds because they are among the first green substances to appear in the spring. The poisonous constituent resides in the aromatic oily fluid already mentioned. Falck, a German authority, reports a 45 per cent. fatality in 31 cases of water-hemlock poisoning occurring in Europe.



FIG. IV.—AMERICAN WATER HEMLOCK (*Cicuta maculata*).

The symptoms of poisoning are vomiting, colicky pains, staggering, unconsciousness, gnashing of the teeth, and frightful epileptiform fits, ending in death. As no chemical antidote is known, the treatment must consist in a thorough cleansing of the alimentary canal, and in combating the symp-

toms as they arise by the use of chloroform, chloral, and such agents as seem to be indicated at the time. Herbivorous animals which have swallowed a sufficient dose generally die, but they are sometimes saved by two or three doses of melted lard, which tends to retard the absorption of the poison in the stomach and also facilitates its expulsion through the intestines.

THE DEATH CUP.

The death cup (*Amanita phalloides*) is the most poisonous of all the fleshy fungi. (Fig. 5.) It is found in summer and autumn throughout the greater part of the United States and Canada, growing upon the ground in the woods at medium and lower elevations. The stem is white. When young it is solid, but afterwards it becomes somewhat hollow and pithy. The base is surrounded by a characteristic cuplike, cup-shaped appendage, the remnant of a veil, which covers the entire plant when young. The length varies from three to five inches. The cap is viscid when moist, and is generally smooth and satiny, but it may sometimes bear fragments of the outer covering or veil. The gills and spores are white. Several varieties of the plant exist, the one most common having a white or yellowish cap, but this may be green or even spotted when growing in deep shade. The general shape is much like that of the common mushroom, from which it is at once distinguished by its basal cup-shaped appendage, and a child can usually distinguish the fly Amanita by its more brilliant coloring.

The amount of the substance of this fungus which is necessary to produce death is very small.

The third part of a medium-sized uncooked cap is said to have proved fatal to a boy twelve years of age, and smaller amounts have affected older persons very seriously. Even the handling of specimens and the breathing of the spores have apparently given rise to very pronounced uneasiness.

The fresh fungus is very inviting in appearance, and has no bad taste when eaten either raw or cooked. There is no uneasiness felt by the victim until from nine to fourteen hours after eating. Severe abdominal pain then sets in, which is rapidly followed by nausea, vomiting, and extreme diarrhoea. These symptoms are persistently maintained, but without loss of consciousness, until death ensues, as it does in from two to four days. Its characteristic action consists not in inhibiting the action of the heart, but in dissolving the red blood corpuscles and permitting the blood serum to escape through the alimentary canal.

The illustrations appearing in this article are reproductions from the Year Book of the U. S. Department of Agriculture, from which the article was compiled.

Spraying to Prevent Potato Rot.

A recent commission appointed to inquire into the state of the potato crop in Ireland gave a report as follows: "The condition of the crop was somewhat similar to that of 1894, and upon investigation they found that the disease *Phytophthora infestans* was confined almost altogether to districts where the land was low, wet, and badly under-drained. The effects of the wet weather was not the only cause of the rot, however, as it was seen that upon land on which a proper rotation of crops was not practiced the disease was also prevalent. On light, dry soils the crop was fair, and it was considered that the drier the climate, the better system of cultivation, the change of seed, and the due observance of the rotation of crops were the causes to which the safety of the potatoes in these districts may be principally attributed.

"There is one point which is worthy of notice. In one district portions of plots were still green, and the tubers, although small, were in a good condition. Enquiry elicited the fact that the potatoes had been sprayed with Bordeaux mixture, which appeared to have prevented the disease." This knowledge is of great importance to the people of this country, as this disease has been the cause of the loss of large quantities of potatoes every year, and this season's crop is no exception. There are numerous maladies that affect the potato crop, but the one we have usually to deal with is known as "*Phytophthora infestans*." It generally affects the tubers rather late in the season, and its attack is frequently sudden and fatal. The tubers are commonly affected with rotting, and producing during the process a foul smell. This disease is most destructive during warm, moist weather, at such times spreading very rapidly. It commonly begins as a single spot on a leaf, from which it spreads throughout the plant. This disease can be prevented by spraying several times during the season with the Bordeaux mixture.

WM. RENMUTH, Colchester County, N. S.:—"We all like your paper very much, and would not be without it."

DAIRY.

Dairy Development.

- 1.—At what time of the year do you prefer to have your cows calve?
- 2.—Describe your treatment and feed of heifer calves intended for dairy cows from birth to maturity. In summer do you let the calves out on pasture or keep them up in light, roomy, cool stable boxes away from flies and scorching sun?
- 3.—At what age do you prefer heifers to drop their first calf?
- 4.—What are your best cows doing in return for care and feed? Do you use the Babcock test?
- 5.—We would be pleased and feel sure it would greatly benefit fellow laborers to have you describe in detail your method of buttermaking from the time the milk leaves the cow till it is shipped to the consumer.

The Individuality of the Cow Determines Her Own Usefulness and Largely that of Her Offspring.

- 1.—From 1st September to 1st January.
- 2.—First two weeks whole milk fresh from cow; third week one half separator skim milk, balance whole milk, afterward all skim milk; keep some of the best hay before them; a convenient feed box, in which is put oil meal and bran in the proportion of one pound to eight, all they will eat up clean every day. They will begin at about a week old. If given all they want, they will not eat too much. We keep them in a roomy box in stable until they are at least five or six months old.
- 3.—At two years old.
- 4.—Thirty-five to forty pounds milk per day, testing 4 to 5 per cent. butter-fat. Yes, we use the scales and Babcock tester.
- 5.—Milk aerated and separated while warm from the cow; cream cooled at once and kept cool until enough for churning is gathered, then ripened; churned at 55° to 60°, according to temperature of weather and room; washed, salted one ounce to the pound in churn; stand about two hours, worked, printed, wrapped in parchment paper with brand on and sent fresh to customers.

The first absolute requirement is the purity and cleanliness of milk. Tainted or filthy milk cannot by any process produce the finest quality of butter or cheese.

The capacity for large quantity of milk of high per cent. butter-fat, capacity to masticate and digest well a large amount of food in "the individual cow, her predisposition, education, and treatment," determine not only the value of the cow and the profit from her, but also almost surely the same qualities and value in her progeny. But the bull that has not these inbred qualifications does by far the most harm and is less considered generally in breeding than the cow. Watch the calves' digestion. Overfeeding causes scours, and spoils the digestive system of the prospective cow when mature to take the greatest amount of food economically. Too much skim milk is a very fruitful cause of scours. Give them a couple of raw eggs when it first starts, and repeat if necessary; this is pretty certain to correct the trouble; reduce the feed. A variety of bulky food, such as will be best for the milk cow, is best to rear the heifer on.

Winnipeg, Man.

Rose Lawn Creamery.

1.—I always have my cows come in the last week of February and the two first weeks in March, because at that time of year we have very little work we can do on the farm, we are able to get good prices for the calves we sell, and those we raise make stronger cattle.

2.—I raise the heifer calves from the best cows only. I tie them up in the stable when three days old, milking the cows and giving the calves all they will take for a week or two, or even three, according to how thrifty they are; then they are moved to a large box stall, and fed separator milk and new milk (half and half) for a week or so. At this time I commence giving them a little meal in the milk, increasing the meal as I diminish the new milk. For meal, I use wheat ground fine; have no rule to guide me as to quantity, but watch the calves and see how it agrees with them; at no time do they get over a pint at a feed in six quarts of skim milk. They are kept in a loose box until fly time is past, with mosquito netting over window. In the fall they are weaned from the milk, when we commence feeding green oat hay to the cows, which we do when the grass fails. The calves have all the hay they will eat all summer. When they are weaned from the milk they are put in a large box stall, all loose, and are turned out with the cows to water, or, in fact, just the same as the cows are treated. The second winter they are tied with chains round their necks, and fed the worst of the hay, the butts of the oat hay; in fact, the cleanings of the mangers from the calves and cows. And I find if properly treated the first year they will digest anything after that and thrive on it.

3.—I have the heifers come in at 2½ to 3 years old. Calves treated in the way I mention will come in (if allowed) at 20 months.

4.—I cannot answer, as we keep no record further than this: I try not to keep any cows that do not give a good quantity of milk of good quality. I test the milk of all heifers the first year by the Babcock test, and if both quality and quantity are there, I consider it my fault if she does not a little more than pay her own way.

5.—I have made good use of the Babcock test, feeling satisfied that I am not milking cows at a loss, also that the churn and separator are doing

their part thoroughly. We handle the milk as follows: The cows are always milked at 7 o'clock, both ends of the day, and always in the stable, which is kept clean and well bedded. As each cow is milked the milk is strained into the receiving cans, and when milking is finished the milk is taken to the creamery and run through the separator (a No. 7 Alexandra), the cream is then cooled by placing the can in cold water. We churn four times a week, with cream at first acid; the butter is washed while in the granular state, also salted in that state. When it is well drained off, the butter is placed on butter-worker and put into shape for printing. The prints are wrapped in parchment paper and labeled "Rose Lawn Creamery," the butter is placed in the ice-house and shipped every Friday per express to Winnipeg.

W. M. CHAMPION.

Raising Calves on Separator Milk.

It is customary among stockmen who raise their calves on skim milk or separator milk to add oil meal along with either oat or corn meal as a substitute for the butter-fat. Experiments which have been conducted lately by Professor Curtiss, of the Iowa Experiment Station, on feeding calves showed that oil meal was not only a more expensive food than either oat or corn meal, but gave less gain for the amount consumed than either of the other foods. The plan of the experiment was to divide the calves into three lots. Lot No. 1 were fed oil meal and milk; No. 2, oatmeal and milk; No. 3, flaxseed, corn meal and milk. Three experiments were conducted in succession, beginning when the calves were quite young, and extending over a period of sixty, ninety and seventy-four days respectively. The result proved that the oatmeal and milk gave the greatest gain, and at the least cost, while the oil meal and milk produced the least gain at the greatest cost. In the last experiment a fourth lot were fed upon corn meal and milk, resulting in a greater gain than any of the former experiments. While the results of these experiments are contrary to prevailing opinion concerning the relative value of these feeds, it is not unnatural, or in any way unreasonable, that the carbonaceous grains should be more suitable for feeding with skim milk than a highly nitrogenous product like oil meal. On the contrary, these results are based upon principles in conformity with both practical experience and scientific laws. Separator skim milk is of itself a nitrogenous food, having a nutritive ratio of about one to two, while oil meal averages about one to one and eight-tenths. Oil meal is the product of flaxseed with, substantially, all the oil extracted. In a ration of oil meal and separator milk we use two products, both naturally rich in fat, but from which practically all this substance has been removed, and the remaining products give a one-sided ration. The pure flaxseed is a more suitable substitute for the butter-fat, but as it contains as high as 35 per cent. of fat it must be fed in small quantities. In the experiments at the Iowa Station only 10 per cent. of it was used in the flaxseed and corn meal ration. The carbohydrates contained in corn and oats seem to be equally efficient, and are safer feeds.

In the same bulletin Professor Curtiss points out the advisability of pursuing a different method in the raising of beef and dairy calves. Those intended for dairy purposes require to be kept in thin but thrifty growing condition, while the calves intended for beef should be fed such foods as will maintain constantly an even covering of thick flesh from birth to maturity.

Condensed Milk.

Among the many products for which Canadians may find a market in Great Britain, Professor Robertson has mentioned condensed milk. While it is not yet manufactured to any extent in this country, if a market can be secured for it which will pay a greater profit to dairymen than butter and cheese there is no reason why condensed milk factories should not prove successful. The experience in its manufacture which had been acquired up to the year 1880 pointed to the fact that the fresh milk should be previously warmed and twelve to thirteen per cent. of its weight of cane sugar added. It was then condensed in a vacuum pan, at a temperature of 158° Fah., to about one-third or one-fourth of its volume. The evaporation went off through a cooled pipe from the top of the pan. The balance was packed in air-tight soldered cylindrical metal vessels.

From 1881 to 1883, experiments were carried on in Germany and Switzerland with condensing sterilized milk without the addition of cane sugar. It was obtained by purifying the fresh milk by the application of centrifugal force and then boiling it in order to coagulate the albuminous part of the nitrogenous matter. The same process is used for condensing as with ordinary milk. The vessels after being filled and soldered are placed for a short time at a temperature of 248° Fah., the keeping qualities of the substance being tested by submitting it for a few weeks to a temperature of 85° to 90° Fah., and after the lapse of this time seeing whether there has not been indications of fermentation shown by distention at the bottom or top of the vessels. If the preparation of condensed milk without the addition of cane sugar is carried on with the necessary precautions, the product obtained is a body possessing great keep-

ing properties, which, when dissolved in about four and one-half times its weight of pure lukewarm water, yields a liquid possessing all the properties prized in fresh milk. If allowed to stand for some time a layer of cream is thrown up which may be made into butter.

That "Cowy" Odor.

What is that "cowy" odor? The wise (?) buttermaker and teacher tell us to let the milk stay uncovered so that the "cowy" odor and animal heat may escape. The animal heat may escape, but the "cowy" odor never will. And the animal or any other heat will escape through the wood or the metal as readily as by the opening or possibly more so.

At first I took it for granted that cow's milk smells bad naturally, but later I questioned it. I filled some bottles and jars and sealed them and put them in cold air. The milk was put in warm, as drawn from the cows, but I knew it was clean and also knew the cows were fed with good food. I tested it frequently for the next forty-eight hours by smelling and tasting. I never could detect a sign of that "cowy" odor.

I now assert that a cow properly fed and kept clean gives milk of a pleasant flavor. But if milk is drawn in stables as I have seen them and allowed to stand in an open pail or can for quite a while it will acquire a "cow stably" odor; and that is what the buttermaker smells when he sticks his nose in to the can and tells the patron to leave the milk uncovered to let the "cowy" odor escape. Would he tell the patron that unless he cleaned out his stables and kept them clean his milk could not be used he would strike nearer at the root of the matter.—L. W. Lightly, in *American Creamery*.

German Margarine Law.

This law came into operation on October 1st of this year. It does not prohibit the manufacture and sale of these products; but states clearly that the manufacture of artificial butter, cheese, and lard must be subjected to official supervision. Police inspectors may enter the premises at any time during business hours to take samples; any information required by them must be given. The inspectors are bound under oath not to divulge any secrets of the trade. In places where the goods are retailed, notices that such goods are on sale must be conspicuously displayed. Vessels containing them must also bear a visible designation. The mixture of butter or "butter lard" with margarine or other fats is prohibited. The manufacture, storage, package, and sale of artificial fats is prohibited upon premises where butter is manufactured, stored, packed, or sold. The law is not applicable to such artificial fats as are not intended for human consumption. The Federal Council is empowered to prohibit the sale of butter of which the fat constituents do not attain a certain standard.

POULTRY.

Turkeys in Autumn.

Many of those who are engaged in raising turkeys for market believe that the critical period is over when the chickens are a few weeks old. This, however, is not the case. It is true that unless great care is taken with the flock at this time the number will decrease rapidly. After the flock have passed this stage they will not require very much attention until the time comes to prepare them for market. During the summer it is advisable to give the birds plenty of exercise. They can be grown at a very little cost by giving them the run of a pasture lot in the early part of the season. A little soft food, such as milk curd and waste from the table, may be given, with a little ground wheat added. After the grain is harvested they will thrive well on the stubble fields without any extra food whatever.

There is an idea prevalent among growers that from Thanksgiving Day until Christmas is the only season when there is a demand for fowl. If turkey is delicious at this season, why should it not be at any other time? Then the market usually becomes glutted, and the price is certain to decrease. The most successful growers arrange to have a little variety in the age of their flock. They are thus enabled to supply customers at different seasons. Another good plan is to pick out the nicest birds, and have them ready when the supply is greatest. Like all other products, the best brings the highest price. The others may be allowed to grow a larger frame, and can be marketed when competition is not so keen. If a good article is offered out of season a market can easily be created.

To be successful in raising turkeys three things are necessary, namely, a well-developed bird, one that will present an attractive appearance when dressed, and a systematic way of grading and packing the fowl for market. To get the first it is necessary to have a well-managed flock. Those kept for breeding purposes should never be overfed. Many of the failures in the business can be attributed to overfeeding, both those that are kept for breeding purposes and the birds that are selected for fattening. The critical period really extends from the time the grower begins the process of preparing for market until they are in the hands of the consumer. In finishing the fowl for market more solid food will be required than while the turkeys are growing. Too much green food at this

stage is likely to produce diarrhoea. Where corn is grown it can be fed to advantage, as it makes the flesh tender. Many dealers say that old turkeys fattened on corn will produce flesh so tender that it could easily be sold for young stock. However, it is not advisable for any grower to have very much old stock in his flock. Where corn cannot be had wheat or peas make a good substitute; in fact, it is a disputed question as to which of the three make the best food for finishing. It is preferable to feed the grain unground.

A very important part of the business lies in dressing the fowl for market; unless this work is done properly the highest price cannot be obtained. Before the turkeys are killed they should be deprived of food for twelve hours, so that their crops may be empty. Care should be taken that they are not bruised in catching. The proper way is to stab them inside the mouth, and after they are thoroughly bled, dry-pick them without tearing the skin. Only an opening large enough to insert one finger is required for removing the entrails. The gizzard, heart or liver should not be removed. After dressing, hang up until cool, when they are ready to pack for market.

Turkey raising requires considerable skill and thought if profit is to result. Proper places are required to keep them in during cold weather. It is not necessary to have expensive buildings, but as turkeys are very sensitive there should not be too many kept together. They are liable to take sick, and a sick turkey is about as good as a dead one. If turkey raisers would co-operate in shipping their fowl, or have a commission merchant who would take the entire output from each district, better prices would be realized. They should then be properly graded and neatly packed in paper-lined boxes, with the number of fowl and total weight stamped on each box. This system is usually preferable to the growers selling them out retail, as dealers can sell to better advantage, and the growers always know from them what the markets require.

Autumn and Winter Management of Poultry.

As the cold nights approach, the hens will require more comfortable quarters than the tree-tops to roost upon if they are to be kept for the purpose of returning a profit throughout the winter. Occasionally we see places where the old system of hunting the hens off the trees and fences these chilly nights and driving them to a place of shelter, to be let free in the morning, is still the custom. Happily, incidents of this kind are scarce, but it is a well-known fact that the average poultry-raiser practices too much "extravagant economy."

Any person who proposes to close up the hens in some out-of-the-way corner and feed them upon the screenings from the fanning mill during the winter had better begin at once to supply his own table with fowl, and keep on using until he is forced to come to a "full stop" for want of supply. The hens will simply keep themselves alive all winter and begin to lay a few eggs in spring just at a time when the markets are so crowded that you can scarcely give eggs away.

It is not necessary to erect an elaborate poultry house, but it should be situated in a place where there will be sufficient sunlight to make it bright and cheerful. Then it should be warm enough to keep water from freezing in cold weather. This is one of the difficulties that have to be overcome. It is not an easy matter to do this without going to considerable expense when the house is built by itself. If the flock is a large one, and properly managed, it will repay the cost of a good building; but for small flocks kept on the farm a corner of the basement in a bank barn is a more suitable place. It should be arranged in the south-east corner, if possible. Poultry intended for market should be separate from the laying stock, as they require different treatment in feeding.

With a suitable house the expense of feeding will be materially reduced. In order to keep the laying hens healthy they require a variety of foods and plenty of exercise during the day. There is usually more trouble caused by overfeeding than by scanty feeding when one is supplied with all the modern conveniences. It requires considerable judgment to manage a flock of poultry properly. Though there is nothing hens will relish better than a mash of warm food, containing meat scraps, bran, etc., every morning, it is not wise to provide this diet constantly. To be successful in this business one should have on hand a supply of green bone in order to get a properly balanced ration for his poultry. It is not sufficient to place ground dry bone in the house, as it is of very little use except for grit. Green bones (ground) contain sufficient mineral matter and nitrogen to balance a ration of corn meal, wheat middlings, or bran. In giving the morning feed it should be remembered that a hen is supposed to "scratch for a living," and the feeder should never give sufficient food to satisfy their appetite. Afterwards give them the run of a place where the floor is covered with chaff or straw, and shake a few handfuls of grain amongst it to induce them to "scratch." In the afternoon a more liberal supply of grain may be scattered amongst the chaff so that they may repair to the roost in the evening with full crops. Clover hay cut fine or hay seeds spread on the floor is quite often used in place of chaff. It is not necessary to feed so much grain when this is provided. Poultry intended for market require more

grain, and if bulky food, such as finely cut clover hay, is added it will assist digestion.

The production of eggs in winter is much the same as winter dairying. The hens, the same as the cows, have to be kept the year round, and it is essential that they return a greater profit in winter than in summer, as it costs more to keep them. There is no danger of flooding the market with eggs in winter, at present, and no person need be afraid of investing a little money in the way of providing suitable houses and proper appliances for feeding to the best advantage.

ENTOMOLOGY.

Entomological Convention.

ENTOMOLOGY IN SCHOOLS.

The thirty-fifth annual convention of the Ontario Entomological Society met in London, Ont., Oct. 12th and 13th. President John Dearness, I. P. S., London, occupied the chair. Among those who contributed papers were: Rev. Thos. W. Fyles, F. L. S., South Quebec; Mr. J. D. Evans, Trenton, Ont.; Mr. H. H. Lyman, Montreal; Mr. Robt. Elliott, Plover Mills; Dr. Bethune, Port Hope; Dr. James Fletcher, Ottawa; Prof. Webster, Wooster, Ohio; and others. Prof. J. H. Panton, who was expected to have contributed to the programme, was unable to do so because of serious illness.

Secretary W. E. Saunders read report of council, and referred to formation of new branches in Toronto and Quebec. The former was affiliated with the parent Association on January 1st, 1897, and the latter a few months later. They were reported as doing energetic and useful work in their respective fields. The Montreal branch was also reported as flourishing, and it is hoped a new Association in the Maritime Provinces will soon be formed and connected with those above mentioned.

The London Geological Section's report was given by Mr. John Law, London, who said that visits had been made to the gold fields at Rossland, north shore of Lake Superior, Lake of the Woods, and Madoc. He reports finding of coal in the vicinity of Sudbury. A beautiful specimen of carboniferous was exhibited at the meeting. It had been prepared at Niagara, and is used instead of emery for grinding and cutting hard substances.

Locusts of the Bible was the subject of a paper by Rev. Mr. Fyles. He said that Solomon was a naturalist, and Moses paid attention to economic entomology. The locusts of the Bible were a species of grasshopper technically known as *Locusta migratoria*. In ancient times they were far more numerous than we can have any conception by experimental knowledge, as they not infrequently destroyed every vestige of vegetation lying before them.

The report of the Ottawa district was read by Mr. Harrington, who said that the tent caterpillar was this year more numerous on various trees than for a long time. The changeable winter of '96-'97 had much to do in lessening many species of insects this year.

Dr. Bethune reported an unusual scarcity of insects this year in the Port Hope district. Bud moth on plum trees had been troublesome, and tent caterpillars more numerous than usual. He expects an extensive invasion next year. The scarcity of fall webworm was very remarkable, as just two years ago they were numerous. One of the worst insects this year was the aphid on all shrubs, currant bushes, roses, etc. Winged aphides have been very numerous recently. Locust-tree borers have killed most of the locust trees there. Only one or two army-worm moths seen this season. Tussock moth has disappeared from Port Hope. Toronto trees had a few local attacks, but not serious; due likely to destruction of cocoons last winter by the City Council. It would have been well if the parasitized cocoons had been preserved and the parasites allowed to escape in the spring. Grapevine flea beetle had been bad on Virginia creeper. Dr. Fletcher expressed the belief that the disappearance of such insects as tent caterpillar, army worm, etc., was due largely to the work of parasites, which develop more numerous than the worms. He reported a reappearance of the large sawfly. There have been few cutworms this season. Bran, arsenic and sugar spread on ground or around hills of corn, etc., or sown with a wheel cultivator six feet apart each way, will destroy the caterpillars, as they prefer it to green plants. Leaf hopper of the grape has a remedy in kerosene emulsion. Hornfly almost disappeared this year, according to prophesy.

THE PRESIDENT'S ADDRESS.

In his address, President Dearness referred to the insects of the year, speaking of the disappearance of cutworms. In 1895 the moths in prodigious numbers made house-keepers miserable in the evenings. In the following spring the larvae of the same insect did great injury to grain crops. One might expect when the time of the pupation of these larvae had expired to witness a reappearance of the moth in increased numbers. Such expectation was entirely disappointed. No parasite was reported on them, so what became of them? The disappearance of the army worm, which in 1896 devastated the grain fields in many townships of Ontario, was also spoken of by Mr. Dearness. The causes and conditions of the appearance, and the still more curious disappearance, of such insects as the cutworm moth and the army worm challenge and invite investigation.

Continuing, he said if the army worm had its "inning" last year, the San Jose scale has this year had the lion's share of attention. "It is to be hoped," said he, "that

we are more frightened than hurt." He was, however, truly thankful people are well frightened. One benefit from the alarm was that it led many to discover what a scale insect is, and to learn that for years their fruit trees have been injured by native or naturalized species of this class of insect. If the alarm perpetuates, as it appears to have started, a crusade against scale insects of all kinds, much good will result. The destructiveness of this scale and the expense and difficulty of killing it, will, if a few more instances of its introduction from nurseries occur, lead to legislation. Mr. Dearness believed that if the San Jose scale ever became established in this country it would not, like the moths above referred to, be marked by a sudden disappearance, nor would it, like the cod in moth, confine its ravages to a single species of tree, nor even to trees under cultivation.

ENTOMOLOGY IN SCHOOLS.

I was glad that the important question of teaching entomology in the schools occupied so large a part in our discussions last year. I have to report that the Western Fair Board repeated its offer of prizes for the life-histories of injurious insects exhibited by schools. The prizes were won by Mr. W. J. Atkinson's school, Avon P. O., and Miss Corsaut's, No. 15, London Township. The former exhibited the cabbage butterfly (*Pieris Rapae*) in egg, larva, pupa and in alcohol, the pupae and the imagines and dried leaves showing the effects of the larva on their host plants, with a readable account of the observations made upon them.

Miss Corsaut's school showed a series of specimens of grasshoppers, one or two with the red mites (*Trombidium locustarium*) attached to their bodies under their wings, and a dissection of a locust.

I hope an increasing number of county and township fair boards will follow the example of the Western in offering encouragement to the true study of insects.

Collections of insects as commonly seen at fairs have little claim to the honor of being scientific exhibits. Their proper places is with wax flowers, rosettes of seaweed, and other such pretty bric-a-brac. There is little or no scientific value in a small private collection of insects arranged at haphazard, without notes or dates, be they ever so nicely spread, and even though they are pinned over their proper Latin names. Besides in nine cases out of ten economic interest centers in the larval form of insects. Exhibits to be worthy of the name of science should attempt to show the phases of the life cycle. This remark is particularly applicable to those insects that undergo complete metamorphoses. Hence, I would advise young collectors to prize most the butterflies and moths they obtain by breeding the larva. While not discarding the net, I would encourage the use of the breeding cage, and I would strongly advise fair boards to offer their best prizes in this class to exhibits of complete life cycles of insects.

During the year I received a few letters from teachers outside of my own district, asking hints on how the children may be directed in the practical study of insect life. Anticipating that others may desire the information, I avail myself of the opportunity afforded by the printing and circulation of this annual report to meet the desire more fully and satisfactorily than I could do by letter.

At the outset the purpose of the lessons should be clearly defined in the teacher's mind. The aim should not be to fill the learner's memory with knowledge about insects, but to train the young eye to see and the mind to reason about, to connect and relate the phenomena observed and to make these observations and reasonings the occasion for practice in correct expression by voice, pen and pencil.

The study, if natural, will be at active to children. Flowers and insects are the classes of objects, next to mud pies, that they take most delight in.

Each teacher will, as skillfully as he can, introduce the study. Plans to arouse an easily obtained interest will readily suggest themselves. The main points may be illustrated by one or two examples, and the technique rather than the methods may be described here. Take, for example, the cabbage butterfly. The study of which won the first prize above referred to. For a class beginning after mid-summer holidays this insect is always easily obtained. Construct a cage by covering a box of horizontal cross section of from 40 to 100 square inches with mosquito netting or cheese cloth; or, being more convenient for feeding and studying, take an ordinary bandbox, remove the bottom and substitute a netting or cheese cloth covering. Use the latter to set over a smaller box such as a chalk-box. Many insects pass the pupal stage buried in the ground, but chrysalids of butterflies are commonly found suspended in dry situations. Earth to the depth of an inch may be put in the box and upon that some brushy twigs upon which to lay the leaves for food, and chips to which the chrysalids may be attached. In the case of the cabbage worm have the children collect the worms of various sizes and with them bring a leaf or parts of leaves to serve as food. If the supply of food is maintained the larva will eat voraciously, grow fast, and in a few days prepare to transform into pupa or chrysalids. When these are formed, in the example under notice the box may be set away in the wood-shed or other secure place until the following spring, awaiting the final transformation. Will you await this beautiful surprise to discover to the children the connection between the beautiful white butterfly and the green cabbage worm, or will you lead them to discover it when they are collecting and observing the larva? Circumstances will determine. You can and should stimulate a search for the youngest and smallest specimens. Some pair of sharp eyes may trace one to the egg, attached alone by its end to the under side of a cabbage leaf. Then institute a search for eggs; these will be brought in numbers and the hatching studied. It is needless to say you should have a magnifying lens; every teacher (and every household) should have one.

In the spring the tent caterpillar is very suitable for study. It is no trouble in early spring to find a bracelet of varnished eggs encircling a twig of apple tree or wild cherry. Cut off the twig with another attached so as to form a fork that the newly-hatched insects may weave a tent upon it. Set two or three of these forks in bottles of water

to stimulate the growth of the buds so that when the eggs are hatched the young tent-makers may have some leaves to feed upon. In time transfer them to the breeding cage, with chips resting on the earth; under these chips they will spin their cocoons. These cocoons may be given to the children to watch during the holidays, for before the first of September the moths will have emerged. The conditions of growth in the schoolroom may be so unfavorable that healthy cocoons are not formed; supplement the supply by outdoor captures. These two examples are selected out of many that might be taken. Nothing has been said of the important part of the study; observations on the habits, moulting, organs, mouth, antennae, legs, segmentation, etc.

When the moths are bred you may, if you wish, release them, but you may wish to preserve what represents a life history of the insect.

Obtain a box six or eight by ten inches, two to four inches deep, with a close wooden or glass cover. Tack linoleum or cork in the bottom and then line the inside with white glazed paper.

The eggs are easily preserved. The leaf, twigs, etc., may be pinned in the box, the eggs may be touched with coal oil to prevent their hatching.

The larvae are taken at various stages and killed with fumes referred to be on or by dropping into hot water or into water and alcohol. They may be "blown" as follows: Snip off the anal end, empty by repeated gentle rollings with a lead pencil from the head backwards, then blow up through a straw inserted in the opening, tie to keep the air in and dry. Or they may be preserved in alcohol by putting them first into a twenty per cent. solution in water, the next day in a forty or fifty per cent. solution, the next day in a sixty or seventy-five per cent. solution. They will keep indefinitely in a seventy-five per cent. or stronger solution. The more gradually the strength of the alcohol is raised the better the form and marking will be retained. If put at once into strong alcohol soft-bodied insects are shrivelled out of recognition. Frequently parasites may be found in or upon insects. These should be carefully observed and specimens of them kept.

Butterflies and moths (Lepidoptera, from *lepis*, a scale, the wings being more or less covered with scales or microscopic feathers), whatever way captured—commonly with a net when in the open field—are transferred to a bottle or tin box and killed with fumes of chloroform, benzine, ether, or cyanide of potassium. A cyanide bottle—it must have a wide mouth and tight cork—is prepared by dropping in a lump of cyanide of potassium, say as large as a marble, varying of course with the size of the bottle; merely cover with water and then add enough plaster of Paris to make a cement with the water. Let it get dry before corking. It is well to slip in a thin layer of dry cotton batting or a disc of blotting paper; then keep it tightly corked except when inserting or taking out an insect. To use chloroform, ether, or benzine, put a few drops on a bit of cotton batting and shut in box or bottle with the insect.

Lepidoptera are then spread on a board until dried. The spreading is easily done before the insect becomes rigid. To make a spreading-board take two pieces of smooth, soft board half an inch thick and ten to eighteen inches long by two or three inches wide, tack them a half inch apart at one end, one quarter inch at the other to cross cleats below the opening between the boards tack an inch strip of thick linoleum from cleat to cleat, corky side upward.

Insert a pin through the body of the killed insect just behind the head, stick the pin into the linoleum so that the insect's body will be carried down to the wings through the opening between the boards. Carefully, so as not to "brush the dust" off the wings, expand them on the boards and over or across them pin narrow strips of paper to keep them in proper position until they dry (two or three days will suffice).

In the box we have spoken of nicely arrange the preserved material—eggs, larva (dried or in vials of alcohol), parasites (if any) pupae, moths or butterflies, etc. To keep living insects out drop in a camphor ball or some crystals of naphthalene, and above a like good care of your accurately dated notes of observations. One such box as this, the result of the teacher's and pupils' own efforts, is likely to be of greater practical and educational value than memorizing a whole text-book on entomology, even though such study were supplemented by catching at random and mounting one hundred beetles, moths and butterflies.

One of the most serious defects in our public school system is the lack of exercises that train the children to observe and to reason from their own observations. Such kind of training cannot be obtained from the text books nor tested by examinations, and hence will the more slowly gain its proper place in our system of education. But I hope that the influential efforts of this Society, now that it has taken this subject up, will continue to stimulate and encourage nature study in our schools, at least along that line in which it is particularly interested, and which the quotation from Mr. Sheldon shows to be so appropriate, and which is no less practical than disciplinary.

Prof. Fletcher, in seconding a vote of thanks moved by Mr. Fyles to Mr. Dearness for his able paper, referred to the importance of this subject, which means so much to the financial interests of our country, as quite 10 per cent. of the crop each year is destroyed by insect pests.

Manitoba schools have made a grand start in the study of plant and insect life. Dr. Fletcher recommended the simple teaching of practical entomology. Reference was made to what he observed in Manitoba, where the children were found to be able to distinguish the various weeds which he presented to them.

Dr. Fletcher read extracts from a letter received from Mr. Martin Burrell, of St. Catharines, upon orchards he visited which was infested with the San Jose scale. A noticeable feature, he found, was that it did not spread from tree to tree so much as last year. In discussing the subject, Dr. Fletcher strongly advised Canadian fruit growers to purchase their trees from Canadian nurseries, instead of importing from States that were infested with the San Jose scale. He believed our own nurseries were free from this injurious

insect, and if they took proper precautions in procuring their stock, would remain so. If farmers and other fruit growers would dig up and destroy badly infested trees, and give attention to spraying others with kerosene emulsion throughout the summer, more satisfactory results would be obtained than by clamoring for legislation to protect them. He also drew attention to the p. a moth, which for the past twenty-five years has been the cause of serious trouble to farmers in Eastern Ontario. In his report of 1895 he described the method of treatment to prevent this maggot. In commenting upon a letter from Mr. Kirkland, who had charge of the work in the State of Massachusetts for the destruction of the gypsy moth, Dr. Fletcher emphasized the importance to Canadians of the successful efforts of the State. Had one of the poorer States been infested he had no doubt but that it might have spread over the greater part of North America. The State Government appropriated the sum of \$70,000 to the eradication of this troublesome pest. It required a number of years' hard work before they got it under control. The method pursued was to spray the trees with arsenate of lead.

A paper read by Mr. Loohead, B. A., London, on the study of crickets, and another by Rev. Dr. Bethune, Port Hope, on the life history of moths, which was prepared by Professor Webster, of Wooster, Ohio, were of considerable interest to those who were interested, as students of entomology.

Officers elected: President, Mr. H. H. Lyman, Montreal; Vice-President, Prof. J. H. Panton, O. A. C., Guelph; Secretary, Mr. W. E. Saunders, London; Treasurer Mr. J. A. Balkwill, London. Directors: Messrs. W. H. Harrington, Ottawa; J. D. Evans, Trenton; A. Gibson, Toronto; A. H. Kilman, Ridgeway; R. W. Rennie, London; and Prof. Panton, Guelph. Librarian and Curator, J. A. Moffat, London. Auditors: Prof. Bowman and Mr. Loohead, London. Editor of the *Entomologist*: Rev. Dr. Bethune. Editing Committee: Dr. Fletcher, Rev. T. W. Fyles, H. H. Lyman, and James White, Snelgrove. Delegate to the Royal Society of Canada: Mr. J. D. Evans. Committee on Field Days: Messrs. Wolverton, Hotson, Spencer, Balkwill, Rennie, Elliot, Bowman, Anderson, Saunders, and Law, London. Library Committee: Messrs. Dearness, Balkwill, Saunders, Moffat, and Dr. Bethune.

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.)

Miscellaneous.

IS COCKLE SEED INJURIOUS?

THOMAS HINDLE, Simcoe Co., Ont., asks if the seed of the cockle (*Lychnis Githago*) can be used in any way as feed for stock, or for any other useful purpose, and states that a farmer of his acquaintance has between fifteen and twenty bushels of this seed.

[The cockle, many years ago, before the machinery for cleaning weed seeds from grain had been brought to its present state of perfection, was a very common weed in grain fields, but, with the exception of a few districts, it is now so uncommon that it may almost be called a rare plant in Canada. I am surprised that any farmer can have the quantity of cockle seed mentioned by your correspondent, unless, indeed, he may have grown this plant as a crop. I fear there is no good purpose to which this seed can be put, and the proper course would be to destroy it with fire, so that the weed may not become more prevalent on the farmer's land. I have frequently heard the statement made that the seed of cockle is poisonous, and when this enquiry of Mr. Hindle was submitted to me I consulted some of the millers here, and also all the works of reference in which the plant was referred to. Millers state that they remove this seed from wheat before grinding it with great care, as it is generally supposed to be injurious, some stating that it produces headache in human beings. The only reference to this poisonous property which I have come across is in La Roussee's large French dictionary, where it is referred to as follows: "The seed is starchy, and can to a very small extent enter into bread, but the skin of the seed contains a bitter, acrid and irritating principle called Saponine, which, when present in bread in any appreciable quantity, makes it bitter and unpleasant, and is stated to be very irritating to the stomach. Serious intestinal hemorrhages observed in Poitou were attributed to its abundance. When these seeds are eaten by stock, especially by fowls, they produce results very similar to the above. Saponine as a powder causes sneezing and acts as a poison on small animals." Saponine, the substance contained in the above-named seeds, is the same as that which in much larger quantity occurs in Saponaria, and gives the English name of soapwort to that plant. This is one of the few economic species in the pink family. When the roots and stems are bruised and agitated in water a soaplike lather is produced, which may be used to a certain extent for washing. Saponine, in varying degrees, is found in many plants, as *lychnis*, *silene*, *arnica*, *arum*, *capsella*, the fruit of the horse chestnut, etc. In view of the above, I do not think it would be wise to use this seed as food for stock, but so that the plant may not become more prevalent in the neighborhood, it would, I think, be well to scald and then bury the supply on hand, as it is a difficult matter to burn any large quantity of threshed seeds.

J. FLETCHER, Botanist.
Central Experimental Farm, Ottawa.]

A POSSIBLE WRONG IMPRESSION CORRECTED.

In speaking of the black knapweed (*Centaurea nigra*)—on page 433, Oct. 1st issue—the types should have said that the seeds do not fly like thistle-down; the head much resembles that of the thistle, but the plumous part is at the base of the seed, hence it is not likely to spread in the fields of a careful farmer.

J. DEARNESS, I. P. S.

BROWN ROT OF PLUMS.

G. C., Huron Co., Ont.:—"My plum trees were loaded with plums in the early part of the season, but all rotted and dropped off before ripening. What would you advise me to do with them? Would it do them any good to spray them with the Bordeaux in the spring?"

[The disease is known as "brown rot." A minute spore falls upon a green plum on which there is a little water or dew and sends out a germinating tube which penetrates the skin of the fruit. The affected plum at first turns brown in spots; these gradually enlarge until finally the whole plum becomes brown and rotten. The spores are blown about by the wind, and when one of them lodges on an unaffected plum where sufficient moisture is present it starts the disease again. The rotted plums shrivel up until finally they become dry and mummied husks, and though they often drop off it is quite common to see them remain on the trees all winter, especially when they rot soon after forming. The spores have the power of germinating the following spring, and in many of them the mycelium remains in a dormant condition so that during the warm spring weather this mycelium produces a new crop of spores. These spores are scattered everywhere, and attack the fruit as soon as it is formed.

To prevent the disease, pick off and burn all mummied plums that have remained on the trees as early in winter as possible. In spring, before the buds begin to swell, spray with a simple solution of copper sulphate, using one pound to twenty-five gallons of water. Before the blossoms open use the Bordeaux mixture, then when the fruit is well formed and while it is growing either use the Bordeaux mixture or ammoniacal carbonate of copper, using one ounce of copper carbonate with twelve gallons of water. This application may be repeated at intervals of ten or twenty days until the fruit approaches maturity.]

YOUNG PIGS, BUT NO MILK.

A SUBSCRIBER, Waterloo Co., Ont.:—"I have a Yorkshire sow that had pigs. They came all right and suckled vigorously, whereupon a day after they died one by one, two by two, till they were all dead. I tried to draw milk from the sow from different teats, but could get nothing. I had her running on rape, where she had access to a good spring and timothy and clover pasture. She was in good condition, but not fat. Explain cause and whether it is advisable to breed her again?"

[This occasionally happens, and from your management we can suggest no cause. If she is not very valuable, and you have other sows to put in her place, it would not be wise to risk another disappointment with her, as you cannot improve upon the treatment you gave her. However, if she is a choicely bred sow, of superior quality and worth risking, give her daily doses of Herbageum or other stock spice for a month previous to farrowing, and feed generously, but avoid extreme fatness.]

LICE IN THE HENHOUSE.

S. NORTHCOTT, Durham Co., Ont.:—"We have been troubled this summer with small lice in our henhouses; some are red, others gray. We closed the building and fumigated it with sulphur smoke, but it did not seem to kill them. We cannot find any on the hens. 1. Can you tell us any way to get rid of them? 2. Will they live on a person or in a dwelling? 3. Does it pay best to keep this or last year's pullets?"

[1. Besides giving another thorough fumigating by burning sulphur in a pot of live coals while all the doors are closed, clean up the building thoroughly and spray the walls and floors, being careful not to miss any cracks, with lime wash to which has been added a quantity of carbolic acid—say six ounces to two gallons of wash. The fowls should be caught and thoroughly dusted with yellow insect powder (pyrethrum), and their dust bath should have mixed with it a quantity of sulphur. 2. Not for any considerable length of time. 3. This year's pullets, if early and well developed, are usually preferred to older hens to keep as winter layers. Last year's birds should also lay well if past the fall moult. Hens older than these should be discarded.]

GARDEN AND ORCHARD.

Our Fruit Trade.

It is a matter worthy of remark and wonder that throughout our entire fruit season we see in the fruit stores of all our cities and towns of any considerable population displayed for sale quantities of California fruit. It is not only displayed, but sold readily at prices above what our home-grown product of similar kinds can command, simply because it is presented in more inviting condition. Even after the long railroad journey over which it has to come it takes the place of the best our producers offer. There are opportunities being lost somewhere when our beautiful Niagara Peninsula fruit does not assert its right to greater recognition. Perhaps the special efforts of our growers and shippers are being absorbed in the development of our market in Great Britain, but even here we see ourselves surpassed by Californian enterprise. The

following extract from an American contemporary shows that distance from market is not a prohibitive barrier to a profitable market in England if growers and shippers will do their duty in picking, packing and shipping:

"John Ball is getting plenty of good California fruit this year to keep company with his Chicago beef and Minnesota wheat. The St. Paul left New York September 15th with over 4,000 packages on board. She arrived in Southampton September 22nd, and nine hours after she was docked the fruit was delivered in Covent Garden market, London, and was sold early next morning. The pears sold for about \$1.12 to \$1.50 per half box; blue plums for \$1.30 to \$1.55, and yellow plums for \$2.00 to \$3.00 per half box. The reports say that the market was somewhat depressed on account of the quantity received. The Teutonic, which sailed the same day as the St. Paul, arrived at Liverpool the same day with about 5,000 packages on board."

Such a report as the above is in marked contrast to such Liverpool cables as the following concerning the condition of shipments of our fruit as it arrives in England:

"Receipts continue to land in bad order, and there is a decided want of confidence in the stock, owing to so much of it being tender and in faulty condition. Now that the firmer varieties will soon be moving, the outlook for good sound fruit is favorable. Inferior quality and fruit showing rot moves slowly."

Similar complaints have been current in Winnipeg papers regarding the condition of Ontario and British Columbia shipments of pears, peaches, and plums as they arrived in Winnipeg. It makes little difference what our Governments do in providing transportation provided producers and shippers neglect to use the necessary precaution in selecting, picking and packing the crop. We trust, however, the experimental shipments this year will do much to teach, as well as to demonstrate, that we can supply the British market with that for which it will pay a good price.

Autumn Work in Garden and Orchard.

BY MARTIN BURRELL, LINCOLN CO., ONT.

There is a very natural tendency amongst fruit growers towards relaxation of effort in the fall, especially of concentrated effort directed to what seems minor details of the horticultural work. In spring the air is full of promise; imagination runs riot amongst the fall crops and fall prices, and no work is too hard and no detail too trifling to be attended to. But when the rush of the summer work is done, when the last load of fruit has gone to the station and the tension is taken off it is small wonder that the horticulturist does not experience the energizing impulses that goaded him on six months ago. And yet, I suppose, the thing that chiefly differentiates the really successful man from his less successful fellow is the fact that the former recognizes no such thing as an unimportant time of the year. He is at it all the time, and always has the future in a corner of his eye. This ability to "keep on keeping on" is a fine faculty and mighty few of us have it.

Throughout the Niagara Peninsula there has been such an abnormally large crop of fruit of all kinds, except apples, and prices have ruled so low, that many growers will be too disgusted to peg away at the various little jobs that will affect their financial returns in 1898. Next April they will take heart of grace and buckle in again. We are a procrastinating generation, but it is a vast deal better to drive your work than let your work drive you. Do not let us put off till the spring what can be often done better in the fall.

Pruning, etc.—Where fruit is extensively grown a good deal of pruning could be profitably done late in the fall. I am not in favor of cutting back young trees or pruning such tender wood as the peach previous to the winter, but the old canes could be cut out of the raspberry patches, and all hardy varieties of grapes pruned directly the wood is ripened; and, decidedly, every man should go systematically through his orchards this fall with a triple object in view, to wit, the removal of "black knots," of limbs showing pear "blight," and of all broken or bruised branches. In spite of careful "propping" there are thousands of split trees and broken limbs in this section; attend to these invalids at once, saw off well behind the break and paint the exposed surface. One or two of my Lombard plums are hopelessly broken and disfigured. They will be top grafted with good varieties of the Domestica plums, or possibly with some of the Japanese type. There are too many Lombards in the country anyway, the glutted plum market is always in the Lombard season, and any man who can grow a better plum, ripening at a better time, does not want to fool around with many Lombards. As for "black knot," it has been pointed out before in these columns that the fungus which constitutes this disease ripens its second crop of spores in the winter, so that now is an excellent time for inspection and excision. The fact may also be re-emphasized that pear blight is a bacterial disease, and that the few bacteria which survive the winter will spread through a whole orchard in the spring. Do not give them a chance.

Insects and Weeds.—The fight with these two classes of agricultural pests is usually considered to be over at the end of the summer (the farmer often coming out at the little end of the horn). Anyway, a truce is called on the part of one of the belligerents, and this is where he makes a big mistake, for the other fellow—be he weed or insect—is sawing wood faster than ever, though perhaps not so ostentatiously at work. It is not the 999 weeds we kill during the summer that trouble us, but that thousandth little "cuss" that, left to his own devices, matures his seed and sends out a whole army of his vile progeny to worry us next summer, and

very few people have a clear idea of how many seeds a good healthy "ragweed," "lamb's-quarter" or "purslane" can mature. I made a close estimate last year of the prospective crop from one fat, fleshy plant of "pursley," and ran up to 50,000 seeds! I do not mean to assert that every seed would mean a plant. Nature provides for all sorts of contingencies. But no wonder the weeds are always with us. The same principle holds good with insects. At infinite pains to ourselves we slaughter 999, the other one winters over and becomes as the sands of the sea.

A great many of our bad insects pass the winter in pupal and quiescent stage; others, like flies and bugs, winter in the mature insect form. The latter usually select for winter quarters weeds, decayed vegetation of the kind that has supplied them with food, and rubbish heaps of all kinds. It is therefore eminently good farming and good gardening to plow under, or better, rake up and burn, all the weeds, litter and vegetable refuse about the place. More autumn fires and less spring fires. It will pay every time. Nothing should be on the top of the ground in the winter but what rightly belongs there.

Drainage and Fertilizing.—It is almost unnecessary to insist on the importance of proper drainage being provided for the orchard before winter. Nothing will injure a tree so much as wet, cold condition of soil round the root system. But apart from the necessary plowing, furrowing out and banking up trees, I believe more could be done in the way of underdrainage in the fall. We get abundant opportunities during the summer to see the evils caused by defective drainage, and it is surprising what an amount of permanent good may be achieved at the cost of a few dollars in tile, and a little steady spade and shovel work at odd times. It is fatal to put all this sort of work off till the spring. Ten hundred other things seem more important then. Try your luck on some one wet low spot of the orchard or farm and watch the effect next spring. You will never let another fall go by without laying more or less tile.

As for fertilizing in the autumn, opinions vary a good deal. When growth, however, is quite over, and cooler weather established, I believe you are quite safe in applying most fertilizers to the orchard, and if you can do it then, you are so much ahead with your work. I would except, of course, fertilizers of a quickly soluble character, such as nitrate of soda, which should be applied when growth has started in the spring. A good many people are afraid of applying manures in the fall or early winter for fear of the leaching or washing away by winter rains and snows. I believe the danger to be greatly exaggerated. On steep hill-sides or on very light sandy soils there is undoubtedly a danger, but with ordinary conditions, and a moderately retentive soil, there is almost no danger of loss. I have made a practice of applying such fertilizers as ashes and bone meal in the fall to berry patches and trees, with excellent results; and barnyard manure I would spread as early in the winter as I conveniently could. I only wish I had more to spread. Ashes form an ideal fertilizer for the strawberry bed. If the ground had been well enriched with barnyard manure last spring the plants should have made vigorous growth. Next year what you are after is not growth so much as berries. The plants themselves take a good deal of nitrogen from the soil, still more potash, and a much smaller quantity of phosphoric acid. When the patch is plowed under, this, however, is practically all returned to the soil. With the fruit matters are very different. Potash constitutes a very large part of its composition, phosphoric acid about a third as much, and of nitrogen only a trace. Now look at the composition of unleached hardwood ashes, and you find about six per cent. of potash, from one to two per cent. of phosphoric acid, and a bare trace of nitrogen—a strawberry fertilizer *par excellence*. If the ashes are strong there is some danger of burning tender foliage in spring. You can safely spread them generously over the beds in the late fall.

APIARY.

Wintering Bees.

At the Buffalo convention of the United States Beekeepers' Union, held in August, Mr. R. F. Holtermann read a paper on wintering bees with artificial heat. The first experiment was conducted in a stone cellar which was divided into five parts. Four of these were used for the bees, and these repositories communicated with one another by means of doors, and also by means of openings 14 inches square near the top of the room. A stove was placed in the first room near the outside door, and through it the fresh air had access. A pipe passed through the different rooms from the stove and entered a chimney in the fourth room. The air in its natural course, by means of the openings around the stovepipe, passed from room to room, and finally in the fourth room passed out by means of a similar opening in the same chimney into which the regular pipe entered. Stove coal was used, and the fire kept up for three and one-half months. The indications of good wintering were that the bees clustered compactly. They never flew to the light of the fire or the outside door, neither was there any brood on the hives when placed on their summer stands. The air passing from room to room was not desirable, but it served as an object lesson to beekeepers that pure air was a necessity. A similar experiment was conducted

the following winter with the same results. One important point was that the chimney into which the foul air passed must have a pipe with hot air constantly passing into it in order to secure the power necessary to make the current travel up the chimney.

MARKETS.

Receipts of cattle have been rather heavy lately than the average runs, the weekly offerings ranging between 1,400 and 1,600; but although heavy there has been a fairly good demand, sufficiently good to keep the market from getting glutted.

Receipts of hogs have been rather heavy lately than the average runs, the weekly offerings ranging between 1,400 and 1,600; but although heavy there has been a fairly good demand, sufficiently good to keep the market from getting glutted.

Canadian Live Stock Export.

Table showing Canadian live stock exports for the weeks ending September 29th and October 6th and 13th, as prepared by R. Bickerdike, of the Live Stock Exchange, Montreal.

SOME INTERESTING FIGURES TOUCHING THE IMPORTATION INTO BRITAIN FROM CANADA HAVE JUST BEEN PUBLISHED. During September the number of cattle landed was 17,098, their value being \$477,073; sheep and lambs, 11,785, valued at \$47,336.

Toronto Markets.

The trade in export cattle is dull, prices fell off 10c. per cwt. The main reason for this was the discouraging cable reports from the English markets.

Butchers' Cattle.—This market is very quiet. There were no buyers from Montreal, but a brisk demand for fat, heavy-weight steers for the local trade; sold readily at \$3.50, medium at \$3.

Feeders.—Distillery men from out-side points are wanting a large quantity for their byres. A limited quantity are being placed in the city byres.

Wool.—The market for wool is quiet. The prices are out on anything that is not strictly a singer; \$5.62 is the top price for strictly singers 140 lbs. and a little over.

Wheat.—About 2,000 bushels of wheat was on sale to-day. White sold at 75c. to 80c. per bushel; wheat advanced 4c. on this market to-day; now quoted at 83c. to 84c. per bushel.

Barley.—About 800 bushels of barley were on offer; sold at 34c. per bushel; market steady; price firm.

Table showing the British Markets with columns for Year, Cattle, Sheep, and Horses.

Chatty Stock Letter from Chicago.

(BY OUR SPECIAL CORRESPONDENT.) Following are the current and comparative prices for the various grades of live stock:—

Table showing current and comparative prices for various grades of live stock, including Cattle, Hogs, and Sheep.

Actual Chicago receipts and shipments of cattle, hogs and sheep for September, 1897, and the first nine months of the year, with comparisons:

Table comparing actual Chicago receipts and shipments of cattle, hogs, and sheep for September 1897 and the first nine months of the year.

The decrease in cattle receipts is mainly in Western ranges, and the lateness of the season makes it seem unlikely that the range cattle will do much toward making up the shortage.

Receipts of Cattle, Hogs, and Sheep.

Table showing receipts of cattle, hogs, and sheep for various months from 1891 to 1897.

The hog situation has changed for the worse quite rapidly of late; that is, from the owners' point of view. The packers have been insisting for a long time that hog prices were too high in proportion to the value of the prepared products.

Buffalo Markets.

Cattle.—Receipts, 185 cars. There was no material change in this week's prices, except that good butcher steers sold a shade higher.

Lambs.—On account of the dry weather quite a number of lambs have been forced on the market that would otherwise have remained in the field.

The Horse Market.

Cabled sales have caused quite a depression in the trade in this place, as sales show that shippers will lose quite a little money on their shipments that have still to arrive.



THE DUSANTES.

A SEQUEL TO "THE CASTING AWAY OF MRS. LECKS AND MRS. ALESHINE."

(Continued from page 455.)

The starting was a little difficult, but in a minute or two we had pushed the mattress partly over the brink, and then, after a few more efforts, we began to slide downward.

The motion, at first slow, suddenly became quite rapid, and I heard behind me a cry or exclamation, from whom I knew not, but I felt quite sure it did not come from any of our party. Every moment we seemed to go faster and faster, and soon we began to revolve, so that sometimes I was in front and sometimes behind. Once when passing over a very smooth sheet of snow, we fairly spun around, so that in every direction feet were flying out from a common center and heels grating on the frozen crust. But there were no more cries or exclamations. Each one of us grasped the cordage which held the cushions together, and the rapidity of the motion forced us almost to hold our breath.

Down the smooth, white slope we sped as a bird skims through the air. It seemed to me as if we passed over miles of snow. Sometimes my face was turned down the mountain where the snow surface seemed to stretch out illimitably, and then it was turned upwards towards the apparently illimitable slopes over which we had passed.

On we went, and the inequalities of the surface gave an irregularity of motion which was uncomfortable and alarming. We turned to this side and that, we bounced and bumped, and the rawhide ropes, which must have been greatly frayed and cut by the snow crust, now gave way in several places, and I knew that the mattress would soon separate into its original cushions, if indeed they still could be called cushions. Fearing increased danger should we now continue bound together in a bunch, I jerked apart the shawl-knot under my arms, and the next moment it seemed to me, there was a general dissolution of our connection with each other. Fortunately, we were now near the bottom of the slope, for while some of us stuck fast to the cushions, others rolled over, or slid, independent of any protection; while I, being thrown forward on my feet, actually ran down-hill! I had just succeeded in stopping myself, when down upon me came the rest of the company, all prostrated in some position or other.

And now from an unwieldy mass of shawls came a cry. "O Albert! Where are you! Lucille! Lucille!" Instantly sprang to one foot good Mrs. Aleshine, her other foot being entangled in a mass of shawls which dragged behind her. He bonnet was split open and mashed down over her eyes. In her left hand she waved a piece of yellow flannel, which in her last mad descent she had torn from some part of the person of Mrs. Lecks, and in the other a bunch of stout dead weeds, which she had seized and pulled up by the roots as she had passed them. Her dress was ripped open down her rotund back, and the earth from the weed roots had bespattered her face. From the midst of this dilapidation her round eyes sparkled with excitement. Hopping on one foot, the shawls and a part of a cushion dragging behind her, she shouted:

"The Dusantes! They are the Dusantes!"

Then pitching forward on her knees before the two strange ladies, who had now tumbled into each other's arms, she cried:

"Oh, which is Emily, and which is Lucille!"

I had rushed towards Ruth, who had clung to a cushion, and was now sitting upon it, when Mrs. Lecks, who was close beside her, arose to her feet and stood upright. One foot was thrust through her own bonnet, and her clothes gave evidence of the frenzy and power of Mrs. Aleshine's grasp, but her mien was dignified and her aspect stately.

"Barb'ry Aleshine!" she exclaimed, "if them Dusantes has dropped down from heaven at your very feet, can't you give 'em a minute to feel their ribs and see if their legs and arms is broken!"

The younger lady now turned her head towards Mrs. Aleshine. "I am Lucille," she said.

In a moment the good woman's arms were around her neck. "I always liked you the best of the two," she whispered into the ear of the astonished young lady.

Having found that Ruth was unhurt, I ran to the assistance of the others. The gentleman had just arisen from a cushion, upon which, lying flat on his back, he had slid over the grass, still holding under one arm the package from which he had refused to part. I helped him to raise the older lady to her feet. She had been a good deal shaken, and much frightened, but, although a little bruised, she had received no important injury.

I went to fill a leather pocket-cup from a brook near by, and when I returned I found the gentleman standing, confronted by Mrs. Lecks, Mrs. Aleshine, and Ruth, while his own companions were regarding the group with eager interest.

"Yes," he was saying, "my name is Dusante, but why do you ask at this moment? Why do you show such excited concern on the subject?"

"Why!" exclaimed Mrs. Lecks. "I will tell you why, sir. My name is Mrs. Lecks, and this is Mrs. Aleshine, and if you are the Mr. Dusante with the house on the desert island, this is the Mrs. Craig who was married in that very house, and the gentleman here with the water is Mr. Craig, who wrote you the letter, which I hope you got. And if that isn't reason enough for our wanting to know if you are Mr. Dusante, I'd like to be told what more there could be!"

"It's them!" Of course it's them!" cried Mrs. Aleshine. "I had a feelin' while we were scootin' down-hill that they was near and dear to us, though exactly why and how, I didn't know. And she's told me she's Lucille, and of, of course the other must be Emily, though what relations—"

"Am I to understand," interrupted the gentleman, looking with earnest animation from one to the other of us, "that these are the good people who inhabited my house on the island?"

"The very ones!" cried Mrs. Aleshine. "And what relation are you to Emily? and Lucille to her?"

The gentleman stepped backward and laid down the package which he had held under his arm, and advancing towards me with outstretched hands, and with tears starting to his eyes, he exclaimed:

"And this man, then, to whom I owe so much, is Mr. Craig!"

"Owe me!" I said. "It is to you that we owe our very lives, and our escape from death in midocean."

"Do not speak of it," he said, shaking his head with a sorrowful expression on his face. "You owe me nothing. I would to Heaven it were not so! But we will not talk of that, now. And this is Mrs. Craig," he continued, taking Ruth by the hand,—"the fair lady whose nuptials were celebrated in my house. And Mrs. Lecks, and Mrs. Aleshine." As he spoke he shook hands with each. "How I have longed to meet you! I have thought of you every day since I returned to my island, and discovered that you had been—"

"I wish I could say—my three guests. And where is the reverend gentleman? And the three martlets? I hope nothing has befallen them!"

"As I—for three of them at least," ejaculated Mrs. Aleshine, "they have left us, but they are all right. And now, sir, if you could tell us what relation you are to Emily, and what Lucille—"

"Barb'ry!" cried Mrs. Lecks, making a dash towards her

friend, "can't you give the man a minute to breathe! Don't you see he's so dumfounded that he hardly knows who he is himself! If them two women was to sink down dead with hunger and hard slidin' right afore your very eyes while you was askin' what relation they was to each other and to him, it would no more'n serve you right! We'd better be seein' if anythin' 's the matter with 'em and what we can do for 'em."

At this moment the younger of Mr. Dusante's ladies quickly stepped forward. "O Mrs. Craig, Mrs. Lecks, and Mrs. Aleshine!" she exclaimed, "I'm just dying to know all about you!"

"And which, contrariwise," cried Mrs. Aleshine, "is the same with us, exactly?"

"And of all the places in the world," continued the young lady, "that we should meet here!"

No one could have been more desirous than I was to know all about these Dusantes, and to discuss the strange manner of our meeting, but I saw that Ruth was looking very pale and faint, and that the elder Dusante lady had sat down again upon the ground, as though obliged to do so by sheer exhaustion, and I therefore halted with double delight the interruption of further explanations by the appearance of two men on horseback who came galloping towards us.

They belonged to the house which I had noticed from the road above, and one of them had seen our swift descent down the mountain-side. At first he had thought the black object he saw sliding over the snow slopes was a rock or mass of underbrush, but his keen eye soon told him that it was a group of human beings, and summoning a companion, he had set out for the foot of the mountain as soon as horses could be caught and saddled.

The men were much surprised when they heard the details of our adventure, but as it was quite plain the some members of our party needed immediate nourishment and attention, the questions and explanations were made very short.

The men dismounted from their horses, and the elder Dusante lady was placed upon one of them, one man leading the animal and the other supporting the lady. Ruth mounted the other horse, and I walked by her to assist her in keeping her seat, but she held fast to the high pommel of the saddle and got on very well. Mr. Dusante took his younger companion on one arm, and his package under the other, while Mrs. Lecks, having relieved her foot from the encircling bonnet, and Mrs. Aleshine, now free from the entangling shawls, followed in the rear. The men offered to come back with the horses for them if they would wait; but the two women declared that they were quite able to walk, and intended to do no waiting, and they trudged vigorously after us.

Our way lay over an almost level plain for about a mile. A portion of it was somewhat rough, so that when we reached the low house to which we were bound, we were all very glad indeed to get there. The house belonged to the two men, and his wife immediately set herself to work to attend to our needs. Her own bed was given to the elder Dusante lady, who took immediate possession of it; and the rest of us stretched ourselves out to rest wherever we could find a place. Before lying down, however, I had, at Ruth's earnest solicitation, engaged one of the men to ride to the railroad station to inquire about Mr. Enderton, and to inform him of our safety.

None of us had had proper rest during the past two nights, and we slept soundly until dark, when we were aroused to partake of supper. All of us except the elder Dusante lady, who preferred to remain in bed, gathered around the table. After supper a large fire, principally of brushwood, was built upon the hearth; and with the bright blaze, two candles, and a lamp, the low room appeared light and cheery. We drew up about the fire, and no sooner had we all seated ourselves than Mrs. Aleshine exclaimed:

"Now, Mr. Dusante, it ain't in the power of mortal man, nor woman neither,—an' if put the other way it might be stronger,—to wait any longer before knowin' what relation Lucille is to Emily, and you to them, an' all about that house of yours on the island. If I'd bawn up into bits this day through holdin' in my wantin' to know, I shouldn't have wondered! An' if it hadn't been for hard sleep, I don't believe I could have held in nohow!"

"That's my mind exactly," said Mrs. Lecks; "and though I know there's a time for all things, an' I don't believe in crowdin' questions on played-out people, I do think, Mr. Dusante, that if I could have caught up with you when we was comin' over here, I'd have asked you to speak out on these points. But you're a long-legged walker, which Mrs. Aleshine is not, and it wouldn't have done to leave her behind."

"Which she wouldn't 'a' been," said Mrs. Aleshine, "long legs 's short."

"I do not wish, my good friends," said Mr. Dusante, "to delay for a moment longer than necessary your very pardonable curiosity concerning me and my family. My name is Albert Dusante. It may interest you to know that my father was a Frenchman and my mother an American lady from New England. I was born in France, but have lived very little in that country, and for a great part of my life have been a merchant in Honolulu. I have never married, and this young lady is my sister."

"Then what relation," began Mrs. Aleshine, "is she to—"

At this moment the hand of Mrs. Lecks, falling heavily into the hand of the speaker, stopped this question, and Mr. Dusante proceeded:

"Our parents died when Lucille was an infant, and we have no near blood relations."

At this, the faces of both Mrs. Aleshine and Mrs. Lecks assumed expressions as if they had each just received a letter superscribed in an unknown hand, and were wondering who it could possibly be from.

"The lady who is now resting in the adjoining room," continued Mr. Dusante, "is a dear friend who has been adopted by me as a mother."

"She adopted our name," burst from Mrs. Lecks and Mrs. Aleshine, in as much unison of time and tone as if the words had been a response in a church service, while Miss Lucille leaned back against the wall near which she sat, and laughed gleefully. Mr. Dusante, however, continued his statements with the same quiet gravity with which he had begun.

"This lady was a dear friend of my mother, although younger than she. I adopted her as a mother to my little orphan sister, and, consequently, placed her in the same maternal relation to myself, doing this with much earnest satisfaction, for I hoped to be able to return, as a son, something of the tender care and affection which she would bestow on Lucille as a daughter."

"And she is Emily!" cried Mrs. Aleshine.

"She adopted our name," answered the speaker, "and she is Mrs. Emily Dusante."

"Adopted mother!" ejaculated Mrs. Lecks.

Mr. Dusante proceeded:

"I do not wish to occupy too much of your time with our personal affairs, and will therefore state that the island on which you found refuge, and where I wish, most heartily, I had been present to act as host, was bought by me as a retreat from the annoyances of business and the exactions of society. When I first visited my island this year we made but a short stay, as we were all desirous of taking a somewhat extended sea voyage in my steam yacht. We visited several places of interest, and when we returned I was pleased to find my bars intact; and when these were unlocked, and the boat from our yacht went through with ourselves and our servants, it was very agreeable to notice the good order which seemed to prevail everywhere. When we entered the house, my mother and sister immediately ascended to their chambers, and when the windows had been opened I heard them from above calling to each other and remarking upon the freshness and cleanliness of the rooms. I went to my library, and when I had thrown open the window I was struck with the somewhat peculiar air of order which seemed to obtain in the room. The books stood upon their shelves with a remarkable regularity, and the chairs and other furniture were arranged with a

precision which impressed me as unusual. In a moment, sir, I saw your letter upon the table, addressed to me. Greatly astonished, I opened and read it.

"When I had finished it, my amazement was great indeed; but obeying an instant impulse, I stepped into the dining-room, which a servant had opened, and took the ginger-jar from the mantelpiece. When I lifted from it the little brown-paper parcel, and beneath it saw the money which had been mentioned in the letter, you may imagine the condition of my mind. I did not take out the money nor count it; but covering it again with the paper parcel, which I believe contained fish-hooks, and with the jar in my hands, I returned to the library, where I sat down to ponder upon these most astounding revelations. While so doing, my mother and sister hastily entered the room. Lucille declared in an excited manner that she believed that the brownies or some other fairies had been there while we were away and had kept the house in order. The whole place was actually cleaner, she said, than when we left it. She had taken down a thin dress from her closet, and it positively looked as if it had just come from the hand of a laundress, with the ruffles ironed smoother and more evenly than they had ever been since it was first stitched together. "Albert," said my mother, her face pale, "there has been somebody in this house!" Then she went on to say that the windows, which were left unwashed because we went away in somewhat of a hurry, were as bright and clean as if the maids had just been rubbing them; the floors and furniture were cleaner and freer from dust than they had ever been before; and the whole house looked as if we had just left it yesterday. "In fact," she said, "it is unnaturally clean!"

During this part of Mr. Dusante's story, Mrs. Lecks and Mrs. Aleshine sat very quiet, with an air of humility upon their faces; but I could see by the proud light in their eyes that they felt their superiority to ordinary women, although they were properly resolved not to show such feeling.

"At that moment," continued Mr. Dusante, "a servant came hurrying into the room, and informed us that the flour was all gone, and there was scarcely anything in the pantries to eat. At this my mother and my sister, who knew that an abundance of provisions had been left in the house, looked at each other aghast. But before they could express their consternation in words, I addressed them. "My dear mother," said I, "and Lucille, there truly has been some one in this house. By this letter I am informed that for several weeks eight persons have lived here under this roof; a marriage has been solemnized, and the happy couple have gone forth from our doors. These persons have eaten our food, they have made use of our property, and we began our usual life on the island; but none of the occupations or recreations in which we formerly employed our time now possessed any attractions for us. Our minds were filled with thoughts of the persons who had been so strangely living in our house; and our conversation was mainly made up of surmises as to what sort of people they were, whether or not we should ever see them, and similar suppositions."

"I could not endure to reflect that I had been paid actual money for the hospitality I would have been so glad to offer to you poor shipwrecked people. At last I determined I would bear no longer the ignominy of this brand of inhospitality, and that, with the ginger-jar in my hand, I would search over the world, if necessary, for the persons who in my absence had paid board to me, and return to them the jar with its contents uncounted and untouched. Your letter informed me of the island to which you were bound, and if I did not find you there, I could discover to what port you had taken your departure."

"I easily traced you to San Francisco, and found the hotel at which you had stopped. Here I obtained fresh news of you, and learned that you had started East, and that the destination of the party was believed to be Philadelphia. I had hoped that I should meet with you before you left California; but supposing by that time that you had reached your destination, or were, at least, far on your way, I yielded to the solicitations of my sister and made some excursions in California, intending then to follow you to Philadelphia and there to advertise for Mr. Craig, if he could not otherwise be found. However, by the rarest and most fortunate of chances, we have met thus early, and for this I can never be too devoutly thankful."

"Now," said Mr. Dusante, "I will perform the duty for which my journey was undertaken, and I assure you that it is a great pleasure to me to be able, so soon, to carry out this cherished purpose."

He then took up from the floor by his side the package which he had so safely guarded during his swift and perilous descent of the mountain-side, and which he had since kept close by him. Placing this upon his knee, he removed the light shawl in which it had been rolled, and then several pieces of wrapping-paper, revealing to our eyes the familiar fat little ginger-jar which had stood on the mantelpiece of the dining-room in the house on the island, and in which we had deposited our board-money.

"It would be simply impossible for me," said Mr. Dusante, "to consent to retain in my possession money paid for the aid which I involuntarily rendered to shipwrecked people. Had I been present on the island that aid would have been most heartily and freely given, and the fact of my absence makes no difference whatever in regard to my feelings on the subject of your paying for the food and shelter you found at my house. Having understood from Mr. Craig's letter that it was Mrs. Lecks who superintended the collection and depositing of the money, I now return to you, madam, this jar with its contents."

"And which," said Mrs. Lecks, sitting up very rigidly, with her hands clasped behind her, "I don't take. If it had been a day and a night, or even two nights, and over a Sunday, it wouldn't have mattered; but when me and Mrs. Aleshine—and the rest of the party can speak for themselves—stays for weeks and weeks, without leave or license, in a man's house, we pay our board—of course, deductin' services. Good-night."

With that she arose, and walked very erect into the adjoining room.

"It was all very well, Mr. Dusante," said Mrs. Aleshine, "for you to try to carry out what you thought was right, but we have our ideas as to what our duty is, and you have your ideas as to what your duty is, an' consciences is even."

And she followed her friend.

Mr. Dusante looked surprised and troubled, and he turned towards me. "My dear sir," said I, "those two good women are very sensitive in regard to right and justice, and I think it will be well not to press this subject upon them."

"Very well, sir," said Mr. Dusante, replacing the wrapping-paper around the jar; "I will drop the subject for the present. But you will allow me to say, sir, that I also am very sensitive in regard to right and justice."

Early the next morning the man who had been sent to the railroad station came back bringing news that a four-horse wagon would shortly be sent for us, and also bearing a letter from Mr. Enderton to Ruth. In this that gentleman informed his daughter that he was quite well, but that he had suffered an anxiety on account of her probable hardships in the abandoned stage-coach. He had hoped, however, that the snow which had precluded his return with assistance had fallen lightly in the elevated position in which she had been left; and he had trusted also that Mr. Craig had bethought himself to build a fire somewhere near the coach, where his daughter might be warmed; and that the provisions, which he knew an ample quantity had been packed for the trip, had been properly heated for her and given to her at suitable intervals. [TO BE CONTINUED.]

THE QUIET HOUR.

Folded In.

If we could do more for the world's great King—
The lilies and sparrows and I—
Could make the blossoming time more long,
Could sing more often the clear, sweet song,
More helpfully live and die.

If we could do more of the world's great work
That waits on the land and the sea,
It would not be so strange that through sense and
through sleep
The highest should love and so lovingly keep
The lilies and sparrows and me.

If we were as the world's great sun—
The lilies and sparrows and I—
If we were as much in the world's great plan,
As full of healing and strength to man,
As great and as gracious and high;

If earth would droop when we go away,
Would die when we shall be dead,
It would not be so strange that the Father of all
Should notice the petals and feathers that fall,
Should number the hairs on my head.

Not for our own little worth—ah, no!
The lilies and sparrows and mine—
Surely not for our own wee worth,
But because His Fatherhood folds the whole earth,
We are wrapped in that love divine.

The beautiful truth is too old to be strange,
Too sweet ever silent to be,
That the Lord of our lords holds in tenderest care
And the King of our kings in his bosom doth bear
The lilies and sparrows and me. —Unidentified.

Worship Through Work.

Let us not think of the religious life as something separate from the everyday life. He that serves God only during set hours of prayer is a very poor servant. We ought to make worship of our work.

Whatever we do, whether we dig or hammer or cook or write, should be done heartily as unto the Lord—that is, we are to serve God in our daily tasks, make them part of our religion. The farmer's cornfield, the mechanic's shop, the engineer's locomotive, the housewife's kitchen, the teacher's and the pupil's schoolroom, every place where honest tasks are done, ought to be a sanctuary where work is transformed into worship. Working hours ought to be as much a part of the religious life as praying and singing and preaching hours. Nay, properly speaking, prayer and meditation and praise are not real service, but preparations for services. We serve by what we do; the soul is only fed and strengthened for service by communion with God in the closet and in the sanctuary.

Let your light shine in the community where you live. Be a light-house for every storm-tossed soul around you. Be an attraction to people who are cold, and hungry, and weary, for the love of God. Be something that will warm aching hearts, something that will cheer hopeless lives. Don't try to see how much you can get, and how little you can do, but consider that day lost on which you have not done something to make some heart glad that you have lived.

The Water Lily.

"O, star on the breast of the river!
O, marvel of bloom and grace!
Did you fall right down from heaven,
Out of the sweetest place?
You are white as the thoughts of an angel;
Your heart is steeped in the sun,
Did you grow in the golden city,
My pure and radiant one?"

"Nay, nay, I fell not out of heaven;
None gave me my saintly white,
It slowly grew from the darkness,
Down in the dreary night,
From the ooze of the silent river
I win my glory and grace,
White souls fall not, O, my poet;
They rise to the sweetest place."

What is a Saint?

There are boys and men who would resent to be called saints. Many people indeed have a prejudice against the word because they do not understand its meaning. They associate it exclusively with the underfed, emaciated figures seen in the stained-glass windows of some churches. Nor is a saint one who is always on his knees praying. He may be, and often is, a full-blooded, athletic man in some active business or profession. There are saints in the army and navy, in shops, at public schools, and in the most stirring scenes of life. A saint is not a man without faults, for no such being exists. St. Paul generally addressed his letters to the saints at

such and such a place; but some of them, notably the Corinthians, he had to rebuke sharply. No, a saint is simply one who tries to be and to do good. Those who do what they can, resist evil, and try their best faithfully to serve God and man, are saints. The Lord did not say of the woman who anointed his feet that she was faultless or even good, but that she did what she could.

Memory Gems.

FROM PAPER CONTRIBUTED BY JOSIE DAVIDSON, GLENBORO, MANITOBA.

I. Speak gently, kindly, to the poor;
Let no harsh term be heard;
They have enough they must endure,
Without an unkind word. —David Bates.

II. I count this thing to be grandly true,
That a noble deed is a step to God,
Lifting the soul from the common sod
To a purer air and a broader view. —J. G. Holland.

III. A mother's love, how sweet the name!
What is mother's love?
A noble, pure, and tender flame,
Enkindled from above,
To bless a heart of earthly mould,—
The warmest love that can grow cold,—
This is a mother's love. —Montgomery.

IV. Despair is the conclusion of fools. —Beaumont.

V. The cause of freedom is the cause of God. —Bowles.

VI. Be slow to fall into friendship; but when thou art in continue to be firm and constant. —Socrates.

VII. No man was ever great without divine inspiration. —Cicero.

THE CHILDREN'S CORNER.

How He Wakened Grandmother.

Mama said, "Little one, go and see
If grandmother's ready to come to tea."
I knew I mustn't disturb her, so
I stepped as gently along tiptoe,
And stood a moment to take a peep—
And there was grandmother fast asleep.

I knew it was time for her to wake;
I thought I'd give her a little shake,
Or tap at her door, or softly call;
But I hadn't the heart for that at all—
She looked so sweet and quiet there,
Lying back in her high arm-chair,
With her dear white hair and a little smile
That means she's loving you all the while.
I didn't make a speak of noise;
I knew she was dreaming of little boys
And girls who lived with her long ago,
And then went to heaven—she had told me so.
I went up close, and I didn't speak
One word, but I gave her on her cheek
The softest bit of a little kiss,
Just in a whisper, and then said this:
"Grandma, dear, it's time for tea."

She opened her eyes and looked at me,
And said: "Why, pet, I have just now dreamed
Of a little angel who came and seemed
To kiss me lovingly on my face."
She pointed lovingly at the very place,
I never told her 'twas only me,
I took her hand and went to tea.

MY DEAR CHILDREN,—

Did you think that Cousin Dorothy had forgotten all about you? Well, you were quite mistaken if you did, for she has been here all the time, keeping a watchful eye over the "Children's Corner," and looking in vain for letters from her young friends East, West, North, and South.

There, you see, you were the ones who were forgetful after all. I knew that you would rather have a story than a letter, so I sent you stories, and plenty of them, but now you need shaking up a little by a few words addressed directly to yourselves.

Have you had any cousins from the city visiting you this summer? How they must enjoy riding on the hay, fishing in the creek (do you call it the "creek"?) and all the other jolly things one can do in the country. Don't they get strong and rosy with drinking the nice rich milk without any water in it to make it "go farther"? But, do you know, I once heard of a little girl who had never before seen a cow milked, and who said, "I think it is much nicer to get milk out of a nice clean jug, as we do, instead of out of a dirty old cow."

It all depends upon what you are used to, you see. Probably the boys and girls of South America think their milk tree is better than either cows or jugs. They just make a hole in a tree and then go out early in the morning with their bowls to catch the milk.

The sap looks and tastes like milk, and it makes people grow fat and strong too, but I don't believe the children can get their vegetable milk all the year round, as you do, so perhaps cows are better after all.

They have some customs in other countries which are very unpleasant and wicked too. You probably love your grandmothers—if you are fortunate enough to have any—as much as the child did who wakened "Grandma" with a kiss. Now, just imagine, there are some islands where as soon as people get to be too old to work they're told that their burial will occur on a certain day. Invitations to the funeral feast are then sent out, and when the day arrives, dead or not dead, the poor old people are buried.

Don't you think it is time we sent missionaries to such places to teach them to behave better?

But it will never do to bore you with too long a letter, so good-bye children. Don't forget to write soon to—
COUSIN DOROTHY.

Puzzled.

There lived in ancient Scribbletown a wise old writer-man, whose name was Homer Cicero Demosthenes McCann. He'd written treatises and themes, till "For a change," he said, "I think I'll write a children's book before I go to bed." He pulled down all his musty tomes in Latin and in Greek; consulted 'cyclopedias and manuscripts antique, Essays in anthropology, studies in counterpoise—
"For these," he said, "are useful lore for little girls and boys." He scribbled hard, and scribbled fast, he burned the midnight oil,
And when he reached "The End" he felt rewarded for his toil;
He said:—"This charming Children's Book is greatly to my credit."
And now he's sorely puzzled that no child has ever read it. —St. Nicholas.



After the painting by Emile Adan, exhibited at this year's Salon.

"TELLING A STORY."

VIII. The heights by great men reached and kept
Were not attained by sudden flight,
But they while their companions slept were toiling
Upward in the night. —Longfellow.

IX. Lying's a certain mark of cowardice;
And when the tongue forgets its honesty,
The heart and hand may drop the functions too
And nothing worthy be resolved or done. —Thomas Southers.

X. A kiss from my mother made me a painter. —Benjamin West.

XI. For God hath marked each sorrowing day
And numbered every secret tear,
And heaven's long years shall pay
For all his children suffer here. —W. C. Bryant.

XII. Beware the bow! through rich and bright
Its rubies flash upon the sight,
An adder coils its depths beneath
Whose lure is woe, whose sting is death. —Alfred B. Street.

XIII. The quality of mercy is not strained,
It droppeth as the gentle dew of heaven
Upon the earth beneath. It is twice blest—
It blesseth him who gives and him who takes. —Shakespeare.

XIV. I would not waste my spring of youth
In idle dalliance; I would plant rich seeds
To blossom in my manhood,
And bear fruit when I am old. —J. A. Hillhouse.

MINNIE MAY offers a prize of \$3.00 for the best article on the Formation of Clubs for the Pleasure and Profit of Farmers' Families, with suggestions about various entertainments suitable for winter evenings. All essays, called "Social Clubs," to be in our office by the 20th November.

Puzzles.

1.—TRANSPOSITION.
To C. S. Edwards.

Charlie, my dear, I'm glad you're back,
With or without your carpet sack.
Your challenge in last month's I spy,
And now endeavor to reply.
You say my fate is sealed; indeed,
That's news for me as I now read.
I didn't know I was engaged,
And at the thought I am enraged.
My "die is cast"—a ghastly phrase;
Can't make it out, it's in a maze.
Now, are you slender as a rake?
That's hard to swallow, and then take
A look at Mr. C. S. E.
As he now doth appear to me.
Why in this group he'd make you laugh
So round and plump's his photograph.
Oh dear, I must a complaint make,
You're all a huge, immense mistake;
One time you're good, one time you're bad,
One time you're gay, one time you're sad;
Why, only a short time ago
Your puzzles were so filled with woe
That "Charlie's friends must all be dead,
He's got so good," was what I said.
As all your sad, sweet poems I read,
And for your sorrow my heart bled,
But one conclusion could I make.
"Tis this: That you'd had too much cake
When writing puzzles filled with tears
To echo down the voiceless years.
I think I'd best retire now,
And so will make my little bow.

2.—NUMERICAL ENIGMA.

My 9, 3, 7 is a tree;
My 8, 5, 10, 4 is choice;
My 12, 11, 9 is having great extent each way;
My 7, 6, 5, 3 is a coat of steel;
Total of 11 letters is a beloved name. "BACHELOR."

3.—DECAPITATION.

I am a word of five letters naming a sudden movement
which is usually caused by an alarm; behead me and I am
welcome at dinner-time; behead me again, and I am part of
a verb. LILIAN M. SHEPARD.

4.—DOUBLE ACROSTIC.

1. A country.
2. A kind of vase.
3. A teacher.
4. Something cold.
5. To surpass.
6. Dull.
7. The enlightened.
8. An exclamation.
9. A past time.

Initials spell something which Muriel E. Day seems to
have. Finals spell something I hope she has not. "KIT."

5.—WHAT AM I!

I am the name of something which may be of any shape
or size and made of various materials, which may be found
either indoors or out, and can be moved from one place to
another. Again, I am the name of something sometimes felt
on the head. At other times I stand for something which
grows but does not walk. In any case, if you behead me you
have the name of a strong and useful animal. "KIT."

6.—CROSS-WORD ENIGMA.

My 1st is in berry but not in fruit;
My 2nd is in flax but not in jute;
My 3rd is in balsam but not in pine;
My 4th is in yours but not in mine;
My 5th is in England but not in Spain;
My 6th is in snow but not in rain;
My last is in kindness but not in pity;
My whole is the name of an ancient city.
BLANCHE MACMURRAY.

7.—CROSS-WORD ENIGMA.

My first is in more but not in night;
My second is in loose but not in tight;
My third is in ox but not in cow;
My fourth is in high but not in low;
My fifth is in cradle but not in bed;
My sixth is in foot but not in head;
My whole is a country in America.
ETHEL MCCREA.

8.—CHARADE.

My first is a conjunction;
In heraldry means "gold";
My second is a portion,
By it we horses hold;
My whole is just a path in space,
By which a planet's march we trace.
CHARLES S. EDWARDS.

9.—NUMERICAL ENIGMA.

My 8, 9, 6, 11 belongs to excitement;
My 5, 10, 7 pertains to a race;
My 1, 2, 3, 4 is one of the earth's four corners;
My whole is a place in England.
MURIEL E. DAY.

Answers to Sept. 15th Puzzles.

- 1—Cattle-show. (As the anagram was not specified this cannot be counted.)
- 2—Forgiveness to the injured does belong,
But they ne'er pardon who have done the wrong.
- 3—L I G H T
- 4—Pastorate.
- 5—INNER
- 6—New Carlisle.
- 7—Chili
- 8—Hellasput
- 9—India
- 10—Nepaul
- 11—Italy.
- 12—Allegany
- 13—buprestidan
- 14—unrepealed
- 15—reticent
- 16—epicist
- 17—Brown—brow
- 18—Heath—heat
- 19—taint
- 20—Hazel—haal
- 21—ilet
- 22—Plume—plum
- 23—den
- 24—Crown—crow
- 25—ad
- 26—Forty—fort
- 27—n
- 28—Lunge—lung
- 29—Sat-in-wood.

SOLVER TO SEPT. 15TH PUZZLES.

"KIT."

DEAR UNCLE TOM AND COUSINS.—

I hope you will pardon the incompleteness of the Puzzle Department this issue, as I am absent from home and have not received all my mail. Will have all properly attended to very soon. ADA A.

Cool Bravery.

"I have heard it said," writes Lord Wolseley, in a contemporary, "that small men are generally braver than tall men; but one of the most stolidly and immovably brave men I have ever known is several inches over six feet in height. I have often seen him, from pure laziness, when relieved from duty in the advanced trenches before Sebastopol, step out calmly in the rear of the parallel where he happened at the moment to be, and take a bee-line for camp, exposed for many hundred yards to a heavy rifle fire from the advanced works of the Russians. He might have walked home through the trenches in safety, but he was too lazy or too careless of his life to go so far round. I remember a curious instance of his imperturbability some years afterwards, when I met him in China. In the assault of the Taku forts we had to cross two ditches filled with water. One of these was sufficiently wide and deep to require a bridge to be thrown over it. In carrying up a light infantry pontoon bridge to launch into this ditch a round shot went through one of the pontoons. To launch it in that condition would have caused it to sink, and we had great difficulty in getting the injured pontoon out of the bridge under the close, severe fire to which we were exposed from the works behind the ditch. In common with all the other mounted officers, I had left my horse at a safe distance behind under some cover. I was therefore astonished, upon standing up after working at this little bridge on the ground, to see beside me a very tall man on a very tall horse. The position was actually comical, and, as well as I remember, I laughed as I saw my cool friend there at the edge of the ditch, a regular cockshot for every Chinaman near him. He said something to me which, owing to the great din and noise at the moment, I could not hear; so, moving nearer to him, I carelessly put my hand on his leg. He winced a little as I touched him, and, calmly saying, 'don't put your hand on my leg, for I have just had a bullet in there,' went on with his conversation as if only a mosquito had bitten him. That man is now known to all as Lieutenant-General Sir Gerald Graham, V. O., who commanded a brigade at Tel-el-Kebir, and who was afterwards in chief command at El-Teb and the many other bloody engagements which took place near Suakin."

A Considerate Master.

After the battle of Mars-la-Tour, the field was covered with the dead, and all available houses filled with the wounded. With great trouble a small room, in which stood a table, chair, and bed, was found for the Prussian king. Upon entering, he asked, "Where are Bismarck and Moltke?" "They have no place as yet," answered the adjutant, well knowing how necessary it was that they should have rest. "Then invite them to camp with me," was the reply; "but order the bed to be removed—the wounded can use it better than I—and bring us straw." It was done, and the three heroes rested during the rainy night upon the straw-covered floor. Never was a milder master than the emperor, as numerous instances prove. One evening he drove to the Victoria Theatre in Berlin, accompanied only by his coachman and body-servant. The latter, believing himself certain of several hours, entered a restaurant near by. But the emperor returned very shortly. The carriage drove up, but the body-servant did not appear. Ten minutes passed by before he was found drinking his glass of beer. Half frightened to death, he began to excuse himself, when he was interrupted by the monarch—"Nonsense—don't bother about it! You have often waited for me: now I have waited for you, and we are quits."

Those Astounding Adverbs.

One evening a gentleman came home with a budget of news. An acquaintance had failed in business. He spoke of the incident as "deliciously sad." He had ridden up-town in a car with a wit whom he described as "horribly entertaining," and, to clap the climax, he spoke of the butter that had been set before him at a country hotel as "divinely rancid."

The young people stared, and the eldest daughter said: "Why, papa, I should think that you were out of your head."
"Not in the least, my dear," he said, pleasantly. "I'm merely trying to follow the fashion. I worked out 'divinely rancid' with a good deal of labor. It seems to me rather more effective than 'awfully sweet.' I mean to keep up with the rest of you hereafter. And now," he continued, "let me help you to a piece of this exquisitely tough beef."
Adverbs, he says, are not now so fashionable as they were in his family.—Boston Post.

Mother's Work.

BY MARY F. BUTTS.
If thy work be holding dimpled cheeks of babies to thy breast,
Fashioning small garments where the needle moves to inward tune,
Stitching dainty scollops for a little rounded wrist,
Or knitting a silk sheathing for feet as soft as rose-leaves,
Count thyself a sister of the gentle Judean woman,
Mother of a Saviour. How knowest thou the outcome
Of this beautiful bud of home? With thee lies the unfolding.
Make thy garden fragrant with tender self-denying,
With love purged pure by prayer, woo the opening blossom.
Thine a holy business set thee by the Father.

Opportunities.

In one of the Greek cities there stood, long ago, a statue. Every trace of it has vanished now, as is the case with most of those old masterpieces of genius; but there is still in existence an epigram which gives us an excellent description of it, and as we read the words we can discover the lesson which those wise old Greeks meant that the statue should teach to every passer-by.

The epigram is in the form of a conversation between a traveller and the statue.
"What is thy name, O statue?"
"I am called Opportunity."
"Who made thee?"
"Lysippus."
"Why art thou standing on thy toes?"
"To show that I stay but a moment."
"Why hast wings on thy feet?"
"To show how quickly I pass by."
"But why is thy hair so long on thy forehead?"
"That men may seize me when they meet me."
"Why, then, is thy head so bald behind?"
"To show that when I have once passed, I cannot be caught."

We do not see statues standing on the highways to remind us of our opportunities for doing good and being of service to others, but we know that they come to us. They are ours but for a moment, if we let them pass, they are gone forever.

Grape Wine.

Pick the grapes off the stems, and mash thoroughly with a potato pounder. To every quart of grapes a pint of cold water should be allowed before they are mashed. After mashing add the water and let them stand for three days, stirring night and morning. Strain all through a jelly-bag till the juice is squeezed out, let stand for three hours, and pour off carefully from the sediment; then add three pounds of white sugar to every gallon of juice; put into jars loosely corked, and at the end of three weeks (if it has finished fermenting) add one quart of whiskey to three gallons of liquid. In three or four days cork securely. While fermenting be sure to keep the jars well filled up to the top with some of the liquid reserved for that purpose.

Sour Cream Nut Cakes.

One pint pastry flour, two-thirds cup of thick sour cream well rubbed into the flour, with one-fourth teaspoonful salt. Add one egg beaten very light, and one-fourth teaspoonful soda dissolved in one teaspoonful hot water. Roll out one-fourth inch thick, and cut into half-inch strips with a pastry jagger. Twist the strip at each end, and then twist like a doughnut. Fry in hot fat, and roll in powdered sugar. Best eaten while fresh.

An old couple went to the Electric Exhibition at the Crystal Palace, were charmed with the electric incandescent lights, asked the price, and found it moderate, the Swan lamps costing only five shillings each. Their means were limited, but the advantages seemed great; and they resolved to risk it, and invested in three or four Swan lamps. "Of course," said the intelligent clerk who handed them the Swan circulars, "you know all about the engines and the different systems of producing electricity?" "Jist like these fellows, my dear!" said the cautious old gentleman sotto voce, nudging his wife. "Come along, Maria." He thought he was going to be wheedled into buying a lot more things by a pushing young tradesman, and so the two hurried off. They got home, and taking a box of lucifers, applied match after match to the "flament," after removing the globe—a vacuum—with some difficulty. Still the thing would not light. At last, enraged, they appealed to the firm, and were—too late!—initiated one step farther into the mysteries of electric lighting.

The "poor" fellow who wrote the following lines seems to have been pretty well off. Nevertheless he had a list of woes:

- Nothing to do but work;
- Nothing to eat but food;
- Nothing to wear but clothes,
- To keep one from going nude.
- Nothing to breathe but air;
- Quick as a flash it's gone;
- Nowhere to fall but off;
- Nowhere to stand but on;
- Nothing to comb but hair;
- Nowhere to sleep but in bed;
- Nothing to weep but tears;
- Nothing to bury but dead.
- Nothing to sing but songs,
- Ah, well; alack! alack!
- Nowhere to go but out;
- Nowhere to come but back.
- Nothing to see but sights;
- Nothing to quench but thirst;
- Nothing to have but what we've got;
- Thus through life we're accursed.
- Nothing to strike but gain.
- Everything moves that goes;
- Nothing at all but common sense
- Can ever withstand these woes.

A Japanese laundry has produced the following advertisement: "Contrary to the opposite company we will most cleanly and carefully wash our customer with possible cheap prices as follows: Ladies, 2 dols. per 100; gentlemen, 1½ dols. per 100."

Commence
Canvassing
To-day

Premiums!

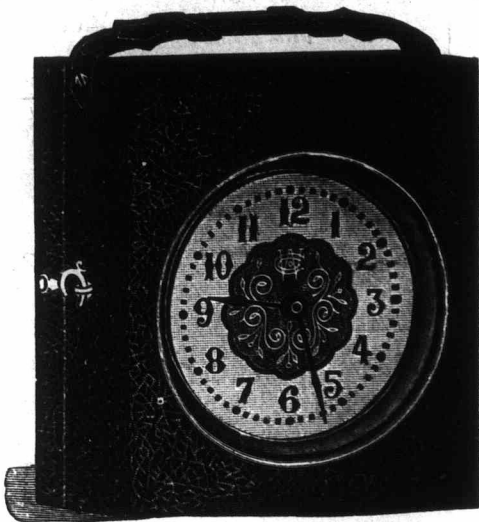
Premiums!

To any of our subscribers furnishing the required number of new subscribers we will send per mail, charges prepaid, any of the valuable premiums shown on this page.

Subscriptions must all be NEW, and cash accompany orders.

BALANCE OF 1897 AND ALL OF 1898 FOR

\$1.00



Fine Gold-finished Clock, handsomely decorated dial; fitted in Maroon Seal Leather Case. 4 New Subscribers.



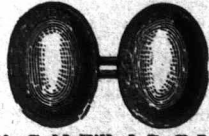
Rich Roman Gold Plate Clock, handsomely polished Case. 4 New Subscribers.



Lady's Bracelet, best Rolled Plate, 4 New Subscribers. Same pattern in Sterling Silver, 3 New Subscribers.



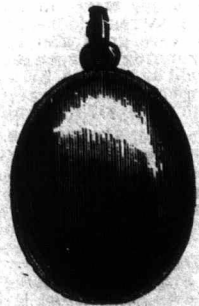
Sterling Silver Baby Pin, 1 New Subscriber.



Gent's Gold Filled Cuff Links, warranted for 20 years, for 3 new names. In Sterling Silver for 1 New Subscriber.



Gent's Gold Filled Cuff Buttons, as above, or Masonic, Odd-fellow or I. O. F. emblem, 2 New Subscribers.

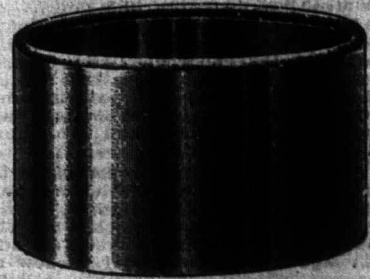


Solid Gold Locket, either Guinea Gold color or bright, 10 New Subscribers. Can have same locket gold filled for 3 New Subscribers.

Sterling Silver Cane Scarf Pin, can also be used as lady's stick pin, 1 New Subscriber.



Sterling Silver Thimble, handsomely engraved (give size required), 2 New Subscribers.



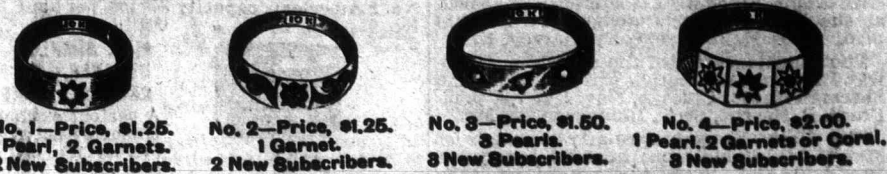
Solid Silver Napkin Ring, 4 New Subscribers

Handsome Rings

WARRANTED TEN KARAT GOLD.

To find the size of ring required, take a narrow strip of paper that will draw tightly around the finger, forward same to us, and we will assure you a perfect fit.

CHILDREN'S OR MISSES' REAL STONE SETTING.



No. 1—Price, \$1.25. 1 Pearl, 2 Garnets. 2 New Subscribers.

No. 2—Price, \$1.25. 1 Garnet. 2 New Subscribers.

No. 3—Price, \$1.50. 3 Pearls. 3 New Subscribers.

No. 4—Price, \$2.00. 1 Pearl, 2 Garnets or Coral. 3 New Subscribers.

LADIES' REAL STONE SETTING.



No. 5—Price, \$3.50. 2 Pearls, 3 Garnets. 5 New Subscribers.

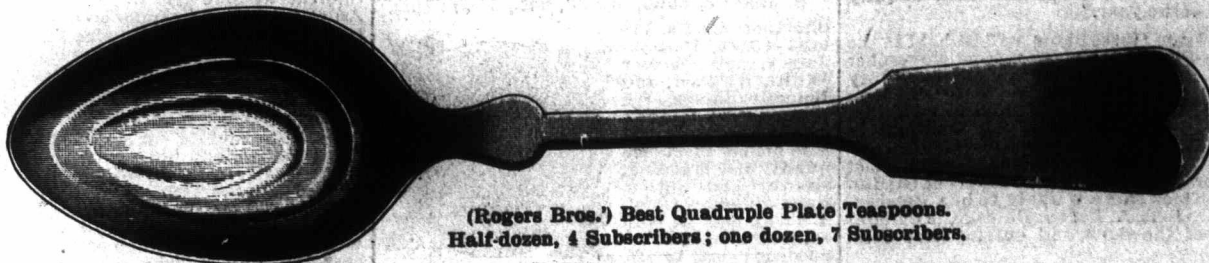
No. 6—Price, \$3.50. 2 Garnets, 5 Pearls. 5 New Subscribers.

No. 7—Price, \$3.50. 1 Garnet, 2 Pearls. 5 New Subscribers.

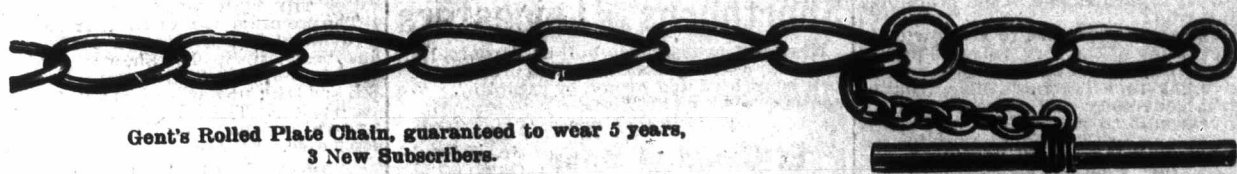
No. 8—Price, \$2.00. 3 New Subscribers.



Solid Silver Sugar Spoon, 3 New Subscribers.



(Rogers Bros.) Best Quadruple Plate Teaspoons. Half-dozen, 4 Subscribers; one dozen, 7 Subscribers.



Gent's Rolled Plate Chain, guaranteed to wear 5 years. 3 New Subscribers.

FOR CANVASSING OUTFIT ADDRESS: Additional premiums will be announced in next issue.

The Wm. Weld Co., Limited, LONDON, ONT.

GOSSIP.

Would call attention to change of advertisement in this issue for Mr. H. K. Fairbairn, Thedford, Ont.

The British agricultural returns show that the total number of horses and mules in Ireland in the present year is 639,492, being a decrease on last year of 19,683.

The annual meeting of the American Aberdeen-Angus Breeders' Association will be held at the Leland Hotel, Chicago, Nov. 4, at 7.30 p. m. Thos. McFarlane, Sec'y, Harvey, Ill.

The annual meeting of the American Galloway Breeders' Association will be held at the Sherman House, Chicago, Nov. 4, at 7.30 p. m. Frank B. Hearne, Sec'y, Independence, Mo.

Mr. Robt. Browne, formerly manager of Mrs. E. M. Jones' famous herd of Jerseys at Brockville, Ont., is now in charge of one of the choicest American Jersey herds, belonging to Mr. Frank H. Hart, an Ohio breeder.

We call attention to the advertisement in this issue of Dr. Barnardo's Girls' Home, Peterborough, Ont. A double advantage can be gained if these parentless children can be furnished homes where their services are needed.

Mr. W. S. Hawkshaw, of Glanworth, Ont., called at our office on September 27th ult., and informed us that he was shipping a trial carload of high-grade shropshire ewe lambs to a well-known feeder of Ohio. He reports good breeding sheep getting scarce, and finds it difficult to pick up carload lots.

Miss P. J. Coldwell, Constance, Ont., writes that she has fifty or more P. Rock pullets and cockerels that she would like to dispose of before winter. Local judges have told her that many of her pullets would score 90 points. She was awarded first prize at Seaford fair, both for chickens and cock and hen. Her Peking ducks are also very fine.

The nineteenth annual meeting of the American Clydesdale Association will be held at the Sherman House, Chicago, on Tuesday, November 2nd, 1897, at 8 o'clock p. m. This date has been fixed so that members attending the Chicago Fat Stock and Horse Show may be present without inconvenience, and the Executive Committee trust a full attendance of C.I. desirous breeders will thus be secured.

G. W. Clemons, St. George, Ont., writes under date of October 9th: "I find enclosed copy of advertisement to replace that now running in your paper. The latter has brought in a shower of inquiries from all parts of Canada, from Winnipeg on the west to Quebec City on the east. The demand for stock is unprecedented, and those who need to purchase bulls will be disappointed if they do not buy immediately."

Wm. Grainger & Son, Lonsdale, Ont., writes under date October 14th, 1897: "I am sending in a change of advertisement would as that the young bulls we offer for sale are an excellent lot, good, big, lusty fellows, with good strong bone, and in nice growing condition. Our recent sales are: The three-year-old heifer, Lady Grainger, and her heifer calf, Lady Florida, to Wm. Holmes, Leadbury, Ont.; the heifer calf, Saltford Maid, to John Walters, Saltford, Ont.; and also one heifer calf to Geo. Grainger, Esq., Ont. We never had such enquiry this time of the year."

The Chicago Horse Show will be held in the Coliseum Building, Chicago, from November 1st to 5th, inclusive. The premium list is very generous. The champion prize for harness horses is \$1,000, and for saddle and hunters \$500 each. The total prize list amounts to \$49,000. This show is of considerable importance to Canadian breeders of Hackneys and saddle horses, as well as to breeders of Clydesdales, of which there is likely to be a good exhibit. Mr. John A. Logan, Chicago, is general manager of the show, and entries close October 20th.

Below will be seen what one of our subscribers has to say regarding one of our premiums he has just won:

GENTLEMEN,—I am pleased to acknowledge the receipt to-day of the very valuable premium, being a fully-prepared, up-to-date "Comprehensive Bagster's Teacher's Bible," that in your great generosity you were pleased to offer and transmit to me for the very small service of procuring three new names for the FARMER'S ADVOCATE and HOME MAGAZINE for the year 1898. I wish herewith most sincerely to express my grateful thanks for this very precious gift, and I shall be much pleased to use it in remembrance of your thoughtful kindness. When I hold this very pretty, useful book in my hand and consider its very great comprehensiveness and its helpful general advantages contained in its 1,100 bright, beautiful octavo pages in clear, readable minion type, I am astonished that you can in safety to yourselves make such an offer to your canvassers for so small a service, and I am sure there should be thousands of our young people all over this fine prosperous country who will readily do this service and hold out their grateful hands for a present so valuable and so useful to all.

Gentlemen, allow me again to thank you for your valuable gift, and I shall still consider myself further indebted to you to do whatever lies within the range of my power and ability for your success.

Very truly yours, B. GOTT. Middlesex Co., Ont., Oct. 9th, 1897.

AGRICULTURAL EXPORTS OF WESTERN AUSTRALIA.

In a report prepared by the Commissioner of Crown Lands in Western Australia, for the Royal Commission on Agriculture, it is stated that owing to the large discoveries of gold and the rapid increase in the consuming population, there is not likely to be any foodstuffs exported to the markets of Great Britain, but the probability is that they will require to import a portion of the food required during the next ten years. There may, however, be an exception in the case of fat stock, where it is pointed out that owing to the increase of cattle and sheep, efforts will be made to export the surplus stock. An attempt is being made to establish a market for these products among the colored races of Singapore, Batavia, and the East.

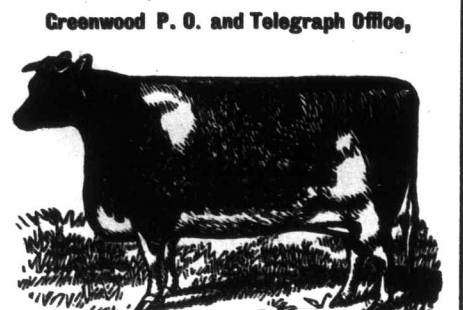
\$70.00 FOR THE American Cream Separator NO. 1

Actual capacity of 250 lbs. per hour. No. 2 American, capacity 350 lbs. per hour, \$100 No. 3 " " 600 " " 135



Richardson & Webster, ST. MARY'S, ONT.

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



HAS FOR SALE AT EXCEEDINGLY LOW PRICES

EXTRA GOOD SHORTHORN BULLS fit for service; also an equally good lot of Cows and Heifers, the best we ever offered. Send for Catalogue and prices. Enquiries answered promptly. Claremont Stn. C.P.R. or Pickering Stn. G.T.R. Our motto: "No business, no harm." 5-1-y-om

RIVER BOW STOCK FARM. B. SNARY & SONS, Croton, Ont., Breeders of

Shorthorn Cattle, Poland-China, Duroc-Jersey, and Chester White Swine, and Leicester Sheep. We now offer for sale five good young bulls, and also heifers of choice quality and breeding, sired by Chief Captain, a son of Indian Chief. Young pigs of both sexes & all ages at exceedingly low prices.

Shorthorns and Leicesters

Nominee, sweepstakes bull at Toronto, 1897, bred by us. We also won first prize on pen Leicesters bred and owned by exhibitor. We continue to breed the best.

YOUNG STOCK FOR SALE. E. Gaunt & Sons, ST. HELEN'S, ONT. Lucknow Station, G. T. R., 3 miles. om

Willow Bank Stock Farm

One of the oldest-established herds of SHORTHORNS in the province, has for sale a number of young bulls and heifers got by Isabella's Heir - 19550-. Also young cows of grand milking families. JAMES DOUGLAS, Caledonia, Ont.

Hawthorn Herd of Deep-Milking Shorthorns

For Sale! FOUR young bulls and several heifers of the choicest breeding and good quality. Prices right. om WM. GRAINGER & SON, Lonsdale, Ont.

FOR SALE.—Two registered BERKSHIRE BOARS; also one SHORTHORN BULL CALF, nine months old, and some choice HEIFERS. F. A. Gardner, BRITANNIA, PERL COUNTY, ONT.

MAPLE LODGE STOCK FARM

Maple Lodge P. O., Ont. We have a very nice lot of Leicester ram lambs and ewes for sale just now.

H. K. Fairbairn, Thedford, Ont. Offers for sale his yearling bull, winner of second prize at the recent Western Fair; sure and quiet. Also three yearling heifers, fit to breed this fall. 22-2-y-o

GOSSIP.

Would call attention to change of advertisement in this issue for Mr. H. K. Fairbairn, Thedford, Ont.

The annual meeting of the Red Polled Cattle Club will be held at the Sherman House, Chicago, Nov. 2, at 10 a. m. J. McLean Smith, Dayton, O., secretary.

The Ontario Veterinary College made its 1897-8 commencement on Oct. 13th, with over 100 students in attendance. Among them were gentlemen from no less than 17 States of the American Union, a striking evidence of the standing of this College, which is affiliated with Toronto University.

Washington, Oct. 1.—Consul Shafer sends a report from Stratford, Ont., to the State Department, in which he says:—"Under the new tariff regulations the duty will be removed from Indian corn and barbed wire after January 1st next, and as corn will not ripen in this district I look to a large import in the near future, both in corn and barbed wire."

O. A. C. ANNUAL STOCK SALE.

The annual sale of pure-bred stock and poultry was held Oct. 13th at the Ontario Agricultural College, and called out a large attendance, buyers being present from the adjoining Provinces and the United States. While prices were higher than preceding years, buyers felt that they received value for their money, as most of the stock offered was of superior merit. The poultry sale is a new departure; the prices received were not high, but the offerings sold readily. The cattle were in excellent trim. The highest price paid for Mr. T. Lloyd Jones, Burford. Prices for the other beef breeds ranged up to \$85. Of dairy breeds only a few were offered, most of them being young calves. Prices ran from \$20 to \$40. Hogs were good and in good demand. Top prices running between \$20 and \$30. Suckling pigs sold as high as \$10 and \$11 each. A small number of sheep were offered. Prices ranged from \$12 to \$17 for lambs.

A SATISFACTORY SALE.

The Shorthorn sale of G. D. Minor, Union, Ont., advertised in October 1st issue to be held on the 12th inst., was a pronounced success. The animals were in nice field condition and ranged in age from four months to twelve years old. The purchasers and prices are as follows:—Daisy D. = 25637 = (illustrated on page 428), \$125, A. Montague, Thamesford; Roan = 25639 = \$70, Jabel Robinson, Middlemarch; Daisy Alice = 25635 = \$50, C. J. Minor, Sparta; Daisy G. = 25638 = \$71, D. Axford, St. Thomas; Daisy Ann = 25636 = \$79, Thos. Roberts, Sparta; Gerty B. \$86, Calvin Russ, New Sarum; Dolly C., \$61, Jabel Robinson, Middlemarch; Stubborn Lass, \$126, Thos. Roberts, Sparta; Daisy A., \$118, W. G. Sanderson, Sparta; Daisy S., \$55, M. Vanstiehl, Union; Daisy C., \$45, R. McKenzie, Crumlin; Daisy E., \$36, D. D. Campbell, Komoka; Gerty A., \$60, D. D. Campbell, Komoka; Winnie M., \$31, C. J. Minor, Sparta; Oscar, bull calf, \$89, Thos. Roberts, Sparta; Smith, bull calf, \$60, Andrew Brower, New Sarum; Arthur, bull calf, \$61, John Smith, Sparta. The eighteen head brought \$1,265, an average of \$70 per head.

SHORTHORN SALES IN BUENOS AYRES.

During August a number of public sales of Shorthorns were held in Buenos Ayres, South America. All were bulls bred in the Argentina. On September 11th nine bulls sold at an average price of \$1,290. The highest price of any of the nine was \$2,486, which was given for a roan, calved in October, 1895. The prices of the nine were \$1,152, \$1,463, \$863, \$768, \$761, \$2,486, \$330, \$1,824, and \$1,281. The price of \$2,486 is the highest yet obtained in the Argentina for an animal bred in that country. On the 13th, six bulls were sold at an average price of \$628; on the 17th, eight were sold at an average of \$326; on the 18th, four were sold at an average of \$561; and on the 20th, other four were sold at an average of \$378. In the last case the highest price was \$1,536, which was paid for a two-year-old red bull.

THE PROVINCIAL WINTER FAIR.

The premium list of the fourteenth Ontario Provincial Fat Stock and Dairy Show has just been issued. The Show will this year be held in the City of Brantford, December 7th, 8th and 9th; upwards of \$1,000 are offered in cash prizes. The prize list in the cattle, sheep and swine departments has been increased in each case.

ONTARIO AGRICULTURAL COLLEGE. Never in the history of the College was there such a rush for admittance. No less than 140 made application this year, as against 108 last. So great was the rush, indeed, that 20 of the young men have been compelled to secure sleeping-room outside the College grounds.

F. BONNYCASTLE & SONS, CAMPBELLFORD, ONT., Breeders of

Shorthorns, Cotswolds, and Berkshires, have for sale one two-shear and three shearling rams, extra good ones. Some choicest ram lambs; also ewe lambs and breeding ewes. Prices right. om

Samuel Dunlop, EADY P. O., ONT., Breeder of

Pure-bred Shorthorn cattle and Poland-China hogs. Am now offering half a dozen young heifers for sale from deep milking dams. om

Geo. Raikes, Barrie, Ont., Breeder of

Shorthorn Cattle & Shropshire Sheep. At present offering some choice Shropshires, all ages. om

Barred Plymouth Rocks.

A fine lot of pullets and a few good cockerels for sale at reasonable prices from Felch's Essex strain. Also a good pair of Pekin ducks. Apply to MISS P. J. COLDWELL, Constance, Huron Co., Ont. om

Consumption Cured.

An old physician, retired from practice, having had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma, and all throat and lung affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints, after having tested its wonderful curative powers in thousands of cases, has felt it his duty to make it known to his suffering fellows. Actuated by this motive and a desire to relieve human suffering, I will send free of charge, to all who desire it, this recipe, in German, French or English, with full directions for preparing and using. Sent by mail by addressing with stamp, naming this paper. W. A. NOYES, 820 Powers' Block, Rochester, N. Y.

THOS. ALLIN & BROS., LAKE VIEW FARM, OSHAWA, ONT.,

Breeders of SHORT-HORN Cattle and SHROPSHIRE Sheep. 2 choice young bulls now for sale, also a few choicely-bred cows and heifers. Hard times prices. Correspondence solicited. 4-2-y-om

...FITZGERALD BROS....

Mount St. Louis, Ont., Breeders of pure Shorthorn cattle, the descendants of Crook-shank and other noted breeds, and Cotswold and Berkshires of all ages, offering a bunch of strong and strongly-bred young females, at reasonable prices. om

W. G. Pettit & Son, FREEMAN, ONTARIO.

Telegraph office, Burlington Station, G. T. R., BREEDERS of Shorthorns, Shropshires, and Berkshires OF Have an extra good lot of young bulls from 6 to 8 months old, got by Indian Statesman. A Duchess of Glo'ster bull by Indian Chief. Also a few choice yearling ewes and ram lambs, and Berkshires of all ages. Farms one-half mile and one and one-half from Burlington Station, G. T. R.

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. om

FOR SALE! Good Young Cows

Two years old, young 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. om H. CARGILL & SON, Station on the farm, Cargill Stn. & P. O., Ont.

E. JEFF & SONS, BONDHEAD, ONT., BREEDERS OF

Shorthorn Cattle, Southdown Sheep, and Berkshire Pigs. At present we are offering some choice young Southdowns and Berkshires. om

A. J. WATSON, CASTLEBERG, ONT.,

(ASHTON FRONTVIEW FARM), now offers for sale one extra good SHORTHORN BULL, also BERKSHIRE PIGS about three months old, at reasonable prices. Correspondence solicited. Bolton Station, C. P. R. 22-2-y-o

LEE FARM REGISTERED JERSEYS.

Bulls fit for service, \$50 each Heifers in calf, 50 " Young cows in calf, 75 " Heifer calves, 30 " Solid colors. None better bred in Canada for dairy purposes. Come and personally select, or write for description and pedigrees. E. PHELPS BALL, 17-y-o Lee Farm, Rock Island, P. Q.

DON JERSEY HERD

Now offers FOUR young bulls, sired by Costa Rica's son. He has 75 per cent. of the blood of Merry Maiden, champion sweepstakes cow of all three tests combined at the World's Fair, Chicago. Address: DAVID DUNCAN, 91-y-o DON P. O., ONT.

JOHN PULFER, BRAMPTON, ONT.

Breeder of choice Jersey reg and high-grade of the variety. Also TAMWORTH SWINE. Young stock always for sale at prices that should sell them. 12-2-y-o

9 CORDS IN 10 HOURS

BY ONE MAN with the FOLDING SAWING MACHINE, made at Essex Centre, Ontario. NO DUTY TO PAY ROW. Send to Main Office for FREE catalogue showing latest IMPROVEMENTS, and testimonials from thousands. First order secure agency. Address: FOLDING SAWING MACHINE CO., 61-63 S. Clinton Street, Chicago, Ill.

WILLOW GROVE HERD OF JERSEYS. Sweepstakes herd of 1888, 1894, 1895 and 1896. J. H. Smith & Son, Highfield, Ont., are offering 12 females, to calve shortly; one first prize bull, dam Elena of Oakdale (19 lbs. 4 oz. of butter in seven days), granddam Menies 3, A. J. C. C., test 20 lbs. 1 oz. in seven days. Dam of bull won 1st prize in dairy test, Guelph, 1896, and he is half-brother to King of Highfield.

"Gem Holstein Herd." STOCK FOR SALE!

We only keep and breed registered Holstein-Friesians. We have no worse choice young bulls and heifers, also some older animals, all of the very best dairy quality, that we will sell, one or more at a time, on reasonable terms. Correspondence solicited. ELLIS BROTHERS, BEDFORD PARK P.O., ONT. Shipping Station, Toronto. 7-7-0m

Maple Hill Holstein-Friesians SPECIAL OFFERING.

Three bull calves, sired by Sir Pietertje Josephine Mechtthilde, whose five nearest female ancestors average over 28 pounds butter per week, and out of the great cows, Cornelia Tenson, Lady Akkrum 2nd, and Inka Rose Pietertje Dekol. If you want a bull to head your herd why not get the best? 11-7-0m G. W. CLEMONS, St. George, Ont.

JOHN TREMAIN, FOREST, ONT., BREEDER OF HIGH-CLASS Holstein Cattle.

The stock of which being purchased from the noted herds of B. B. Lord (Sinclairville, N. Y.) and H. Bollert (Cassel). Young stock of gilt-edge breeding for sale.

Brookbank Holsteins. Champion milk and butter herd. Can sell a limited number of bulls and heifers one month old and up; some nice ones from our show herd. First come first served. Quality unsurpassed. Prices right. Write or come and see. A. S. G. RICE, OXFORD CO., ONT. - CURRIE'S CROSSING.

SPRING BROOK STOCK FARM - Holstein-Friesian Cattle and Tamworth Swine. Meet me at Toronto; will exhibit a herd of Tamworths; will not exhibit Holsteins, but have a large herd of best quality and breeding. Stock of all ages for sale. Prices right. A. C. HALLMAN, New Dundee, Waterloo Co., Ont.

D. J. GIBSON, Bowmanville, Ont., Breeder of HOLSTEINS AND TAMWORTHS. Now offering a yearling bull fit for service and a number of young Tamworths of both sexes.

Prize-Winning AYRSHIRES FOR SALE.

I have at present one of the largest and best herds in Ontario, which has been very successful in the prize ring. They are deep milkers and of a large size. Bulls, cows and heifers for sale always on hand. JAS. McCORMICK & SON, ROCKTON, ONT. 20-7-0

GLENGARY STOCK FARM.

My herd comprises the best strains procurable. Am now offering young bulls and heifers descended from the importation of the late Thos. Brown. PRICES RIGHT. JNO. A. McDONALD, JR., Williamstown, Ont. 4-2-7-0

AYRSHIRES FOR SALE. Six choice young Bulls, one and two years old, by Earl of Percy. My spring calves are by Douglas of Loudon 1381, bred by D. Morton & Son. Prices right. F. W. TAYLOR, Hoard's St., G.T.R. o Wellman's Cor., Ont.

THE EUREKA VETERINARY CAUSTIC BALSAM. A reliable remedy for Veterinary patients. Ask your druggist for it. Prepared by THE EUREKA VETERINARY MEDICINE CO., LONDON, ONT.

Ottawa Fair Prize List.

HORSES. THOROUGHBREDS. - Stallion, four years old and upwards - 1 and 3 Ottawa Live Stock Improvement Co; 2 J R Dawes, Lachine, P. Q. Stallion, any age - 1 Ottawa Live Stock Improvement Co. Stallion with three of his get, any age or sex - 1 Ottawa Live Stock Improvement Co; 1 Best stallion, two years and over - 1 Ottawa Live Stock Improvement Co.

CARRIAGE HORSES. - Stallion, four years old and upwards, not under 16 hands - 1 A A Blyth, Ottawa; 2 J J Anderson, Dominionville, Ont; 3 Hornsby Bros, Eminence, Ken, U. S. Stallion, three years old - 1 Charles Dow, Kenmore; 2 E A Carnochan, Easton's Corners, Stallion, two years old - 1 H Craig, Howick; 2 T Rutter, Ottawa; 3 J D Fraser, Turdman's Bridge; Yearling stallion - 1 T Fairburn, Billings' Bridge; 2 Geo Stetson, Skead's Mills. Stallion, of any age (special) - 1 A A Blyth. Brood mare, with foal by side - 1 W C Edwards, Rockland; 2 J D Fraser; 3 Alex Kennedy, Ottawa. Foal - 1 A Kennedy; 2 C W Barber, Gatineau Point; 3 W C Edwards. Three-year-old gelding or filly - 1 W C McConnell, Morewood; 2 R Ness, Howick. Two-year-old gelding or filly - 1 Thomas White, City View; 2 R Ness. Yearling gelding or filly - 1 Alexander Kennedy; 2 J M Morgan, Ottawa; 3 W C Edwards. Pair of matched carriage horses (geldings or mares) in harness, 15 1/2 hands and over - 1 Robert Beith, Bowmanville; 2 E S Skead, Ottawa; 3 E E Clancy, Toronto. Single carriage horse (gelding or mare) in harness, 15 1/2 hands or over - 1 E S Skead; 2 E B Clancy; 3 John Hutton, Ottawa. Mare, any age (special) - 1 Robert Beith. Best pair of matched carriage horses (geldings or mares), 15 1/2 hands and over - 1 Robert Beith.

HIGH-STEPPERS. - Pair matched horses (mares or geldings), not more than 15 1/2 hands - 1 E B Clancy, Toronto; 2 E S Skead, Ottawa; 3 A E Wylie, Alton, Ont. Single horse (mare or gelding), exhibited in this section (special) - 1 E B Clancy. Single horse (mare or gelding), not more than 15 1/2 hands - 1 E B Clancy; 2 R Beith, Bowmanville; 3 W Cunningham, Ottawa. Single horse (mare or gelding), exhibited in this section - 1 E B Clancy.

COACH HORSES (for Cleveland Bays, French and German Coach horses, over 16 hands). - Stallion, three years old and upwards - 1 R Ness, Howick. STANDARD-BRED. - Stallion, four years old and upwards - 1 Alex McLaren, Buckingham; 2 J M Morgan, Ottawa; 3 Thomas Hale, Pembroke. Yearling stallion - 1 J M Morgan; 2 J Pettipiece, Ottawa East. Stallion, of any age - 1 A McLaren. Brood mare, with foal by her side - 1 and 2 A McLaren. Mare, of any age - 1 M Morgan. Best Standard-bred stallion - 1 A McLaren.

ROADSTERS. - Stallion, four years old and upwards, not less than 15 1/2 hands, to be driven in harness - 1 J H Allan, Ottawa. Stallion, any age - 1 J H Allan. Filly, two years old - 1 N D Rdey, Aylmer; 2 J W Slack, Merivale; 3 Mr Faulkner, Ottawa East. Filly, one year old - 1 J M Morgan, Ottawa; 2 and 3 W C Edwards, Rockland. Brood mare, not less than 15 1/2 hands high, with foal by her side - 1 and 3 Alex McLaren, Buckingham; 2 W C Edwards. Foal - 1 A McLaren; 2 and 3 W C Edwards. Mare, any age - 1 W C Edwards. Pair mares or geldings, three years or over, 15 hands and upwards - 1 A H Johnson, Casselford. Mare or gelding - 1 M Beauvais, Ottawa; 2 W Cunningham, Ottawa; 3 McInstry, Ottawa. Pair Roadsters (mares or geldings), 15 hands and upwards - 1 A H Johnson.

HACKNEYS. - Stallion, four years old and upwards - 1 Graham Bros, Claremont; 2 Robt Beith, Bowmanville. Yearling stallion - 1 R Beith. Filly, two years old - 1 R Beith. Yearling filly - 1 R Beith. Brood mare, with foal by her side - 1 R Beith. Mare, any age - 1 R Beith. Stallion, any age - 1 Graham Bros.

SADDLE HORSES AND HUNTERS. - Saddle horse, gelding or mare - 1 R T Blackburn, Ottawa; 2 H D Smith, Compton; 3 A E Wylie, Ottawa. Hunter, heavy-weight, up to 210 lbs - 1 E S Skead, Ottawa; 2 H Alexander, Ottawa; 3 T C Bate, Ottawa. Hunter, heavy-weight, up to 154 lbs - 1 H S Perley, St Alban's; 2 T C Bate, Ottawa; 3 C D Graham, Ottawa. Three-year-old gelding or filly - 1 A Kennedy, Ottawa. Two-year-old gelding or filly - 1 T Fairburn, Billings' Bridge. Yearling gelding or filly - 1 and 2 W C Edwards, Rockland. Best heavy-weight hunter - 1 E S Skead.

PONIES. - Pair of ponies in harness, from 12 to 14 hands - 1 A James, Perth. Single pony in harness, from 12 to 14 hands - 1 Robt Beith, Bowmanville. Pair ponies in harness, under 12 hands - 1 T Ahearn, Ottawa. Single pony in harness, under 12 hands - 1 W Cunningham, Ottawa; 2 Mrs E C Bessey, Hull; 3 T C Bate, Ottawa.

GENERAL PURPOSE. - Stallion, three years old and upwards - 1 Geo Sparks, Vars; 2 E Harrison, Ottawa. Brood mare, with foal by her side - 1 Jas Callander, North Gower; 2 C W Barber, Gatineau Point. Three-year-old gelding or filly - 1 J Thompson, North Georgetown; 2 Sam Stewart, Aylmer. Two-year-old gelding or filly - 1 J Callander, North Gower. Foal - 1 Jas Callander. Best team (geldings or mares), in harness - 1 A Stanley, Hawthorne; 2 A Spratt, Johnson's Corners. Best mare, of any age - 1 J Thompson. General Purpose mare, any age - 1 J Thompson.

HEAVY DRAFT. - Stallion, four years old and upwards - 1 Robert Ness, Howick; 2 Graham Bros, Claremont; 3 J J Wilson, Carp. Stallion, three years old - 1 R Davies, Toronto. Stallion, two years old - 1 and 2 Robert Davies. Yearling stallion - 1 and 2 Robert Davies. Best registered heavy draft stallion, two years old and over - 1 Robt Ness. Brood mare, with foal by her side - 1 Robt Ness; 2 Robt Ness. Filly, three years old - 1 and 2 Robt Ness. Filly, two years old - 1 and 2 Robt Davies; 3 R Ness. Foal - 1 Robt Davies; 2 Robert Ness. Heavy draft team (geldings or mares) - 1 Robt Ness; 2 Jas Callander, North Gower. Mare, any age (special) - 1 Robt Davies. Stallion, with three of his get, any age or sex (special) - 1 Robt Ness.

HEAVY DRAFT (CANADIAN BREED. - Stallion, four years old and upwards - 1 M Muldoon, Hazeldean; 2 W Wyatt, Dalmeny; 3 A Spratt, Johnson's Corners; 4 M C Cartney,

BOWEN CABLE STAY FENCE CO. For a machine to build the cheapest, strongest and best fence made of wire. No royalties, no farm rights, machine easily and quickly operated by any farmer. Send for large circulars. NORWALK, OHIO, U.S.

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CHESTER WHITE AND DUROC-JERSEY PIGS.

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This is the Dairy breed for ordinary farmers. Large, vigorous and hardy, giving plenty of rich milk. Several fine young bulls for sale at very reasonable prices. A few heifers can be spared. Address: SYDNEY FISHER, 17-y-o Alva Farm, Knowlton, P.Q.

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

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HEALS saddle galls, sore shoulders, ulcers, etc. Keeps animals free from infection.

NO DANGER; SAFE, CHEAP, and EFFECTIVE.

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Sold in large tins at from 25 to 40 gallons of wash, according to strength required. Special terms to breeders, ranchmen, and others requiring large quantities.

Sold by all druggists. Send for pamphlet. Robt. Wightman, OWEN SOUND, ONT. Sole agent for the Dominion.

North Georgetown. Stallion, three years old - 1 J G Clark, Ottawa. Stallion, two years old - 1 Samuel Stewart, Aylmer; 2 John Clark; 3 A Spratt. Brood mare, with foal by her side - 1 A Searf, Cummings' Bridge; 2 Robert Ness, Howick; 3 C W Barber, Gatineau Point; 4 R Richardson, Billings' Bridge. Three-year-old filly or gelding - 1 A M Stewart, Dalmeny; 2 J G McEwen, Allan's Corners. Two-year-old filly or gelding - 1 C W Barber; 2 W Henry, City View; 3 John Clark, Ottawa; 4 J G Clark. Best yearling gelding or filly - 1 R Richardson. Best foal - 1 A N Searf, Hawthorne; 2 R Richardson; 3 Robt Ness. Heavy draft team (mares or geldings) - 1 G I Dewar, Ottawa; 2 J G McEwen. Stallion, with three of his get, any age or sex - 1 W Wyatt. Mare, any age - 1 C W Barber. Best Dominion-bred heavy draft stallion, any age - 1 J G Clark.

CATTLE.

DURHAMS. - Bull, three years old and upwards - 1 T E Robson, Ilderton; 2 Jas Leask, Greenbank. Bull, two years old - 1 D McLaren & Sons, Dunmore. Bull calf, under one year (age to be taken into consideration in judging) - 1, 2 and 3 W C Edwards, Rockland. Bull, of any age - 1 T E Robson. Cow, three years old - 1 and 2 T E Robson. Heifer, two years old - 1 T E Robson; 3 W C Edwards & Co. Heifer calf, under one year - 1 T E Robson; 2 and 3 W C Edwards. Best female, any age - 1 T E Robson. Herd, consisting of one bull and four females, over one year (gold medal and diploma) - 1 T E Robson; 2 W C Edwards & Co. Best herd of one bull and four females, under two years of age, owned by exhibitor and recorded in the Dominion Short-horn Herd Book - 1 W C Edwards.

GALLOWAYS. - Bull, three years old and upwards - 1 D McCrea, Guelph; 2 J J Sibbald, Anna. Bull, two years old - 1 J Sibbald. Bull, one year old - 1 J Sibbald; 2 and 3 D McCrea. Bull calf, under one year - 1 J Sibbald. Bull, of any age - 1 D McCrea. Cow, three years and upwards - 1 and 2 J Sibbald; 3 D McCrea. Heifer, two years old - 1 J Sibbald; 2 and 3 D McCrea. Heifer, one year old - 1 and 2 D McCrea; 3 J Sibbald. Heifer calf, under one year - 1 and 2 D McCrea; 3 J Sibbald. Female, any age - 1 J Sibbald. Herd, consisting of one bull and four females over one year - 1 J Sibbald.

HEREFORDS. - H D Smith, Compton, Que., won all the prizes taken, including 1st for bull, three years old and upwards; bull, two years old; bull calf, under one year; bull, of any age; cow, three years old and upwards; heifer, two years old; heifer, one year old; heifer calf, under one year; female, of any age; best herd of one bull and four females, over one year; and 2nd for cow, three years old and upwards; heifer, two years old; and herd of one bull and four females, over one year; and 3rd for three-year-old cow, and two-year-old heifer.

POLLED ANGUS. - James Bowman Guelph, Ont., won all the prizes taken, including 1st for bull, three years old and upwards; bull, two years old; bull calf, under one year; three years old and upwards; heifer, two years old; heifer, one year old; heifer calf, under one year; female, any age; best herd of one bull and four females, over one year; and 2nd and 3rd for cow three years old and upwards, and heifer calf, under one year.

DEVONS. - Bull, two years old and upwards - 1 and 2 W J Rudd, Eden Mills. Bull, one year old - 1 and 2 W J Rudd. Bull calf, under one year - 1 W C Edwards & Co, Rockland; 2 W J Rudd. Bull, any age - W C Edwards & Co. Cow, three years old and upwards - 1 W J Rudd; 2 and 3 W C Edwards & Co. Heifer, two years old - 1 W J Rudd; 2 and 3 W C Edwards & Co. Heifer, one year old - 1 C J Gilroy & Son; 2 W J Rudd; 3 W C Edwards & Co. Heifer calf, under one year - W J Rudd. Female, any age - W J Rudd. Herd, consisting of one bull and four females over one year old - W J Rudd.

HOLSTEINS. - Bull, three years old and upwards - 1 G W Clemons, St George; 2 C J Gilroy & Son, Glen Buell; 3 A D Besserer, Ottawa. Bull, two years old - McCuaig & Robertson, Vankleek Hill. Bull, one year old - 1 G W Clemons; 2 Tevbie & Fee, Cummings' Bridge. Bull calf, over six months and under one year - 1 C J Gilroy & Son; 2 G Dowler, Billings' Bridge. Bull calf, under six months - 1 M Rice, Currie; 2 McCuaig & Robertson. Bull, of any age - G W Clemons. Cow, four years old and upwards - 1 and 2 G W Clemons; 3 and 4 C J Gilroy & Son. Cow, three years old - 1 G W Clemons; 2 and 3 C J Gilroy & Son. Heifer, two years old - 1 C J Gilroy & Son; 2 G W Clemons. Heifer, one year old - 1 and 2 G W Clemons; 3 C J Gilroy & Son. Heifer calf, under six months and under one year - 1 and 3 C J Gilroy & Son; 2 G W Clemons. Heifer calf, under six months - 1 G W Clemons; 2 and 3 C J Gilroy & Son. Female, any age - G W Clemons. Herd, one bull and four females, over one year - 1 and 3 G W Clemons; 2 C J Gilroy & Son. Herd, consisting of one bull and four females, under two years old, bred and owned by exhibitor - C J Gilroy & Son.

JERSEYS. - Bull, three years old and upwards - 1 Miller & Sibley, Franklin, Pa; 2 McCuaig & Robertson, Vankleek Hill. Bull, two years old - 1 Robt Davies, Toronto; 2 Miller & Sibley. Bull, one year old - Miller & Sibley. Bull calf, over six months and under one year - 1 Miller & Sibley; 2 McCuaig & Robertson. Bull calf, under six months - Miller & Sibley. Cow, four years old and upwards - 1, 2, 3 and 4 Miller & Sibley. Cow, three years old - 1 Miller & Sibley; 2 and 3 Robt Davies. Heifer, two years old - 1 Robt Davies; 2 and 3 Miller & Sibley. Heifer, one year old - 1 and 3 Miller & Sibley; 2 Robt Davies. Heifer calf, over six months and under one year - 1 and 2 Miller & Sibley. Heifer calf, under six months - 1 and 2 Miller & Sibley; 3 Robt Davies. Female, any age - Miller & Sibley. Best herd, consisting of one bull and four females, over one year - 1 and 3 Miller & Sibley; 2 Robt Davies.

GUERNSEYS. - Bull, three years old and upwards - 1 Sydney Fisher, Knowlton, Que; 2 W H & C H McNish, Lyn; 3 Wm Butler & Son, Dereham Centre. Bull, two years old - W H & C H McNish. Bull, one year old - 1 Wm Butler & Son; 2 Sydney Fisher. Bull calf, under

(Continued on page 466.)

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Rams and ewes of all ages, all registered, and from prize-winning stock. Turkeys from 42-lb. tom and Mungers hens.

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Shropshire Rams

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One year—1 and 3 Wm Butler & Son; 2 Sydney Fisher. Bull, any age—1 Wm Butler & Son. Cow, four years old and upwards—1 W H & C H McNish; 2 Wm Butler & Son; 3 Sydney Fisher. Cow, three years old—1 and 3 Wm Butler & Son; 2 W H & C H McNish. Heifer, two years old—1 and 2 Sydney Fisher; 3 Wm Butler & Son. Heifer, one year old—1 W H & C H McNish; 2 and 3 Wm Butler & Son. Heifer calf, under one year—1 and 2 Sydney Fisher; 3 W H & C H McNish. Female, any age—W H & C H McNish. Best herd, consisting of one bull and four females, over one year—1 W H & C H McNish; 2 Wm Butler & Son.

AYRSHIRES.—Bull, three years old and upwards—1 Daniel Drummond, Petite Cote; 2 R G Steacy, Brookville; 3 W Wylie, Howick; 4 Daniel Drummond. Bull, two years old—1 R G Steacy; 2 J Howden, St. Louis Station. Bull, one year old—1 W Stewart & Son, Menie; 2 Jas Legault, St. Joseph. Bull calf, over six months and under one year—1 R G Steacy; 2 R Reid & Co, Hintonburg; 3 J Yuill & Sons, Carleton Place; 4 J Howden. Bull calf, under six months—1 D Drummond; 2 R G Steacy; 3 W Wylie; 4 Wm Stewart & Son. Heifer, any age—1 R G Steacy. Cow, four years old and upwards—1 R G Steacy; 2 D Drummond; 3 W Stewart & Son; 4 D Drummond. Cow, three years old—1 D Drummond; 2 R G Steacy; 3 W Wylie; 4 W Stewart & Son. Heifer, two years old—1 W Wylie; 2 D Drummond; 3 J G Clark, Ottawa; 4 W Stewart & Son. Heifer, one year old—1 W Stewart & Son; 2 D Drummond; 3 W Wylie; 4 R G Steacy. Heifer calf, over six months and under one year—1 D Drummond; 2 W Wylie; 3 W Stewart & Son; 4 J Yuill & Sons. Heifer calf, under six months—1 and 2 D Drummond; 3 J Yuill & Sons; 4 W Stewart & Son. Female, any age—R G Steacy. Best herd, consisting of one bull and four females, over one year—1 R G Steacy; 2 D Drummond; 3 W Wylie. Best herd, consisting of one bull and four females, under two years old, bred and owned by exhibitor—D Drummond.

GRADE CATTLE.—Grade cow, four years old and upwards—1 J G Clark, Ottawa; 2 and 3 R Reid & Co, Hintonburg. Cow, three years old—1 and 3 J G Clark; 2 R Reid & Co. Heifer, two years old—1 and 2 R Reid & Co; 3 J G Clark. Heifer, one year old—1 J G Clark; 2 R Reid & Co. Heifer calf, under one year—1 W Wylie; 2 and 3 R Reid & Co. Best female, any age—J G Clark. Best herd of dairy cattle, consisting of five females, over one year—1 and 3 R Reid & Co; 2 J G Clark.

GRADE CATTLE (BEEF).—James Leask, Greenbank, won all the prizes in this class.

FAT CATTLE, ANY BREED.—Best fat steer, three years old—1 and 2 James Leask, Greenbank. Best fat steer, two years old—James Leask. Best fat steer, one year old—1 James Bowman, Guelph; 2 James Leask. Best fatted cow or heifer—1 James Leask; 2 H D Smith, Compton; 3 W J Rudd, Eden Mills.

MILK TEST.—The cow being the largest producer (products from milk only to be considered)—C J Gilroy & Son, Glen Buell. Best Holstein-Friesian cow, registered in the C H F Herd Book, which has not received first premium—1 G W Clemons, St George; 2 C J Gilroy & Son.

SHEEP.

COTSWOLDS (LONG-WOOLED).—A J Watson, Castlederg, Ont., won all the prizes taken, including first for best shearing ram; ram lamb; one ewe two shears and over; one shearing ewe; one ewe lamb; one ram, two aged ewes, two shearing ewes, and two ewe lambs; and second for ewe two shears and over, shearing ewe and ewe lamb.

LEICESTERS.—Ram, two shears and over—1 D Baxter, Howick. Shearing ram—1 John Kelly, Shakespeare; 2 and 3 W A Rennie, Shakespeare. Ram lamb—1 John Kelly; 2 W A Rennie; 3 D Baxter. One ewe, two shears and over—1 and 2 W A Rennie; 3 D Baxter. One shearing ewe—1, 2 and 3 W A Rennie. One ewe lamb—1, 2 and 3 W A Rennie. One ram, two aged ewes, two shearing ewes and two ewe lambs—1 W A Rennie.

LINCOLNS.—T E Robson, Iderton, Ontario, won all the prizes taken, including first for best ram, two shears and over; shearing ram; ram lamb; one ewe, two shears and over; one shearing ewe; one ewe lamb; one ram, two aged ewes, two shearing ewes, and two ewe lambs; and second for ram lamb, one ewe two shears and over, one shearing ewe, and one ewe lamb.

SOUTH DOWNS (MEDIUM-WOOLED).—Ram, two shears and over—1 and 3 John Jackson & Sons, Abingdon; 2 Robert Shaw & Son, Glanford Station. Shearing ram—1 and 2 John Jackson & Sons; 3 Robert Shaw & Son. Ram lamb—1 and 3 Robert Shaw & Son; 2 John Jackson & Sons. One ewe, two shears and over—1, 2 and 3 J Jackson & Sons. One shearing ewe—1 and 2 John Jackson & Sons; 3 Robert Shaw & Son. One ewe lamb—1 John Jackson & Sons; 2 and 3 Robert Shaw & Son.

SHROPSHIRE DOWNS.—John Campbell, Woodville, Ont., won all the prizes taken, including first for best ram, two shears and over; shearing ram; ram lamb; one ewe, two shears and over; one shearing ewe; one ewe lamb; one ram, two aged ewes, two shearing ewes and two ewe lambs; and second for ram, two shears and over; shearing ram; ram lamb; one ewe, two shears and over; one shearing ewe, and one ewe lamb; and third on one ewe, two shears and over; one shearing ewe and one ewe lamb.

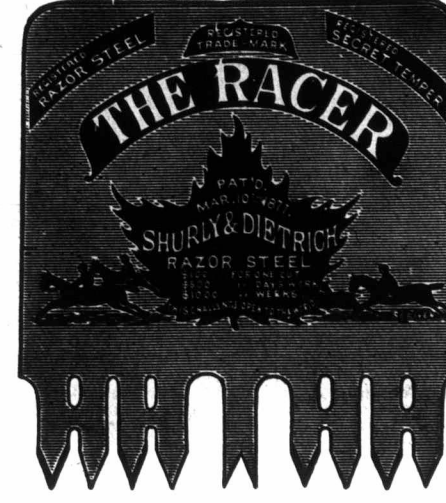
OXFORD, SUFFOLK, AND HAMPSHIRE DOWNS.—Ram, two shears and over—1 John Kelly, Shakespeare; 2 H Bonville, Danville, P. Q. Shearing Ram—1 John Kelly; 2 H Bonville. Ram lamb—1 and 3 H Bonville; 2 John Kelly. One ewe, two shears and over—1 John Kelly; 2 and 3 H Bonville. One shearing ewe—1 and 3 John Kelly; 2 H Bonville. One ewe lamb—1 and 2 John Kelly; 3 H Bonville. One ram, two aged ewes, two shearing ewes and two ewe lambs—1 John Kelly.

DORSET HORNED.—Ram, two shears and over—1 Jas Borman, Guelph; 2 and 3 John A McGilvray, Uxbridge, Ont., who also won the remaining prizes, including first, second and third on shearing ram; ram lamb; one ewe, two shears and over; one shearing

(Continued on page 471.)

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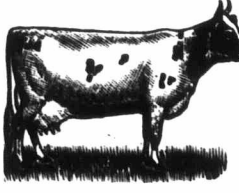
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I HAVE for sale a choice lot of yearling and ram lambs, yearling ewes, and ewe lambs for 1897. Prices reasonable.

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40 ewes and ewe lambs for sale. Address—JOHN JACKSON, Abingdon, Ont.

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A fine lot of young Pigs on hand for sale. Prices reasonable.

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F. S. WETHERALL, Cookshire, Quebec. For sale. A few Cheviot Ram Lambs. o