

# FARMER'S ADVOCATE

AND HOME MAGAZINE.

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## THE FARMER'S ADVOCATE & HOME MAGAZINE

WILLIAM WELD, EDITOR AND PROPRIETOR.

THE LEADING AGRICULTURAL JOURNAL PUBLISHED IN THE DOMINION.

The FARMER'S ADVOCATE is published on or about the 1st of each month. It is impartial and independent of all classes or parties, handsomely illustrated with original engravings, and furnishes the most profitable, practical and reliable information for farmers, dairymen, gardeners and stockmen, of any publication in Canada.

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## Our Monthly Prize Essays.

CONDITIONS OF COMPETITION.

1.—No award will be made unless one essay at least comes up to the standard for publication.

2.—The essays will be judged by the ideas, arguments, conciseness and conformity with the subject, and not by the grammar, punctuation or spelling, our object being to encourage farmers who have enjoyed few educational advantages.

3.—Should one or more essays, in addition to the one receiving the first prize, present a different view of the question, a second prize will be awarded, but the payment will be in agricultural books. First prize essayists may choose books or money, or part of both. Selections of books from our advertised list must be sent in not later than the 15th of the month in which the essays appear. Second prize essayists may order books for any amount not exceeding \$3.00, but no balance will be remitted in cash. When first prize essayists mention nothing about books, we will remit the money.

Our prize of \$5.00 for the best original essay on *Winter Care of Cattle*, has been awarded to Thos. McMillan, Constance, Ont., and our 2nd prize on the same subject to James R. Lawler, Whitby. Both essays appear in this issue.

A prize of \$5.00 will be given for the best original essay on *The Condition of the Canadian Farmer*. Essays to be handed in not later than December 15th.

A prize of \$5.00 will be given for the best original essay on *Soiling and Soiling Crops*. Essays to be handed in not later than Jan. 15.

Now is the time to subscribe for the *Farmer's Advocate*, the best agricultural paper in Canada.

## Editorial.

### On the Wing.

Victoria, Vancouver's Isle, October 25th, 1887.—We have now reached the Pacific coast. The view from this eminence (Church Hill) commands a lovely panorama; in the foreground lie the parliamentary buildings and educational establishments, Victoria and Esquimaux harbors, with the steamers for the north and south watching for the arrival of the Australian mail via the Sandwich Isles. We are deeply impressed with the grandeur of the scene and the importance of the situation.

The mineral, fishing and lumber interests of this British Columbia, and the largely increasing trade of our Pacific Railway, tend to make this Province an important and a valuable adjunct to the British possessions.

When we think of the destitution existing in Europe—when we reflect upon the vast resources of the magnificent country we have just passed through—we think how appropriate was the motto (made of the heads of wheat) we saw placed over the altar in the Episcopal church in the capital of Assiniboia on Thanksgiving Day, "I am the Bread of Life."

Five years ago we passed through this territory of Assiniboia. The railroad was then being constructed; only a few tents and board shanties were then to be seen. The country then appeared to us a trackless desert of brown, seared and dried up, with but little short and dried grass upon it—a most uninviting place; in fact, we had estimated it as a barren desert, never to be of any value; we did not believe that our cattle could live there, or that grain would ever be profitably raised on these thousands of miles. This opinion is now changed.

Having this year visited eight agricultural exhibitions in this territory, having been to many of the farms in different localities, and having conversed with the inhabitants, we find the granaries overflowing with grain, the stock in an astonishingly thriving condition, and a hopeful and prosperous people in all parts. We have visited many who had commenced with only their own energy, now having farms and thousands of bushels of wheat to sell; and here in this comparatively unknown Territory of Assiniboia is a country larger than old Ontario, Nova Scotia and New Brunswick combined; a territory destined to contain millions of people, and land to be had free to all that come to it. And this is only one of the territories, some of which are larger in area than this, and some claiming advantages that, in some instances, surpass this one. Villages and towns are springing

up in all parts; the busy clatter of the hammer is heard on all sides. There are undoubted difficulties to overcome by all who undertake a pioneer life; some may not be fitted for it; but where to go, how to go, and who should not go, and the individual successes and fortunes, the drawbacks and requirements may be treated on in future issues. Suffice for the present to say that in this jubilee year of the reign of our Queen, the fact is fully demonstrated that we have in our North-West Territories a country that probably may be one of the greatest wheat producing countries in the world. Let us all unite in thanks for our blessings, and contemplate the appropriate motto used at Regina.

RETURNED.

Nov. 25.—We re-enter our office after an absence of nearly three months, to attend to duty's call. We left our office under the invitation from agricultural societies, Government officials and many friends. During our absence we have visited 14 agricultural and horticultural exhibitions in Canada. Also, under special invitations, we visited the Experimental Farm at Ottawa, and three private experimental farms in the North West. After filling as many of our Canadian invitations as possible, between Sherbrooke, P. Q., to Wellington, B. C., in response to invitation we visited San Francisco, southern California and Kansas City, passing through Washington and Oregon Territories to California, returning by Colorado, New Mexico, Kansas, Illinois and Michigan. We found that during the past year we have travelled nearly 9,000 miles by rail, besides steamboat, carriage and stage rides. We, or rather you, our readers, have already paid for this, as we are acting in a different capacity to those whose fares are paid by either of the Governments, or either of the railroad companies, or any of the existing societies.

We believe that we have gained information that will be of much interest and importance to you all. But to condense, write and prepare our matter and have our illustrations made, will take a little time after one gets settled to quiet work again.

We have met with the kindest receptions, unbounded hospitality, and more invitations than we could possibly accept in Canada, for which we feel highly honored, and return our sincere thanks to those of whose hospitality we have partaken, and to those whose hospitality we have been under the necessity of declining for the present.

To our Canadian and American friends in the United States and Territories, whose kind invitations we have for the present felt it our duty



to decline until our plans are more fully developed, we return our sincere thanks, and trust that no word which we may ever pen or utter will mar the good feelings of fellowship we have had tendered to us. We most heartily appreciate the eulogiums we have heard from your lips, of the high appreciation that you hold of our Queen and our laws, and will devote a good part of our time and attention to a fuller development of the noble, grand and patriotic feelings that I have heard expressed while sojourning in your land.

Could we, with your aid, lend our publication to your service in reuniting the mother and child—Britain and the United States—in one grand bond of unity for good, we should feel that our labors have not been in vain. We offer to you, our American cousins, an open hand, an open paper and an open heart, and an open invitation to suggest any means by which we of the British Empire and you our friends can unite in one grand cause, the elevation and uniting in one bond your nation with ours. There will be objections, there will be selfish ends to bury, but we have confidence that the majority of your nation desire a nobler, a higher and a grander stand of unity than that of mere tricksters, that there is a necessity of a higher standard, that dishonorable and dishonest actions are depreciated by you. Let us all hope that the pen will show itself superior to the sword, and that such a unity may be formed as may tend to our honor and stability. We invite suggestions from both our American and British friends. We do not presume to mention any plan or policy, as yet preferring to or the opinions of any that may have a hope of doing any good by any chance that might be suggested. We are well aware that the best plans that can be devised will meet with the most strenuous opposition by some.

Our past experience causes us to use caution, as every legislator in our country interested in the welfare of agriculture should remember the false position that the party writers attempted to place us in when we gave what they now must know were truthful accounts about our first visit to Manitoba, and the treatment of intending settlers.

When on the Pacific coast we much enjoyed the sight of the flowers and the quantities of their fruits and products from their fruits, large quantities of which will be consumed in the Northern States and probably in Canada. Their push and energy finds a market for their products here, but I regret to state that our Canadian and northern products are scarcely procurable, even at the best hotels on the Pacific coast. A good piece of marbled beef or tender mutton, or a good piece of Cheddar cheese, or even a good piece of butter, was about as impossible to procure as a hen's tooth. These products—the main staples of life—even to the fish—are not at all to be compared to the quality of the products found in all our northern markets. The fact is, the inhabitants of the Pacific coast hardly know what good meat, good butter or good cheese is, and ere they ask too much from us they should by liberal patronage of imported products from the north, open a more welcome door for their products among us. They do import considerable butter, and when properly packed and cared for it keeps fresh and sweet for any length of time, say years, if necessary. The mode of packing it to keep is: Wrap our 1 lb. and 2 lbs. in a linen cloth, pack

into a barrel, and fill the barrel entirely with brine; the barrel should be hooped with galvanized iron hoops, as iron will corrode and penetrate through the wood and injure the butter.

#### WHEAT.

When in conversation with Mr. Myers, of Whitewood, Assiniboia, one of the most—perhaps the most—enthusiastic and learned readers, writers and experimenters in the Dominion, we found that he has been using his exertions and means to procure the best plants, seeds, etc., etc. Through diplomatic difficulty he could not procure the Riga wheat. The Dominion Government has procured some and has given some to different persons. We believe that every subscriber to the FARMER'S ADVOCATE in the Northwest should be the first to receive it, as they are undoubtedly the most unbiassed and unprejudiced people in all parts. If you have not received any, you might do well to write at once to Prof. Saunders, at Ottawa, and respectfully ask for the Riga, the earliest wheat. Ask for that wheat alone, as many of the other wheats sent out will only cause you care without profit. Should this, the Riga, or the earliest wheat, reach you, it may be a great source of profit to you and to the country.

When making enquiries about the Red Fife wheat, over which there has been so much said, the most intelligent and best informed millers have told us that it is only the same variety of wheat that we introduced into the county of Middlesex over 25 years ago.

When at Wapella Agricultural Exhibition in Assiniboia, we saw some White Fife wheat, so plump and white that we would not at first believe that it was not winter wheat. It appeared as good as any white winter wheat we have seen in Ontario this year, and better than most of it.

#### Commercial Union.

As this policy has been introduced into Canada by Americans, and as it has been embraced by some Canadian editors, and even government expenditures made to aid its advancement, we deemed it our duty to enter the United States and learn of the people from personal observation something of the state of the country to which stronger commercial attachment is advocated.

In the great West and the Pacific slope, both in Canada and the United States, we find that there is now a demand for our eastern products that by judicious management should be increased to an enormous extent. For instance, butter, cheese, and even some meats, cannot be produced on this coast at all equal in quality to eastern products. As for wheat and flour, it appears more than probable that Canada will be called on to supply breadstuffs for this coast in a few years, as Canadian wheat products are so rapidly increasing.

In nearly all parts of California vegetable and often vine culture depend on irrigation. Where this is adopted the fruits grow to a large size, but are often very defective in quality.

The Americans are a clear headed race of men. They desire Canada as a market for their products; they desire it as a very valuable addition to the Union, knowing full well its capacities and resources. Our lumber and coal interest of this coast is of great value; our coal, the supply of which is practically unlimited, commands \$3 per ton, a higher price than any other found on the U.S. coast. The fish in the Canadian waters of the Atlantic are far superior in quality to those taken

on this coast, and the shell fish here are comparatively valueless. The dairy and apple products of Canada are superior to those of the United States, and of still greater importance is the fact that Canadian stock is free from contagious and death-giving diseases.

Our Canadian Pacific Railroad, from what we have already seen and heard, is rightly pronounced a safer and better equipped road than either of the others, passes through quite as grand scenery, and even a more healthy and invigorating country. There exists a feeling of dissatisfaction in regard to the power, monopoly and discrimination of that road in Canada, but the iron rod of their lines on the U. S. side of the border is found even more burdensome. The laws in Canada are too often disregarded by even our officials, and too often made to screen party or railroad interests. In the U. S. matters are no better, but rather worse. Corruption, immorality and dishonorable acts are quite as flagrant there as with us. Notwithstanding such defects, the Americans have a fine country and are an energetic people, and thousands—we may say millions—admire our laws and the British constitution; many would willingly sacrifice something to elevate the honour, prosperity and stability of both nations, and a fair reciprocal arrangement for greater harmony and greater commercial trade between us. Canada has no necessity, as many would like it to appear, to go to the back door and pray for admittance. Should our legislators at any time, at the suggestion of the U. S. or our Government, approach this subject in a fair and honorable manner, we would volunteer the pages of this journal to forward any measure that we might deem of permanent advantage to Canadian agriculturists, the American citizens and the British nation. A community of race, religion and literature, and the diffusion of civil and religious liberty the aim of both countries should aid in bringing about the most friendly relationship between the two. We Canadians admire the progress and development of the grand resources of the United States, and we believe a very large portion of the most enlightened people of that nation do for the same reasons entertain a warm admiration for us and our Government. We would foster these feelings. Since the war, we feel assured there is a much more friendly feeling existing in the U. S. toward us, and a growing belief that the prosperity of each is in a great measure shared by the other. This subject may not be strictly agricultural, but as both the Reform and Conservative agricultural exponents, and their paid agricultural publications, are harping on this card, it is necessary for us to express our views on political agriculture.

Prof. Lazenby, Ohio, insists that killing birds and robbing their nests should be punished by fine or imprisonment, or both.

A. W. Hatch, of Wisconsin, told the American Pomological Society that he made money by reducing his orchard fifty percent, and giving the half that remained the same amount of care he had formerly given the whole.

Two classes of horses, says the Rural New Yorker, will sell to advantage in New York hereafter: heavy express horses and coaches or roadsters. Electricity is to be the motive power of the future on the street car lines, and 80 percent of the horses now employed at this work will be idle. There will always be a vast amount of city freight transportation that cannot be conducted without horse power, and strong, active horses will always be cash property. At present the horses which are too light for heavy work, and too slow or too clumsy for driving purposes, find a place on the street cars. Ten years hence those who breed this class of animals will be unable to dispose of them at anything near their value. Those who breed any old mare to a second-class draught or trotting stallion will be unable to dispose of their colts in the New York market.

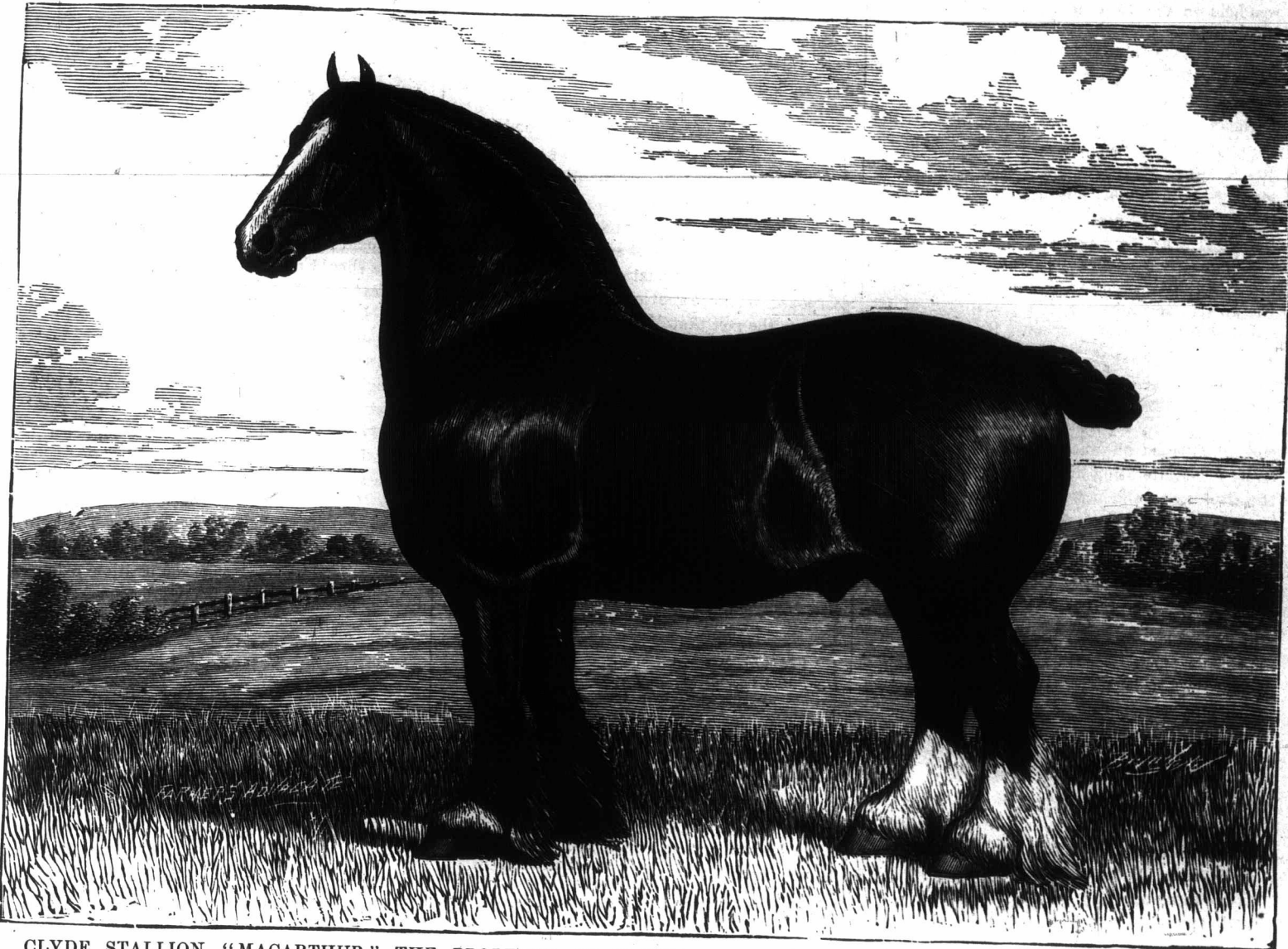


**The Advocate for 1888.**

The present number closes the 22nd volume of the ADVOCATE. We return you our sincere thanks for your liberal and continued support and appreciation of our labors. It is our opinion that from our trip to the Pacific coast and from our increased staff of able writers, that the FARMER'S ADVOCATE for 1888 will contain more important information, and will be better illustrated, than any numbers yet issued. If you appreciate any good that it may have done, we trust that the contents of the 23rd volume will tend to your interest and to the welfare of the

upon the fineness of the grains of sand. Gravel or coarse sand is scarcely a profitable soil, and yields with liberal manuring and watering at most a scanty crop. On the other hand, when the sand grains are very fine, almost dust-like, the sand holds the water very tenaciously between the particles, often holding the soil very compactly together, which obstructs the admission of air and the penetration of the roots of the growing crops. However, when a sandy soil has the sand particles of proper fineness, possessing also sufficient moisture or obtaining the same by capillary action from deeper strata,

nitrogen in the form of nitric acid. Some very fertile soils only contain 0.1 to 0.3 percent of lime; but it must never be entirely wanting, as no vegetation can then flourish, not even those plants which are poor in lime, such as the cereals. When the lime is in a finely pulverized condition, existing in the form of carbonate of lime, and being thoroughly mixed with the rest of the soil, it exercises a beneficial influence on the mechanical and chemical condition of the soil. An expert can readily detect its influence when there is only one or two percent of carbonate of lime in the soil. It improves the physical condition of both clayey and sandy soils, all extreme properties being regulated, as is done by an admixture of humus, and marl-



CLYDE STALLION "MACARTHUR," THE PROPERTY OF MESSRS. GRAHAM BROS., CLAREMONT, ONT. (SEE PAGE 366.)

agricultural and national interest in a much greater ratio than any of its predecessors.

In sending in your renewals, if you would take the trouble you might very materially aid your journal and the editor by adding one new name to our list. It is from the number we receive that we are able to improve.

**Sand and Lime as Constituents of the Soil.**

In our latest two issues, we set forth the advantages of humus and clay as constituent parts of the soil; we shall now speak of sand and lime.

In general, sand produces physical properties opposite to those of clay, sandy soils being light, dry, warm, and very porous for air and water. These properties are, however, largely dependent

it can yield good crops of many plants, and is often more benefited by concentrated and quick acting fertilizers than a clay soil, but these applications must be made oftener, also in smaller quantities, and in the proper time, in order to produce the best effects. When manures or fertilizers are liberally used, a sandy soil of medium fineness of the sand particles is well adapted for intensive gardening, admixed with a good supply of humus.

In most soils, the presence of humus, clay, and sand can be readily observed, and their relative qualities easily determined, but *lime*, which is found in every fertile soil, is not present in such quantities that it can be so readily determined. Lime is a constituent of plant food, while clay and humus must first be decomposed before they yield their food constituents, the former yielding the mineral or ash constituents of the plant, and the latter mainly the

soils (containing 4 to 8 percent of lime) which are generally the most fruitful and profitable. Finely divided carbonate of lime favors the gathering of a mild, fruitful humus, and brings about that medium state of activity which causes the plants to flourish in the highest degree. A real marl-soil can be worked without damage in almost any kind of weather, and although it may appear puddled and lumpy after plowing while in a wet condition, it readily crumbles in a few days into a finely pulverized mass. It should be borne in mind that carbonate of lime easily washes out of the surface soil. A soil may be poor in lime even though it originated from lime-stone rocks and still lies on such a formation, and may therefore be benefited by a dressing of lime or marl. From an agricultural standpoint, the percentage of lime in certain districts ought to receive greater attention than it has heretofore done.

In our next issue we shall show how to judge soils, which we consider to be of greater practical importance than the judging of live stock.



## Farmers' Clubs.

## Dominion Farmers' Council.

[The Dominion Farmers' Council meets in the city of London, Ont., on the third Thursday of every month, at 2 o'clock p. m. All communications should be addressed to the Secretary, W. A. MACDONALD, LONDON, ONT. This Council has now on hand pamphlets containing its Constitution and By-laws, with an account of its origin, objects, etc., also a form of Constitution and By-laws suitable for Farmers' Clubs, which will, on application to the Secretary, be distributed free to all parties having in contemplation the organization of clubs. Clubs amalgamated with this Council are entitled to instruments for testing milk.]

The regular monthly meeting of this Council was held on the 19th ult., President Leitch in the chair.

## COMMUNICATIONS.

Amongst the communications read, one was received from the Secretary of the Salem Farmers' Club in response to questions sent to the secretaries of the amalgamated clubs asking for an account of their progress during the summer months. The summer meetings of this club were poorly attended, and little was accomplished, but there was a good attendance at the October meeting. The lactoscope sent to the club awakened little interest. The secretary tested the milk of several cows, the percentage of fat varying from 2½ to 4 percent. He also tested milk from the vats at the cheese-factory, which gave 2½ percent of fat, and he regarded this figure as indicating a good deal of adulteration. The inspector's report also indicated adulterations. One patron was brought before a magistrate for adulterating his milk, but the latter refused to accept the lactoscope test as evidence, as he was obliged to look at the results of the test through spectacles. The "tea-milk" plea was magnified and sworn to be a common practice. The secretary, in his list of tests, gave one cow which stood above the standard for registration in the Council's register book, but the test was not made officially. He stated that much fall wheat in his locality was sown upon stubble with only one plowing (gang plow), no manure being applied, and in one instance the wheat was put in merely with a spring tooth harrow. He complained of the judging at the local exhibitions, stating that the judges did not know some of the varieties exhibited, and in one instance a fraudulent first prize in peas was won by placing choice, hand-picked samples on the top, the bottom containing very inferior samples. Young cattle and cows were cheap in the neighborhood owing to the scarcity of winter feed.

In the discussion of the above report by the Council, the Secretary stated that the results given by the lactoscope should not be taken as evidence by the courts except in connection with the specific gravity, when the percentage of fat varied a good deal from the standard, or when there is more than one-fourth of one percent difference between the morning's and the evening's milk. A correct lactometer should always be used with the lactoscope for the double purpose of checking inaccuracies and ascertaining whether the milk is skimmed or watered.

Mr. J. B. LANE stated that a committee of cheese-makers had been appointed to suggest amendments to the adulteration act, and to look into the whole question of testing milk at the cheese factories.

In answer to a correspondent who inquired what advantages could be obtained by amalgamating with the Dominion Farmers' Council, Henry Anderson stated the advantages derived

by co-operation in the trades and professions might be taken as a guide. He thought that delegates from the amalgamated clubs might meet from time to time to discuss matters pertaining to agriculture; the clubs might also submit questions to the Council for discussion, and the Council would find it advantageous to submit questions to be voted on by the clubs. There might also be communication established between the secretaries of the various amalgamated clubs for mutual information, the making of purchases and sales of different varieties of seeds, etc. He found that the desire for organization and co-operation was quite strong, but the failures were caused by a lack of energy.

Moved by Henry Anderson, and seconded by J. K. Little, that the Grantham Farmers' Club be amalgamated with the Dominion Farmers' Council—Carried.

Moved by J. W. Bartlett, and seconded by John Kennedy, that the East Dawn Farmers' Club be amalgamated with the Dominion Farmers' Council—Carried.

## COMMERCIAL UNION.

This question was on the programme of the day, it being a continuation of the discussion postponed at the June meeting of the Council owing to the fact that Mr. Waters' paper on the subject did not arrive in time. The resolution was as follows: "Resolved, that a commercial union with the United States would be beneficial to the farmers of Canada." The President read Mr. Waters' paper as published in the July issue of the FARMER'S ADVOCATE, a synopsis of which is as follows:

A commercial union would necessitate the adoption of a similar tariff against all other countries, Britain included, and it was probable that the present high tariff of the U. S. would be adopted. Of the total imports of Canada, viz., \$99,602,694, we imported from Britain \$40,601,199, and from the U. S. \$44,858,039. Of our total export trade last year amounting to \$74,975,506, Britain took \$36,694,263 and the U. S. \$31,463,342. Of our agricultural and animal products, Britain took 22½ millions and the U. S. nearly 15½ millions. It was evident that the English market was our best for heavy, well-fed cattle and sheep, as well as for our wheat, oats and peas, and almost our whole cheese and butter were exported to England. The rapid increase showed the certainty of the British market. The U. S. took the bulk of our barley, a small proportion of our peas and oats, all our surplus lambs, and small inferior cattle, as well as our surplus poultry and eggs. Of our total export of horses last year, viz., 16,525 head, the Americans took 16,113, valued at \$130 per head. So long as the U. S. and Canada had any surplus, the English market would determine the price. Commercial union would not benefit us in our products exported to Britain; but the trade in barley, horses, lambs, light cattle, poultry, eggs and potatoes would be increased, and the farmers benefited. Our parliament could at any time give us full benefit of American competition in our markets, if we desired it. We want from the Americans their corn, coal, raw cotton, sugars and syrups, and a free exchange of these would be beneficial to both countries, and would not to any extent interfere with our manufacturing industries, with the exception of sugar. He was in favor of a reciprocity in the natural products of both countries; but was against commercial union. This policy (restricted reciprocity) would leave us in full control of our own financial affairs without injury to our manufacturers. With regard to manufactured goods, if the ground taken in 1878 was correct, commercial union would not give the American market to our manufacturers, but would give the Canadian market to the Americans. "Commercial union would do more to foster the spirit of annexation amongst our people than any other policy that could be adopted."

## DISCUSSION.

J. B. LANE expressed his entire approval of Mr. Waters' paper, and Vice-President Anderson took the same view.

MR. LANE stated that agricultural implements could be purchased as cheaply in Canada as in the United States.

MR. O'BRIEN—We lose 20 percent on every horse we sell to the Americans.

MR. LITTLE—Who pays the duty?

MR. O'BRIEN—Two years ago we paid \$65 each for sewing machines which could be purchased in the States for \$18.

MR. LITTLE—We should confine the discussion strictly to agricultural questions.

MR. LANE—It is beneficial for our farmers that we should have manufacturers to employ large numbers of men who consume dutiable goods to help defray the expenses of government. Direct taxation relieves some classes at the expense of others. Commercial union would bring direct taxation. I am in favor of reciprocity. In some parts of Canada, where the soil is light, corn is principally grown, and a reciprocity in corn would injure the farmers in those localities. Canada should not be made a slaughter-house for American manufactures.

MR. LITTLE—We will resist every attempt to obtain direct taxation.

FRANK SHORE—I would let corn come in free, although farmers in southern Ontario would kick against it, this being their chief crop. A great deal of corn comes to this city from these parts.

MR. LANE—I would not object to having corn free in a reciprocity treaty with the States.

MR. ANDERSON—The farmers in Canada are just as well off as those in the States. The high protective tariffs have oppressed the American farmers dreadfully. Home competition reduces prices. Binders which a few years ago cost \$240, can now be purchased for \$120 in consequence of the keen competition. If a commercial union necessitated direct taxation, the farmers would have to bear almost the whole burden, because land can't be hidden. I am opposed to commercial union in all its aspects. So long as we competed in the same market with the Americans, we would not be benefited, but we might get some manufactured goods cheaper. The whole scheme is a boom originated by annexationists. Our farmers have it in their power to better their condition, but they may rest assured that they cannot do so by commercial union. It seems to be a party question which prevents us from getting at the truth of the matter. It is annexation that Wiman and Butterworth and their confederates want.

JOHN WELD—I have had opportunities for consulting a large number of manufacturers on commercial union, and I find that some are in its favor, but a large majority is against it.

MR. O'BRIEN—The American farmers are not so heavily taxed as those in Canada. I have an intimate friend in Huron county, Michigan, who has 160 acres of land, and his taxes (including school rates) are only \$24 a year, while I have to pay \$74.24 for 188 acres, there being very little difference in the prices of produce, or the market advantages. Taking all the circumstances into consideration, I am decidedly in favor of commercial union, but just as strongly opposed to annexation.

MR. BARTLETT—The opening up of American markets for our fruits would be of decided advantage to our farmers. New York and Boston are



our best fruit markets. Canadian farmers are benefited by slaughtered goods from the other side of the line. There is a great deal of false loyalty in our country. Duty to self is duty to the state and to all mankind. We do not, as is generally supposed, give England a slap in the face by proposing commercial union, for the British Parliament would have to ratify such a treaty, and in all probability the present American tariff would be lowered.

JOHN KENNEDY—I was in Cincinnati when the discussion took place on commercial union, and there was a strong sentiment in favor of such a treaty. I am a warm supporter of commercial union.

MR. LITTLE—Before the vote is taken on this question, I wish it to be distinctly understood that, although I am going to vote in favor of the scheme, I might modify or change my views when I see the details. I vote on the presumption that the details are satisfactory. If it will lead to direct taxation, I shall have nothing to do with it.

A VOICE—We all vote on the presumption that the details will be satisfactory.

PRESIDENT LEITCH—Free trade expands the trade between countries, and in this sense it is beneficial; but in adopting unrestricted trade between Canada and the United States, Ontario would not be so much benefited as the other Provinces of the Dominion. The Maritime Provinces would gain much, and Manitoba and British Columbia would also be greatly benefited. Ontario is independent, as we grow pretty much the same products as the adjoining States. With reference to our export of scrub steers to Buffalo, I see no advantage in commercial union, for our farmers grow such stuff at a heavy loss, and the trade should be abolished. Lumber would be raised \$2 per thousand. Fishermen's and lumbermen's supplies, which are now produced in Ontario, would come from the United States. It is quite an item to supply 4,000 men with the necessaries of life. I am not, however, against commercial union provided fiscal matters could be satisfactorily adjusted. Our present tariff is burdensome enough, but it is much worse in the United States. I am not yet quite decided which way I should vote, but I am more favorable to the scheme now than I was when it was discussed at our June meeting.

W. A. MACDONALD—This question is one of the gravest character, grave for the future welfare of our country, and no citizen can give it independent thought who has adopted the party methods of thinking. There is now a grand opportunity for studying sound principles, but our passions and prejudices have been appealed to instead of our judgment. The direct taxation scare strikes terror into the minds of thousands of honest farmers who would otherwise be in favor of commercial union. There seems to be something sacred in their methods of taxation, it being a cardinal virtue to draw the taxes out of a farmer's trouser-pocket, while it is downright tyranny and robbery to abstract them from the pocket of his vest or coat. The sums of money squandered in collecting our taxes and adjusting our tariffs are appalling to contemplate. Our present system of taxation is the most iniquitous gambling den that has ever been exposed to the light of day, and has been the cause of more ignorance, poverty, crime, immorality and tyranny than all other social failures combined. I should despair of my country and of posterity

were there not sound remedial measures susceptible of grasp by all honest and progressive men. No system of taxation can be unjust which is uniform and constant; the injustice and robbery are attributable to the incessant changes brought about by ignorant and designing men. The unjust and oppressive portion of our taxes is paid by those who suffer from these changes. Justice to all simply demands that a tax should (1) be levied without liability to change, and (2) that it cannot be evaded by a portion of the community. On this principle, the tendency would be the taxation of land only, where there can be no evasion, and the land owners would then become our tax-collectors, instead of the merchants and manufacturers, as under our present system. Every consumer of farm produce would have to pay his just portion of the tax imposed upon the land, and farm products would be thus enhanced in price. When trade finds its natural level, the profits in all industries being about equal, no oppressive taxation can exist in any given industry. But there can be no hope for the desired change so long as our highest ideal of the politician is that he should be an expert tax-tinker. You also talk loudly about annexation. When the loyalty of the Canadian people demands that a political connection shall be formed with the United States, we shall have it, and not till then. Do you want to protect us against ourselves? The Imperial Federation League is gaining strength, but it has not the natural elements of success. It does not necessarily follow that intercolonial free trade will divert commerce into the channels cut out by nature, and, besides, the British land system appears destined to be the doom of the greatest nation that ever swayed a sceptre. It would cost more to maintain the barrier which arrests the northerly and southerly trade between the two great nations of this continent than it would to make a gift of many millions of happy homes. You might as well attempt to prevent the billows from tyrannically lashing our native shores. It is a question of fate, not of opinion. My loyalty is firm to any principles that will divert trade into its natural channels, and alleviate oppressive taxation, and to any sentiments that will tend to Canadianize our Dominion, and by exterminating the privileged class, weld mankind into a homogeneous mass. One of the most absurd utterances has often been expressed in this chamber and has gained currency throughout the country, viz., that the Canadian farmer, being better off than his American neighbor, could not be benefited by a commercial union. Why, if the natural opportunities are greater in Canada than in the States, this is one of the strongest arguments in favor of such a union. There can be no sound arguments in favor of restriction in any legitimate trade.

#### ANALYSIS OF THE VOTE.

Before the question came to a vote, quite a number of members and others left the meeting. The count gave a majority of two votes in favor of commercial union. The sentiment in favor of the scheme was much stronger than at the June meeting, many of the members having studied the question much more thoroughly. It will be interesting to analyze the vote of the officers, for, when the Council was organized, they were the choice of agricultural bodies as being the most intelligent, progressive and independent farmers in the county of Middlesex. The Council was organized on a strictly independent basis; but, naturally enough, although the officers are not politically hampered in any way, some of them lean slightly in favor of one party or the other. Two, although denouncing

partyism, are faintly Reform, one faintly Conservative, and the other is a Radical who has not fallen into the ways of any party. With these facts it is interesting to know that only one officer voted stoutly against commercial union. The President, who did not vote, is in favor of giving the scheme a trial, providing fiscal matters could be satisfactorily adjusted.

At the next meeting of the Council Vice-President Anderson will read a paper on "Fences or Herd Laws."

### The Farm.

#### Farm Mortgages.

The deplorable condition of our farmers has been the hobby of some political papers for several months, and the extent of our mortgaged lands has been summoned as evidence. In the judgment of some writers, the number of acres mortgaged and the amounts embraced in the mortgages are a correct barometer of our agricultural condition.

From the standpoint of political economy, it is impossible to understand the subject in this light, the error arising from the conception, or rather misconception, that it is a bad thing to owe money and a good thing to owe other forms of property: if you owe money your affairs are in a deplorable state, but if you owe land or horses, your business is flourishing. If the question is to be superficially considered, why not say that the farmer has the money received for his mortgage and also the land covered by the mortgage, so that he is doubly well off by his transaction. It would be just as reasonable to say that the money lender is poverty-stricken because he owes so much land, as that the farmer is poor because he owes so much money. The fact is that the farmer cannot include in his resources both the money borrowed and the land mortgaged, neither can the lender (mortgagee) call both the money and the land his own. Practically, it makes little or no difference whether the farmer calls the borrowed money his own or the land covered by the mortgage; so it also is with the lender regarding the money lent. The farmer is none the worse off for the change if to-day he has \$5,000 in the bank and to-morrow he owes the same amount on a mortgage—or even on a note; he surely gets value for the money invested.

However, there may be—and there are—conditions in which the existence of farm mortgages is to be regretted. This is mainly due to the fact that there have been large profits in the investments or speculations which have given rise to the mortgages. For many years land has had speculative values, the prices being higher than the productiveness of the soil warranted, and so long as this state of affairs continued, so long as land maintained a steady increase in price, investments were profitable and secure, and whether farms were purchased for cash or by mortgage, had nothing to do with the adversity of the farming community; in fact, the greater the mortgage debt the greater the prosperity. But present prosperity may be the parent of future adversity. The spirit of speculation ran too high, the difference between natural and artificial prices became too great, and a reaction was inevitable. It is a fault in our system of land tenure that prices are usually in excess of intrinsic values—that is, profits based upon the fertility of the soil in relation to the market prices for farm produce, this excess being caused by the



prospects of a rise in land values owing to an increase of population. Thus interest must be low.

However, as in the present condition of our agricultural affairs, the prospects are towards a decline, caused partly by reaction from speculative prices and partly from decreased fertility of the soil. These facts have prevented mortgagors, whose mortgages are of long standing, from obtaining value for the money borrowed at high rates of interest, and as the keen competition with other countries in our leading markets forbids bright prospects for the future, the losses may be regarded as permanent, not only for those farmers who mortgaged their farms; but also for those who paid cash for the land purchased.

This solution applies to the majority of cases, mortgages having been given for the purchase of more land, but many mortgages have been given for money borrowed for permanent improvements, in which cases skilful and business-like farmers have usually received satisfactory returns. We do not consider it a pertinent question to discuss mortgages given by reckless farmers who muddle their business in every transaction, and, out of the generosity of their hearts, pay too much for everything they buy.

We have been at a loss to understand why the writers on this subject have spoken of farm mortgages instead of farm debts, especially when the reference is to the condition of the farmer. The only difference between mortgage debts and those contracted by other securities is in the degree of the security. In many lines of business a distinction might be drawn between mortgages and other securities; but as most farmers pay all their debts, the word debt, instead of mortgage, should be used in discussing the condition of our farmers.

Having given the subject our serious consideration, we have come to the following conclusions concerning the condition of our farmers:

1. In their eagerness for more land for themselves or their families, farms rose to speculative prices, and the system of extensive farming was thus largely followed, thereby causing a double loss, one arising from the speculative prices of land, and the other arising from the wasteful system of extensive farming. The latter loss has been prevented by farmers who mortgaged their farms for permanent improvements, the intensive system of farming being the more profitable of the two methods.
2. The lack of organization or combined effort on the part of our farmers, permitting themselves to be despoiled on every hand by rings, corporations, monopolies and other organized forces; the accumulation of an immense public debt, and all sorts of profitless political expenditures, many of them being nominally for the advancement of agriculture.
3. The devotion of farmers to profitless political issues, and the neglect of agricultural studies, whereby they suffer loss by every agricultural boom that sweeps over the land.

Unless these grave obstacles, or a majority of them, are removed, the degradation of our farmers will continue, and an irremediable state of misery and suffering will be their fate.

ANOTHER INSECT PEST.—It is stated that another agricultural pest, the "ribbon-footed corn fly," has made its appearance in East Yorkshire, England, and several fields near Hunsley have been badly affected to the extent of fully one-third of the produce. It has also been found in large quantities at South Dalton.

**Potato Tests on our Experiment Grounds—Fertilizers and Methods of Planting Tested.**

In our last issue we gave the analyses of the principal fertilizers applied to our experimental plot, and we now give the results of our experiments with the potatoes to which these fertilizers were applied, including the quantities of the fertilizers per acre. It will be seen by the table that the yield was not large, caused by the great drought which occurred during the most important season of the growth, a result also being that the percentage of small potatoes was large.

TABLE SHOWING THE YIELD OF POTATOES PER ACRE AND THE QUANTITIES OF FERTILIZERS APPLIED:

Plot.	Fertilizer.	Pounds per acre.	Fertilizer.	Pounds per acre.	Total yield in bush. per acre.	Percent of small.
1	No manure.	.....	.....	154	21	
2	Farmyard	2000	(top dressed).	180	44	
3	Gen'l Fertil'r.	580	.....	161.6	27.2	
4	Wheat bran.	1875	.....	161.6	28.3	
5	Wheat bran.	1875	and gypsum.	400	152	28.5
6	Wheat bran.	1875	and lime.	1000	167.5	16.8
7	Wheat bran.	1875	and ashes.	2500	162	27.5
8	Wheat bran.	1875	(top dressed).	.....	156.6	28.6
9	Ground bone.	551	and ashes.	1333	179	20.7
10	Apatite	331	.....	133	155.8	20
11	Lime.	1000	.....	140	31.2	
12	Gypsum.	400	.....	126.6	31	
13	Nitrate soda.	150	.....	136.6	28.1	
14	S. ammonia.	114	.....	151.5	30	
15	M. s'ph'ate.	429	.....	162	24.7	
16	B. s'ph'ate.	458	.....	168.5	33	
17	Ground bone.	666	.....	162	16.4	
18	Bone black.	482	.....	152	25.6	
19	Ground ap'e.	400	.....	167.8	21.8	
20	M. s'ph'ate.	429	and lime	35	136.6	28.1
21	No manure.	.....	planted 2 1/2 in. deep	172.5	22.4	
22	No manure.	.....	planted 4 in. deep	148.6	24.3	
23	Bone black.	482	and gypsum.	400	137.3	26.6
24	Bone black.	482	and salt.	400	135	39.8
25	Ground ap'e.	400	and gypsum.	400	148	27.7
26	Ground ap'e.	400	and salt.	400	149.5	29
27	Mur. potash.	169	.....	188.6	31.6	
28	Sul. potash.	215	.....	178.6	34	
29	Ashes	1333	.....	176.6	22.5	
30	Ground ap'e.	400	* & sul. potash 215	186	29.2	
31	Bone black.	482	* & sul. potash 215	171.3	19	
32	Ground bone.	666	* & sul. potash 215	178	25	
33	No manure.	.....	seed uncut, 18 in. apart.	136	19	
34	"	.....	seed cut, 18 in. apart	141.6	21.4	
35	"	.....	seed, 12 bush. per acre.	84	20.2	
36	"	.....	seed, 20 bush. per acre.	95	17.7	
37	"	.....	seed, 57 bush. 18 in. apart.	176.6	17.7	
38	Gen. fertilizer	580	seed, 12 bush. per acre.	105.8	17.6	
39	Gen. fertilizer	580	seed, 57 bush. 18 in. apart.	240	14.6	

\* EXPLANATION OF ABBREVIATIONS.—Ap'e = apatite. M. s'ph'ate = mineral superphosphate. B. s'ph'ate = bone superphosphate. S. ammonia = sulphate of ammonia. Sul. potash = sulphate of potash. Mur. potash = muriate of potash.

The variety used was the White Star, and the quantity of seed planted per acre, except where otherwise stated, was 30 bushels.

What we desired specially to emphasize and prove was the folly of applying barnyard manure to a soil rich in humus (decomposed vegetable matter). Barnyard manure and humus are practically the same thing, and when the former is applied a manure is used which the soil already contains in too great abundance. Bran is also a form of vegetable matter, but its superiority as a fertilizer lies in the fact that it contains a large percentage of mineral constituents. On all vegetable soils, mineral fertilizers, such as bone, ashes, superphosphates, and potash salts, should only be applied, but small percentages of nitrogen sometimes also produce favorable results. Although these facts are already well known, they have been proved by the foregoing experiments. A number of the plots were planted in duplicate

and the figures given are the averages of the two plots. Although the soil was as even as was possible to obtain, yet there were slight variations in the yields of the duplicated plots, so that there may be a difference of four or five bushels per acre which may not be attributed to the action of the fertilizers.

Barnyard manure and humus being both rich in nitrogen, it will be seen, in comparing plots 1 and 2, that the farmyard manure produced injurious results, but the difference was no doubt partly caused by the fact that the manure was somewhat coarse, and, when cultivated into the soil, injured its mechanical texture. Compare also plots 13 and 14, and it will be seen that the nitrogenous fertilizers used on these plots also produced injurious results, undoubtedly because the soil was already too rich in nitrogen. The general fertilizers (plots 3 and 4) produced good results, although they contained some nitrogen in addition to the phosphoric acid and potash. It is a striking fact that the so-called fertilizers which are commonly used by farmers, viz., gypsum (landplaster) and salt have produced ineffectual, if not injurious results. (Compare plots 5, 12, 23, 24, 25 and 26.) There are some good reasons for these effects, the main one being that the season was very dry, and then it must be remembered that gypsum and salt possess the property of dissolving mineral plant food, especially potash salts, and carrying them down into the lower strata of the soil, which might have been done by the rains of the early part of the season, and as our soil is shallow, having only 8 or 9 inches of organic matter on the surface, with a sandy subsoil, it is quite probable that the fertilizers applied with the salt and plaster were carried down below the reach of the potato roots. In previous experiments on a clayey soil, we obtained better results from planting the potatoes 6 inches than 4 inches deep, but plot 21 shows the best results from shallow planting with the hoe, the other trenches having been dug about 4 inches deep with the spade. This fact also convinces us that the salt and plaster proved unsatisfactory by carrying the other salts down too deep. Lime with superphosphate (plot 20) naturally produced unsatisfactory results, because the lime united with the phosphoric acid and made it insoluble. Otherwise lime (plot 6) has produced good results by aiding to decompose the organic matter.

Phosphoric acid alone (plots 16, 17, 18 and 19) have produced very satisfactory results, except the latter, but in connection with potash (plot 9) it has succeeded better, although in plot 10 the ashes seem to have had little effect in dissolving the insoluble apatite. We can scarcely account for the lime producing such injurious results in plot 11; probably the dry season and the lack of fertilizing salts in the soil may have had something to do with it.

All the potash fertilizers (plots 27, 28 and 29), used alone, have produced excellent results, showing clearly the soil is very deficient in potash; and phosphoric acid and potash (plots 30, 31 and 32) have done splendidly together.

It did not require an expert to find out that phosphoric acid and potash were the fertilizers which our soil most needed, and we were convinced of this fact from the very first, but we desired to apply other fertilizers to demonstrate to our readers the futility of applying manures or fertilizers to land without study and caution. However, there are some soils which we could



not judge so accurately, and our plan would be to make a special test before coming to any conclusion about the fertilizers required to be used.

Plots 33 to 39 explain themselves. They are intended to show the results of different methods of planting and different quantities of seed per acre. It will be seen that heavy seeding (57 bushels per acre) without fertilizers has produced about as good results as the best fertilizers where only 30 bushels per acre were planted. By an easy calculation, based upon the relative prices of potatoes and fertilizers, the farmer can find out whether it is more profitable to seed heavy or purchase fertilizers. In plot 39, with a liberal dressing and heavy seeding, by far the best results were obtained. Undoubtedly the best and cheapest method of raising potatoes is to go into their cultivation as intensively as possible.

Although our soil is well adapted for profitable results in the use of concentrated fertilizers, yet the dry season operated against the action of the fertilizers. In many instances they produced paying results, and we have also the satisfaction of knowing that quite a large percentage of the fertilizers applied will benefit succeeding crops.

We have several other interesting experiments, especially with vegetables and small fruits, which we shall describe in future issues of the *ADVOCATE*.

#### Farming as a Profession and a Business — The Farmer's Condition.

There is no occupation which requires so many accomplishments as farming, and yet it is vulgarly supposed that a man who is fit for no business, trade or profession, will do well enough for a farmer. This is a reason why farming is held in such disrepute, and why so many ambitious youths make for the so-called learned professions. The asserted respectability of the learned professions is largely acquired, or rather purchased, at the public expense. Why should the farmer permit himself to be taxed for the purpose of adding profit and respectability to other professions, thereby degrading his own? Our education authorities enjoy their innings—that's the reason—and the Chinese wall constructed around their profession is the cause of a great deal of degradation amongst other classes of the community. The "higher education" boom at the public expense is a most mischievous and dangerous weapon in our social affairs, one part of the community being educated into nineties, while another part does not enjoy an education befitting for good citizenship and industrial avocations. The condition is somewhat akin to a pack of landlords who control legislation in subservience to their own ends, the result in both instances being a widening of the gap between the masses and the classes; the one party sucks their happiness from the vitals of society mainly in the form of "filthy lucre," and the other mainly in the form of "respectability."

Let us for a moment cast an extra ray of light on the picture. Let everybody be permitted to enter law, medicine, or the teaching profession just with the same liberty as he enjoys with reference to agriculture, and what will then become of that respectability occasioned by exclusiveness? Compel a man to fag through a long curriculum of study and pass brain-wrecking examinations before he is permitted to enter the practice of farming, and then agriculture may become a

popular and respectable profession. It cannot be legislated or talked into so-called respectability.

It has been urged, however, that there is something grand and lofty to be learned in the "learned professions"—that they are sort of exact sciences, as it were. When this comes to be true, the part will become greater than the whole. Where is there a science that has not its foundation in agriculture? What, in relation to our social well-being, is not traceable to the soil or to natural opportunities? Advanced thinkers of the day have pronounced the drug to be a farce; law has dwindled into the farce of interpreting legislative acts passed for the robbing of the masses, or the respectable toilers who produce the wealth of the world—the outcome of our political party systems. Does the business of our country suffer because our merchants are not educated at the public expense, or are their methods less exact on this account? Are our business teachers less useful because they are not dignified by the name of professor? Have our agricultural professors, by feeding out of the public crib, added dignity to agricultural erudition?

To sum up, there is more useful study in agriculture than in all the learned professions combined, and we do not run any risk of contradiction when we also add the studies of the accountant. We question if there is a business accountant in the country who could keep accurate farm accounts, giving the farmer a correct balance-sheet of the profits and losses on each of the products of his industry—including, of course, the proper debits and credits belonging to the manures, the fertilizers, and the plant foods extracted from the soil. All the agricultural professors on this continent, including both the genuine and the bogus ones, have proved disastrous failures in the preparation of the farm balance-sheet.

The condition of our farmers can only be bettered in one way. Squandering public money will prove more or less futile so long as we remain uneducated as to the most useful and practical methods of employing these expenditures. The movement, to be effective, must be spontaneous on the part of our farmers. They must feel convinced that they are being despoiled of the products of their honest toil, which will continue to keep a majority of them in a state of abject poverty and slavery so long as they fail to rouse themselves to a comprehension of the magnitude of the dangers which are kept in the haze by the despoilers of their hard-earned property. They must dispel the terrible gloom of party politics, seize that deadly weapon, the ballot, with heroic grasp, and make an organized effort to vanquish their common foe—the organized foes of society and humanity.

#### PRIZE ESSAY.

##### Winter Care of Cattle.

BY THOS. MACMILLAN, CONSTANCE, ONT.

This is a subject which earnestly demands the study and attention of every stock farmer; and, living in a country possessed of the climate of Ontario, where we have to contend against such severe winters, it is doubly important that every farmer should understand and practice the most comfortable and economical way of feeding cattle.

The first requisite in the winter care of stock is to have good stabling, where the cattle can be tied. I would recommend bank barns, with stone stabling underneath (where you can have all the fodder stored in the building above); but they must be kept clean, thoroughly ventilated, and require to be white-washed with lime every summer, and when cattle are housed dur-

ing the summer season, they should be white-washed both in the spring and fall.

It is, then, of the utmost necessity that cattle should be housed at nights before it is too late in the season; whenever we begin to have a succession of night frosts, I consider every farmer is losing money by leaving his stock out; and as it approaches winter, it only does the cattle harm to allow them to rove round the fields, even in the middle of the day, grazing on frozen grass, as by this treatment they will lose flesh.

It is a settled principle in stock raising that an animal should be kept growing steadily from the time it is dropped till it comes to maturity; and it is specially important that at this season of the year we ought to bear this principle in mind, and feed liberally until the animal is accustomed to its changed condition, remembering that for every pound of flesh the animal loses it requires the price of two pounds to replace it.

When your cattle are stalled, don't follow the general practice, in perhaps throwing them anything that is handy for the first two or three days or a week, until the feed and buildings are got in proper order; but have everything in proper order when you begin, as every farmer ought to know about when he should commence, and understand something of the general method he intends to pursue in wintering his stock.

Next comes the course of feeding, the essentials of which are straw, hay, grain, roots and water. While threshing the grain, the chaff should be separated from the straw as well as possible, in order to have the chaffy straw for feeding whole, and the long straw to cut up with hay. I would feed grain and a few roots once a day all winter; and in the fall and spring, roots are an essential food in aiding to change the animal from the grass to dry feed, and back to the grass again in spring.

Feed the stock three times a day; but bear in mind, don't feed three times between 8 or 9 o'clock in the forenoon and 4 or 5 in the afternoon, as every feeder ought to be in the stables not later than 6 in the morning to be able to finish at the darkening at night. My daily method would be roots and straw in the morning; turn out for water at noon; clean out stables, and feed cut straw and hay mixed, with a little meal sprinkled over it (say about 1½ lbs. mixture, peas, oats, barley and bran); also a little salt, as I consider salt a good appetizer, as it causes the animals to both feed and drink better; let them in whenever they want to come, which time will of course be regulated by the state of the weather; and feed hay for the night ration. My reason for feeding roots in the morning is to give the animals an appetite for their straw; I would feed straw in the morning, because I want the refuse for bedding at noon; feed the cut feed and meal at noon, that the animals may come in readily, and be led easily; and feed hay at night, as they will fill themselves, and have plenty of time for ruminating and digesting it before morning. In the feeding process, with perhaps the exception of the straw, feed just what they will lick up clean, and observe regularity in feeding.

As spring approaches, and the time has come for turning the cattle to pasture again, turn them out by degrees, and as I said before, feed liberally on roots, as the great care is to prevent scouring too much in making the change.

There is another great requisite in the treatment of stock, namely, to be kind and gentle with the animals, as the actions of the profitable stock feeder are characterized by the pat of the hand in the stable, and in giving them the padded path in the yard.



**The Dairy.**

**Milk Standards.**

Under Mr. Thos. Macfarlane, chief analyst for the Dominion, the Department of Inland Revenue collected samples of milk from different parts of several Provinces for the purpose of analyzing the same with a view of establishing standards for Canada. Determinations of the specific gravity, the butter-fat and solids other than fat, were made, and the results were published in the Toronto Mail. The samples were taken from ordinary dairy herds, and the analyses showed the average percentage of fat to be 3.86, the lowest average being from Toronto (3.38 percent), and the highest from Halifax (4.24 percent.)

These results elicited communications from Prof. Brown, of the Model Farm, in our leading dailies, showing how that institution had eclipsed these results, the inference being that the Model Farm is making amazing strides in this department of dairying. That the Model Farm has made a large number of analyses of samples of milk from the various breeds maintained at that institution is perfectly true, but it is equally true that this work is utterly barren of practical results. The question of milk standards is one of vast importance to our farmers and dairymen, and yet if the Model Farm authorities had gone deliberately to work to bungle the business, they could not have been more successful. In the first place, no account whatever is taken of the specific gravity—the only standard which at present is of any practical use to our dairymen—and, secondly, a knowledge of the quality of the milk of all the breeds in creation is of no practical value to our farmers until standards for our own herds are first established. It is as important for the farmer to know what breed he should avoid to prevent his herd from deteriorating, as to know what breed he should adopt to build up his herd.

A year or two ago, Prof. Robertson, then the professor of dairying at the Model Farm, did the only work in this direction that has proved to be of any practical value. He demonstrated that ordinary stock, under the same treatment as the Model Farm thoroughbreds received, were at least as profitable as any in the market, and it is to be deeply deplored that his investigations have not been continued. The only practical test which Prof. Brown ever made was with an "Old Grannie" of a cow, and, with one exception, she headed the list. No number of tests made with one breed can prove its superiority over any other breed. Both breeds must be tested, and in the same manner no standards of thoroughbred stock can avail against herds that have never been tested. If the common consent of certain people is evidence in the one case, why not also in the other? And where is the necessity for testing at all? A similar bungle is made at our exhibitions. If the judges in the show ring decide the relative merits of certain cows, then where is the sense in turning the pail or the churn performance into a standard? Who is the highest authority, the judge, the pail, or the churn?

Moreover, it is unjust to include beefing breeds in the standard for dairy purposes. Nobody denies that beef breeds give rich milk, richer even than the average of dairy cows; the former lacks only in the quantity of milk.

**Stock-Raising and Grain-Growing in Relation to Soil Fertility and Exhaustion.**

No. IV.

There is a superstition amongst the manure theorists that the soil obtains sufficient plant-food from the air to make up for any waste or other deficiency which they cannot explain. True, the soil obtains some ammonia, and other forms of nitrogen, from the air, probably to the average extent of one-third of the crop's requirements, but it is equally true that about a similar quantity is given off, the soil being a self-regulator in this respect, and it cannot be maintained that nitrogen fertility can, on the whole, be increased from this source. To argue the stock-raiser has an advantage over the grain-grower in this respect is to maintain that the aerial ammonia cruelly deserts the grain-grower and rushes gleefully into the fields of the stock-raiser. In no particular can it be asserted that the former has an advantage over the latter in depending upon atmospheric plant food. With reference to the other named constituents of plant food, phosphoric acid and potash, none of which is supplied by the air, the stock-raiser and the grain-grower must both depend upon other sources for their supply. We therefore again arrive at the conclusion that, in order to maintain the fertility of the soil, all the constituents removed by the crop and sold off the farm must be restored in some form or another.

In answering the arguments, or rather the fallacies, of the manure hobbyists, it is only necessary to consider the relative quantities of plant food removed from the soil under the most intensive system of farming, for they are a unit in their advocacy of the best stock and the best pastures; but as our object in writing these articles is more to teach our readers to think and calculate for themselves than to answer the theories of our opponents, we shall give the averages as well as the intensive extremes.

The reader should bear in mind that we are guided by average figures both with regard to the composition of the foods, and their products, so that where the variations are slight, nothing will be proved; but where the variations are considerable, the proofs may be regarded as complete.

We shall consider the exhaustion occasioned by the removal of wheat, milk and beef in separate tables. Wheat may be consistently taken as a representative grain crop, the quantity of fertility removed by selling off other grains, under average quantities raised per acre, being near enough the same for all practical purposes. Calculating an average crop at 20 bushels per acre, and a good crop at 40 bushels, and taking the average composition of fall wheat as containing 2.08 percent of nitrogen, 0.79 percent of phosphoric acid, and 0.52 percent of potash, we get the following pounds and value of fertility removed from an acre, calculating nitrogen at 16c. per pound, phosphoric acid at 6c. and potash at 4½c.

TABLE SHOWING THE QUANTITY AND VALUE OF FERTILITY REMOVED FROM AN ACRE OF WHEAT—YIELD, 20 BUSHELS PER ACRE.

	lbs.	c.	Total.
Nitrogen	24.96	16	\$3.99
Phosphoric acid	9.48	6	.57
Potash	6.24	4½	.28
Total			\$4.84

Calculating the yield at 40 bushels per acre, the number of pounds removed as fertility are simply ascertained by multiplying by 2, the total value therefore being  $4.84 \times 2 = \$9.68$ .

Let us now compare these sums with the average yearly fertility removed by an average dairyman's cow grazing on an average dairyman's pasture. In this calculation the cow produces 4,000 lbs. of milk per year, and it requires two acres to keep her in grass during the summer months. It will also require two more acres to maintain her during winter, so that 4,000 from four acres are equivalent to 1,000 lbs. of milk per acre annually. In milk the fertility removed is more valuable than in grain, being more available. The average composition of milk, per 1,000 lbs., being 5.4 lbs. of nitrogen, 2 lbs. of phosphoric acid, and 1.7 lbs. of potash, we get the following

TABLE SHOWING THE QUANTITY AND VALUE OF THE FERTILITY REMOVED BY MILK FROM AN ACRE:

	lbs.	c.	Total.
Nitrogen	5.4	17	\$0.92
Phosphoric acid	2.0	7	0.14
Potash	1.7	5	0.09
Total			\$1.15

In considering the quantity of fertility removed from an acre by means of milk, there are two phases of intensity, viz., the quantity of milk may be, say, doubled by a cow of superior merit, and the quantity per acre may again be doubled or quadrupled by pasturing her on good land carrying superior grass. Meanwhile, however, let us merely compare the ordinary cow grazing upon the ordinary pasture (2 acres) with the 20 bushel per acre yield of wheat, and for comparison with the 40 bushel yield, let us suppose that a superior 2-acre pasture, grazing one or two cows, and its equivalent in other crops, for winter feed, will produce 8,000 lbs. of milk annually, so that the quantity and value of fertility removed from an acre will be double those mentioned in the above table—the value therefore being  $1.15 \times 2 = \$2.30$ .

With reference to the quantity and value of fertility removed by the production of beef, we take the annual growth or increase to be represented by the following analysis, viz., 3.52 percent of nitrogen, 0.42 percent of phosphoric acid, and 0.38 percent of potash, and taking the daily gain to be 1.75 pounds, we get a total increase of 639 pounds per annum from the four acres, as shown in the calculation with the cows, so that the quantity of annual increase from one acre will be  $639 \div 4 = 160$  lbs., the following

TABLE SHOWING THE QUANTITY AND VALUE OF THE FERTILITY REMOVED FROM AN ACRE DEVOTED TO BEEF GROWING.

	lbs.	c.	Total.
Nitrogen	5.60	17	\$0.95
Phosphoric acid	0.67	7	.05
Potash	0.60	5	.03
Total			\$1.03

If the animal grazes on two acres, instead of the four, or their equivalent devoted to winter feed, the value of the fertility removed per acre will be double this sum— $1.03 \times 2 = \$2.06$ .

Until we receive reliable intelligence to the contrary, we shall regard Mr. William Brown, C. E., P. L. S., Model Farm Superintendent, Professor of Agriculture, Live Stock, Dairying, Arboriculture, etc., as the founder and chief promoter of the said School of Practical Theory, and we therefore take the liberty of quoting the



following from the Model Farm Report in 1886, pages 158-9.

There is no doubt of the fact that the present limit of North American pastures is 1,300 lbs. of milk, or 85 lbs. of beef per acre per season of 5½ months. These at 3c. and 5c. per lb., give \$9.75 and \$4.25 respectively, or an average value of \$7 per acre, with the very marked difference of nearly 130 percent in favor of the milk product. \* \* \* The pasture seeded down in 1884 is still holding two cows per acre easily, and producing at the rate of 7,692 lbs. of milk per season of 5½ months by common grade cows—cows which under any conditions never give over 25 lbs. per head per day. Were they Holsteins, Ayrshires or Shorthorns, the season's produce would amount to about 14,000 lbs. of milk per acre.

Prof. Brown deserves the gratitude of every farmer in Ontario for his excellent permanent pasture, but if he would confine his observations more to facts and arguments and less to theory, he would deserve much greater gratitude.

Let us now show how his facts disprove his own theories, as well as those of his disciples in his School of Practical Theory. We don't deny the fact that he pastures two cows per acre, but his conclusions relating to the yields of the thoroughbreds are unwarrantable, although this extreme is not unattainable.

By reference to the aforementioned tables, it will be seen that we produced, under average conditions, 1,000 lbs. of milk per acre, producing a loss of fertility of \$1.15; therefore, 14,000 lbs. of milk per acre (Professor Brown's estimate) would produce an exhaustion of 1.15 x 14 = \$16.10 per acre; or his permanent pasture becomes exhausted 3½ times more rapidly than the soil under an average crop of wheat (20 bushels per acre); or at least 1½ times faster than exhaustion can take place under the most intensive system of wheat growing. It will be safe to assert that under the most intensive system of soiling, at least 50 percent more milk could be obtained from an acre than from Prof. Brown's permanent pasture, so that the total yield of milk per acre would then be 21,000 lbs. instead of 14,000, showing a soil exhaustion of \$24.15 per acre, instead of \$16.10. Under maximum yields of wheat growing, the soil cannot be exhausted at a greater rate than \$5 or \$6 per acre, while dairying in its most intensive form may exhaust the soil at the rate of \$24 per acre.

In the same manner, if two steers are pastured on an acre, instead of one steer on four acres, as in our foregoing calculation, the soil will become exhausted at the rate of 1.03 x 8 = \$8.24 per acre.

It will be observed that we have made no allowance in the average estimates for waste of manure during the winter months, which, under ordinary management, has been variously estimated at one-half to three-fourths of the total excrements voided. Taking the former waste as a basis and calculating that an average animal will void a ton of manure per month, worth \$1.60 per ton, we get a still further exhaustion of \$1.20 per acre, to be added to the exhaustion produced by the cows and steers respectively under the average conditions, and \$2.40 per acre under the more intensive system.

(To be continued.)

In Britain the loss occasioned by attacks of the ox-warble fly amounts to upwards of £2,000,000 sterling annually. This loss is preventable.

England's importation of frozen meats from Australia have increased very largely. In 1881 the number of carcasses received was 150,000, while in 1886 they reached 800,000.

**Relative Profits in Dairying and Beef Growing.**

In order to arrive at a basis for calculating the relation between these two branches of stock raising, it is necessary to estimate the cost of both steers and cows from calfhood to their life's end, and not only pick out that portion of their life that may be most profitable. Calves, whether they are intended to be fed for the block or raised for dairy purposes, receive the same treatment for the first two years, the cost of which would be as follows:

TABLE SHOWING COST OF STEER:

400 lbs. whole milk.....	\$4.00	
1500 " skim ".....	4.50	
100 " grain.....	1.00	
100 " bran.....	.80	
80 " oil cake.....	.50	
Grass, hay and pasture.....	2.00	
<b>Total for 1st summer.....</b>	<b>12.60</b>	
500 lbs. hay.....	2.50	
500 " bran.....	3.00	
350 " grain.....	3.50	
600 " roots.....	1.00	
45 " oil cake.....	.75	
<b>Total for 1st winter.....</b>	<b>10.75</b>	
Six months' pasture.....	9.00	
2000 lbs. straw.....	4.00	
500 " bran.....	3.00	
2000 " roots.....	3.35	
500 " grain.....	5.00	
<b>Total for second year.....</b>	<b>24.35</b>	
Six months' pasture.....	9.00	
900 lbs. straw.....	2.25	
900 " hay.....	4.50	
800 " bran.....	4.80	
1440 " grain.....	14.40	
3600 " roots.....	6.00	
240 " oil cake.....	4.25	
<b>Total for third year.....</b>	<b>45.20</b>	
<b>Total cost of three-year-old steer.....</b>	<b>63.90</b>	

A good steer, fed as indicated above, should gain from 1½ to 1¾ pounds per day, or should weigh, at the end of three years, 1,640 lbs. to 1,920 lbs. and, if disposed of at 5c. per pound, would realize from \$82 to \$96, the former sum being a loss of \$11.90, and the latter a gain of \$2.10.

In the above calculations no labor for attendance, interest on capital, risks, rent for stables, etc., have been debited, nor has the manure been credited. It is estimated that one person, earning \$30 a month, including board, can attend 50 head of cattle, representing \$10 for each steer from birth. The interest of 6% on the capital invested in the steers as food consumed by them is \$7, the interest and depreciation on stables, etc., \$5, and risks, including veterinary surgeon, fees, etc., \$2, making a sum total of \$24 of extra charges for each 3-year-old steer, which is to be deducted from the value of their manure. During their lifetime the steers consumed 8,400 lbs. of dry matter in their food, of which on the average 44% will be found as dry matter, in the solid excrements about 3,700 lbs., and 6%, or about 500 lbs. in their urine. The solid excrements would contain about 83% of water, making a bulk of a little over 21,700 lbs., containing 63 lbs. of nitrogen, 21 lbs. of potash and 36 lbs. of phosphoric acid, which at the market prices of commercial fertilizers would realize as follows:

VALUE OF THE SOLID EXCREMENTS.

63 lbs. of nitrogen @ 15c.....	\$ 9.55
21 " of potash @ 4½c.....	94
36 " of phosphoric acid @ 6c.....	2.16
<b>Total.....</b>	<b>\$12.65</b>

Urine of cattle contains about 93% of water; a bulk of that substance containing 500 lbs. of solid matter, would therefore weigh 7,140 lbs., of which 50 lbs. are nitrogen and 35 lbs. potash.

VALUE OF URINE OF THREE-YEAR-OLD STEERS.

50 lbs. of nitrogen @ 17c.....	\$ 8.50
35 " of potash @ 4½c.....	1.57
<b>Total.....</b>	<b>\$10.07</b>

The entire value of the manure, \$12.63 + \$10.07 = \$22.72, is therefore \$1.28 less than the cost of attendance, interest, risk, etc., and this amount must be deducted from the profits or added to the loss of feeding, which leaves a loss of \$13.18 in the one case and a gain of 82c. in the other.

The heifers would consume the same quantity of food as the steers did for the first two years, being equivalent to \$47.70. Their feed for the third, and each subsequent year, would, however, be less.

TABLE SHOWING COST OF HEIFERS.

Cost of 1st year.....	\$ 12.60	\$ 12.60
Cost of 2nd year.....	24.35	36.95
Six months' pasture.....	9.00	45.95
1700 lbs. straw.....	3.00	48.95
750 " hay.....	3.75	52.70
2700 " roots.....	4.50	57.20
900 " bran.....	5.40	62.60
500 " grain.....	5.00	67.60
<b>Cost of third year.....</b>	<b>30.65</b>	<b>98.25</b>
<b>Total cost at three years.....</b>	<b>78.35</b>	

To this cost of \$78.35 must be added \$1.28, the amount by which the attendance, risks, interest, etc. overbalances the manure, making a cost of \$79.63, before any returns in milk are given. This cost, with its interest, must be equally distributed over the lactation period of the cow, so that when her usefulness is over her cost has been repaid. If this period be 10 years and interest 6%, then each yearly instalment will be \$10.70. If profitable, this amount, together with risks, attendance and stabling, added to her yearly food, charged at market prices, should not exceed the value of her milk and manure for that period.

COST OF ONE YEAR'S MILK.

One year's food.....	\$30.65
Attendance in winter.....	3.00
Cost of milking.....	5.00
Risks, etc.....	1.00
Stabling, etc.....	1.75
Yearly instalments on the cost of cow.....	10.70
<b>Total cost.....</b>	<b>\$52.70</b>

During this time a good cow well cared for will give from about 5,400 to 6,200 lbs. of milk, which will realize, on an average, about 8c. per pound at the cheese factories, or \$43 to \$50 for the year's milk. The total dry matter consumed by the cow in her food for the year is 3,440 lbs., of which 38% = 1,300 lbs., are found in the solid excrements, and 5% = 170 lbs. in the urine. The solid excrements having about 83% of water, would therefore weigh 7,700 lbs., of which 0.29% or 22.3 lbs. are nitrogen, 0.1%, or 7.7 lbs., potash, and 0.17%, or 9.7 lbs., phosphoric acid, which at their respective market prices of 15, 4½ and 6 cents, would realize \$4.28. The urine containing about 93% of water, would, with 170 lbs. of dry matter, weigh 2,430 lbs., of which 0.58% or 12 lbs. would be nitrogen, and 0.49% or 11 lbs. potash. These, at 17 and 4½ cents respectively, have a value of \$2.53. The entire value of the manure is therefore \$4.28 + \$2.53 = \$6.81. This amount added to the value of the milk, \$43 to \$50, would leave the returns to be from \$49.81 to \$56.81, which with \$52.70 as total costs, leave a loss of \$2.89 in one case, and a gain of \$4.11 in the other.

Some authorities calculate a much larger profit in dairying than beef growing, but our figures do not do this, and are practically substantiated by Mr. J. B. Lane, one of our most progressive farmers in Middlesex, in our July issue.

The calves the dairy cows produce cannot be credited to them, as their value at birth is no more than will cover the services of their sire, for there is no profit in veal raising. The 82c. profit shown in the one estimate of beef growing will be more than counterbalanced by the cost of the calf at birth, which has not been debited in the above estimates.



**Stock.**

**Should we Feed for Fat Meat or Lean?**

In view of the position which we have taken with reference to the breeding and feeding of stock, and the remarks we have made with regard to the prevalence of disease, the accompanying illustrations, taken from hogs fed for fat and also for lean in experiments conducted at the Wisconsin Agricultural Experiment Station, under the direction of Prof. W. A. Henry, will be of considerable interest to our readers.

Pigs from the same litter were selected, which were 100 days old when the experiment began, and they were divided into two lots of three hogs each. The object was to adopt extreme methods of feeding, the belief having gained currency that hogs fed on corn, a fatty food, laid on large percentages of fat meat and were liable to disease. Lot I. received a diet that was largely composed of bone and muscle-forming substances, viz., protein and salts, the ration being as follows: 1 part dried blood, 6 parts shorts, and 14 parts by weight of skim-milk, all these foods containing very little fat. On the other hand, Lot II. received nothing but fine ground corn meal, which has a very large percentage of fat and a low percentage of protein and salts. The nutritive ratio of the ration fed to Lot I. was 1:2, and that fed to Lot II. was 1:7.7. Both lots were permitted to take exercise at will, and received all the food they could consume. The experiment lasted 136 days, at the expiration of which period it was found that Lot I., fed for lean, gained 405½ lbs., while Lot II., fed for fat, only gained 291½ lbs.

Upon slaughtering, the carcasses were cut square across between the fifth and sixth ribs, and again at the loin (small of the back). Plate I. in the accompanying illustrations shows the appearance of the meat after the head was removed, the parts having been photographed and painted in order to show the relative proportions of fat and lean. Plate II. shows the cross-section after the cutting between the fifth and sixth ribs was made, and Plate III. shows the appearance at the loin cross-section.

The following table gives the most important

facts in the case, the weights being of the three hogs in each lot:

Total.	Lot A. Fed for lean.	Lot B. Fed for fat.
Live weight . . . . .	669½ lbs.	561½ lbs.
Dressed weight . . . . .	541½ "	451 "
External fat . . . . .	150 "	156 "
Lean meat . . . . .	244 "	178½ "

These difference should be borne in mind in considering what follows.

3. The kidneys of Lot A weighed 42 percent more than those of Lot B.
4. The spleens of Lot A weighed 33 percent more than those of Lot B.
5. The livers of Lot A weighed 32 percent more than those of Lot B.

6. The blood (caught on killing) of Lot A weighed 59 percent more than that of Lot B.

7. The hair on Lot A weighed 36 percent more than that of Lot B.

8. The skin of Lot A weighed 36 percent more for Lot A than for Lot B.

9. The large muscles of the back (Ilio spinalis) of Lot A weighed 64 percent more than those of Lot B.

10. The two tenderloin muscles (Psoas magnus) of Lot A weighed 38 percent more than those of Lot B.

11. Thirty-eight percent of all the meat that could be cut from the carcasses of Lot A was fat, while the fat of Lot B was 46 percent of all that could be separated.

12. The bones of Lot A were 23 percent heavier than those of Lot B.

13. The thigh bones of Lot A were 62 percent stronger with the testing machine than those of Lot B.

Similar results have been obtained by experiments conducted by Prof. Sanborn, of the Missouri Agricultural Experiment Station, which have already been published in the ADVOCATE.

Such experiments will, or should, revolutionize the existing methods of feeding in the United States, where little else than corn is fed. (No writer has yet hinted at the condition of the corn-fed men in the Western and Southern States).

There is too much truth in the following remarks of Prof. Henry: "We find of late years that the business (hog-raising) is beset with many difficulties. The pigs at birth are delicate and die easily, the sows are often but indifferent mothers, in some cases even eating their young, while animals of all ages fall easy victims to any contagious malady. The difficulties have grown until now every interested party feels there is no small degree of uncertainty attached to the business. Some tell us that the trouble comes from the so-called improvements, that our stock is bred up too high,

and that relief will be found in going back for fresh blood to the old style hog, which, they affirm, was a wonderfully hardy and vigorous animal. Others maintain that our improvement of the breeds is an advantage, and that we should hold fast to all that has been done in this line,

PLATE I.

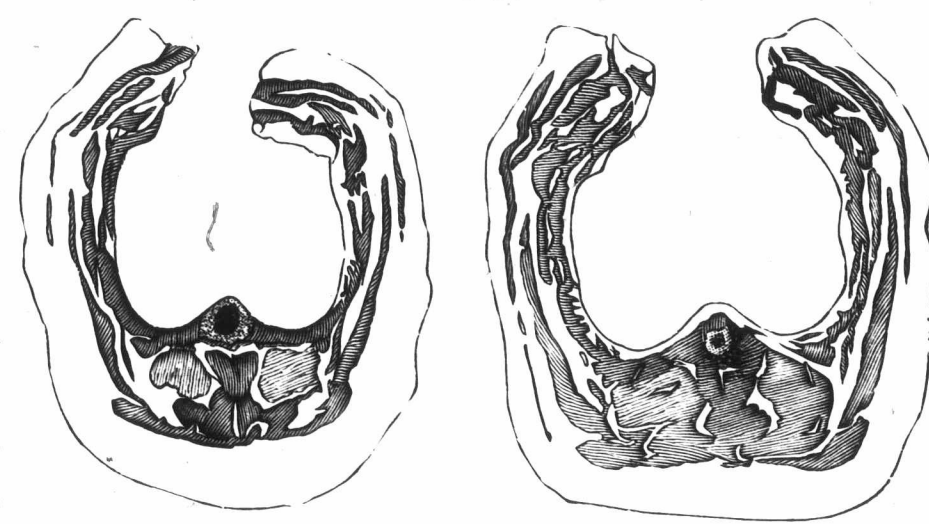


**Fed for Fat.**  
Lot A, No. 1, Carbohydrate fed.

Weight of kidneys . . . . .	27 oz.	19 oz.
Weight of spleens . . . . .	16 "	12 "
Weight of livers . . . . .	146½ "	109½ "

**Fed for Lean.**  
Lot B, No. 1, Protein fed.

PLATE II.

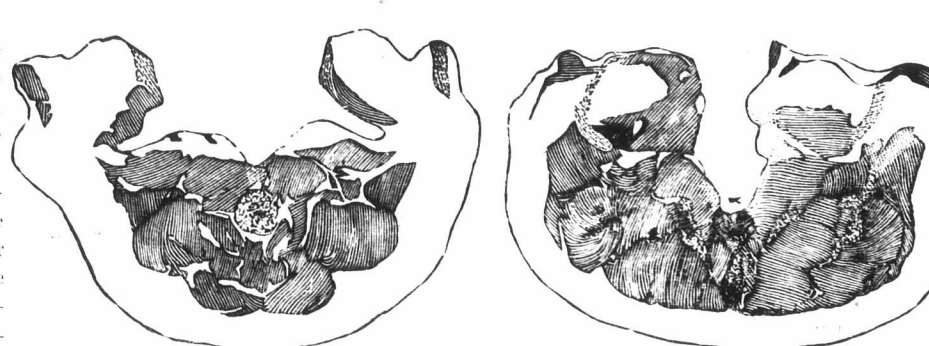


**Fed for Fat.**  
Lot A, No. 2, Carbohydrate fed.

Weight of blood . . . . .	296 oz.	186 oz.
Breaking strain five thigh bones . . . . .	4550 lbs.	2855 lbs.

**Fed for Lean.**  
Lot B, No. 2, Protein fed.

PLATE III.



**Fed for Fat.**  
Lot A, No. 3, Carbohydrate fed.

Summed up in another way, Prof. Henry gives the following as the results of the experiment:

1. The live weight of Lot A (fed for lean) is 19 percent greater than Lot B, fed for fat.
2. The dressed weight of Lot A is 21 percent greater than Lot B.

**Fed for Lean.**  
Lot B, No. 3, Protein fed.



but that more intelligent care is necessary in feeding and management, and if these things are properly attended to, there need be no serious trouble in the hog. It requires but a few illustrations to show that the hog, as now bred and managed, is the farthest removed from a state of nature of any of our domesticated animals."

No doubt our freedom from disease in Canada has been largely caused by the feeding of foods rich in protein, and the small quantities of corn grown in our country. It is not necessary to feed such a high ration as that given to the hogs fed for lean in the above experiment; but every farmer should feed largely those foods which are rich in protein substances, a table of which is given on this page, and sloppy foods should be avoided as much as possible.

**Fodder Rations for Stock.**

Having described the influences which affect the composition and digestibility of foods, we give here with a table showing the average and the variations, the former being in the centre of the column and the latter immediately below.

This table is much more worth to the farmer than its value for figuring out fodder rations. For example, if a farmer has a food which in a ration would give too much fat, he may, by consulting the market reports, profitably exchange it for a food containing less fat and more protein. Again, if he wishes to obtain rich manure, he can obtain foods which are rich in ash, as well as protein—such as bran and oil-cake, and by obtaining an analysis of the ash, he may restore the fertility of his farm if it is worn out in any special constituent of plant food, say phosphoric acid.

A "nutritive ratio" is simply the relation which exists between the nitrogenous and non-nitrogenous portion of a given food or ration, and is expressed thus: 1:6, meaning that the food or ration contains six times as much digestible carbo-hydrates as digestible protein, or a proportion of one to six. But as all the non-nitrogenous portion of the food does not belong to the carbo-hydrate group, the fat is converted into its carbo-hydrate equivalent by multiplying by 2.5 (more accurately 2.44). But this factor is not very accurate, for it merely assumes that the fat has 2½ times more heating power than the carbo-hydrates.

Various attempts have been made to establish relative money values to the three nutrients, protein, fat, and carbo-hydrates, just in the same manner as a fertilizer is valued by the percentages of nitrogen, phosphoric acid, and potash which it contains; but the establishing of such standards is attended with almost insuperable difficulties. In the first place, the food nutrients cannot be obtained separately, as is

done with the constituents which make up the fertilizer, and, secondly, the market price differs from the scientific value. Another obstacle for our conditions is that the calculations have been made from the market prices in Germany, which may vary materially from those in Canada. The German investigators, basing their calculations upon market prices, have established 5:5:1 as the relative values for protein, fat and carbo-hydrates respectively; and in working out the money values in the subjoined table, we simply called these figures cents, which also gives the average market prices per 100 lbs. for some of the foods, notably hay, oats, oil-cake, and roots.

These are the money values from a practical standpoint: Scientifically, however, protein,

percent of crude fat, and 39.5 percent of carbo-hydrates. In these calculations, the crude, not the digestible, portions of the nutrients are taken as the basis, for it would be impossible to guarantee the digestibility, the variations being so great. In order to obtain the number of feeding units in the above oil-cake, we proceed as follows:  $29.5 \times 5 + 10 \times 5 + 39.5 \times 1 = 237$  units. Now if the market price of oil-cake is \$2.00 per 100 lbs., therefore 237 units will cost \$2.00, or one unit will cost  $200 \div 237 = \$0.0084$ . This is the money value of one feeding unit, but as there are in the protein  $29.5 \times 5 = 147.5$  units, the value of the protein will be  $147.5 \times .0084 = \$1.24$ ; in the same manner, the value of the fat will be  $10 \times 5 \times .0084 = \$0.43$ , and the carbo-hydrates  $39.5 \times 1 \times .0084 = \$0.33$ ; total, \$2.00.

**How to Calculate Feeding Rations.**

Suppose a farmer has hay (2 parts timothy and 3 parts clover), oat straw, peas and mangels, all of average composition and digestibility, as found in the accompanying tables:

The small table is based upon numerous feeding experiments with ruminants, and gives the amounts of the digestible nutrients required for the various animals and purposes mentioned:

If the farmer desires to feed these foods say to a cow giving milk and weighing 1,000 lbs., let him select any ration at random, say the following: 10 lbs. hay (4 lbs. timothy and 6 of clover); 8 lbs. straw; 4 lbs. peas; and 25 lbs. of mangels. By consulting the tables he will find that this ration will give him 1.6 lbs. of protein, .29 lbs. of fat, and 10.8 lbs. of carbo-hydrates, or a nutritive ratio of about 1:10.

But as the table demands 2.5 lbs. of protein, .4 lbs. of fat, and 12.5 lbs. of carbo-hydrates, being a nutritive ratio of 1:5.4, it will be seen that the ration selected by the farmer contains insufficient nutrients, and too wide a nutritive ratio; and as the total dry substance is about the same amount required by the table, it is evident that some of the coarse fodders, with a wide nutritive ratio, will have to be exchanged for more concentrated ones having a narrow ratio.

Exchange 4 lbs. straw for 4 of peas, and ration will contain 24.6 lbs. dry matter, having 2.5 lbs. protein, .32 of fat 12.5 of carbo-hydrates.

TABLE SHOWING THE COMPOSITION AND DIGESTIBILITY OF FEEDING STUFFS:

	Total Dry Matter.	Crude Protein (Albuminoids).	Crude Fat.	Nitrogen-Free Extract.	Crude Fibre.	Ash.	DIGESTIBLE.					
							Protein.	Carbo-hydrates.	Fat.	Nutritive Ratio.	Relative Value.	
	%	%	%	%	%	%	%	%	%	%	%	%
Timothy.....	86.5 85.7-87.5	6.2 4.9-8.4	1.7 1.1-2.0	45.8 43.3-48.1	28.9 25.3-32.8	3.9	3.5 1.9-6	45.5 39-52	0.76 0.09-1.3	1:13.5	0.66	
Red Clover.....	84 78.5-87.1	13.4 7.6-18.3	3.2 1.4-5.1	36.4 15.2-48.1	25.4 18.8-49.1	5.6	8.0 3.2-13.4	37.0 20.6-56.7	1.88 0.46-3.84	1:5.2	0.86	
Wheat Straw.....	85.7 74.0-91.9	3.1 1.4-5.6	1.2 0.6-2.0	37.5 28.7-44.4	40.0 28.9-52.6	3.9	.8	35.6	0.4	1:45.8	0.41	
Oat Straw.....	85.7 78.7-89.7	4.0 1.3-7.0	2.0 1.0-5.1	35.6 24.9-48.9	39.7 30.0-50.2	4.4	1.4 1.0-3.5	40. 27-48.6	0.7 0.14-2.6	1:29.9	0.50	
Pea Straw.....	85.7 82.6-88.1	7.3 4.8-10.1	2.0 1.5-3.3	32.3 22.8-39.8	39.2 33.6-51.8	4.9	4.4 2.8-6.1	40.9 33.2-50.1	0.9 0.6-1.6	1:9.8	0.67	
Wheat.....	85.7 81.3-90.0	13.2 8.2-24.1	1.6 0.7-2.7	66.2 60.2-75.3	3.0 0.7-8.3	1.7	11.7 5.0-17.3	64.3 37-59.8	1.2 3.1-6.2	1:5.8	1.28	
Oats.....	86.3 83.6-92.4	12.0 6.3-18.5	6.0 4.4-7.3	56.6 48-71.8	9.0 4.1-16.1	2.7	10.4 5.0-17.3	45.9 37-59.8	4.6 3.1-6.2	1:4.5	1.20	
Peas.....	86.8 77.9-91.1	22.4 18.6-27.1	3.0 0.6-5.3	52.6 41.9-59.6	6.4 1.9-9.2	2.4	19.7 15.6-24.7	55.7 41.2-63.6	1.7 0.2-3.6	1:2.6	1.62	
Barley.....	86.2 79.1-91.7	11.2 6.2-18.3	2.1 1.0-3.2	65.5 56.1-74.7	5.2 2.2-10.8	2.2	8.0 3.5-13.3	58.9 49.1-71.1	1.7 1.1-7.2	1:7.9	1.07	
Maize.....	87.3 77.6-91.8	10.6 5.8-15.1	6.5 1.5-9.2	65.7 52.4-72.7	2.8 1.3-8.5	1.7	9.0 4.86-13.3	62.6 49.1-71.1	4.9 1.1-7.2	1:8.3	1.32	
Bran.....	87.6 83.5-92.4	14.5 10.1-27.0	3.5 1.7-6.6	53.6 28.5-61.5	9.4 4.1-34.6	6.0	12.7 8.3-25.2	44.6 23.3-58.7	2.8 0.54-5.3	1:4	1.12	
Middlings.....	87.1 86.0-88.5	14.6 12.6-15.2	3.0 2.6-3.3	63.8 61.6-64.9	3.1 1.4-4.8	2.6						
Oil Cake.....	87.8 81.1-92.9	29.5 20.6-37.8	10.0 6.0-18.2	29.8 19.7-41.3	9.7 5.1-16.8	8.8	25.6 16.5-35	29.6 19.4-39.7	9.1 5.2-17.1	1:1.2	2.63	
Mangels.....	12.0 7.4-24.6	1.1 0.55-2.6	0.1 0.05-0.6	9.1 5.2-13.8	0.9 0.6-4.5	0.8	1.1 0.55-2.6	10 5.8-18.3	0.1 0.05-0.6	1:9.3	0.16	
Carrots.....	14.1 10.1-20.8	1.3 0.5-2.4	0.25 0.2-0.8	9.6 5.9-15.5	1.9 0.7-3.4	1.0	1.3 0.5-2.4	11.5 6.6-18.9	0.25 0.2-0.8	1:9.3	0.35	
Turnips.....	8.5 7.1-13.9	1.0 0.6-1.8	0.15 0.1-0.2	5.8 3.7-10.9	.97 0.3-1.0	0.8	1.0 0.6-1.8	6.7 4.0-11.1	0.15 0.1-0.2	1:7	0.12	
Potatoes.....	25.0	2.1	0.2	20.7	1.1	0.9	2.1	21.8	0.2	1:10.6	0.33	

considering all the functions which it performs, is more valuable than fat, and yet fatty foods in our markets appear to bring as high a price as those rich in protein, and then also the manual value of protein foods is considerable, while fat has no value as a manure. The relation in the American standard is 4.5:3.84:0.95 respectively for the protein, fat, and carbo-hydrates, which figures usually also come close to the market prices. This relation is scientifically more accurate than the German standard, but we do not know whether or not it has been based on market prices.

In Germany the concentrated foods, especially the by-products, must have a guaranteed analysis, and they are reduced to units of feeding value. For example, suppose the relative value to be 5:5:1 respectively for the protein, fat, and carbo-hydrates, and the analysis of, say, oil-cake to be 29.5 percent of crude protein, 10

RATIONS PER 1000 LBS LIVE WEIGHT FOR	Total Organic Substance.				Nutritive Ratio.	
	lbs.	lbs.	lbs.	lbs.		
Milk Cows.....	24	2.5	12.5	0.4	5.4	
Fattening Steers, 1st Period..	27	2.5	15	0.5	6.5	
" " 2nd Period..	28	3.0	14.8	0.7	6.5	
" " 3rd Period..	25	2.7	14.8	0.6	6.0	
Fattening Sheep, 1st Period..	23	3.0	15.2	0.5	5.5	
" " 2nd Period..	25	3.5	14.4	0.6	4.5	
Fattening Swine, 1st Period..	36	5.0	27.5		5.5	
" " 2nd Period..	31	4.0	24.0		6.0	
" " 3rd Period..	23.5	2.7	17.5		6.5	
Sheep, coarse woolled.....	20	1.2	10.3	0.2	9	
Sheep, fine woolled.....	22.5	1.5	11.4	0.25	8	
Horses moderately worked....	12.5	1.8	11.2	0.6	7	
Horses heavily worked.....	25.5	2.8	13.4	0.8	5.5	
GROWING CATTLE.						
Ages—Months. Live Weight.						
2-3	150	4.0	13.8	2.0	4.7	
3-6	300	3.4	13.5	1.0	5.0	
6-12	500	2.4	13.5	0.6	6.0	
12-18	700	2.4	13.0	0.4	7	
18-24	850	2.4	1.6	12.0	0.4	8



**Chicago Fat Stock Show.**

[From our Chicago Correspondent.]

"Tenth Annual American Fat Stock Show—Second Annual American Horse Show—Third Annual Dairy Show—Annual Poultry Show"—is the way it is announced by the Board of Agriculture. Now, why didn't they go on in this way, mentioning the Butterine Show, and other products and appliances indefinitely? How much better it would be to designate the whole display as "The American Live Stock Exposition." That would let in everything directly or indirectly connected with live stock, and would be especially more appropriate since it is the intention to include hereafter a display of breeding stock.

Well, the show for this year is over, and it was withal a very creditable one. Every department, except perhaps that set apart for butter and butter making, was larger and better in every way than ever before, and this is saying a good deal.

D. M. Moninger's 2-year-old sweepstakes Shorthorn stood no show in the carcass test, and the first honors were taken here by a Galloway steer two years old. John B. Sherman, of the Stock Yards, got first premium on his 3-year-old Polled Angus steer in the slaughter contest.

The black cattle not only made a wonderfully fine display, but they took the best premiums in the most important classes.

The cattle in the show were all younger on an average than ever before, and yet the early maturity idea does not seem to be quite so rampant as it was. The Kansas City Fat Stock Show rules out all cattle three years old or over, and in this it is thought a great mistake is made. It is forcing the early maturity craze rather too much.

Mr. Wm. Watson, feeder for T. W. Harvey, Turlington, Neb., took grand sweepstakes with the Angus 2-year-old Black Prince of Turlington, at the Kansas City Show, but at Chicago he had to give way to Moninger's Shorthorn. It was 60 years ago that Mr. Watson's grandfather took first prize at London on a black steer, and the grandson had hopes of taking the best premium at the "Smithfield of America."

Never before did the Shorthorn men have so fine a display of thorough-bred cattle in the building, and the Hereford men have had so small a proportion of good cattle. There were more thorough-bred Shorthorns and fewer grades, and more grade Herefords and fewer thorough-breds than usual. It was quite a common remark all around that the Shorthorn men were doing themselves great credit, and coming to the front. An old breeder thought the Shorthorn men had made the mistake of pandering too much to the color fashion. As he expressed it, "many a bad bull is saved for breeding simply because he has a red coat."

There was a fine display of poultry, and the horse show was the best it has ever been.

During the first week the excitement and uneasiness over the execution of the anarchists made the attendance small, but the show was a complete success financially.

Mr. John Rutherford, of Roseville, Ont., had a splendid lot of sheep, and carried home a fine lot of premiums, as follows:

Southdown—best wether shown; premium to Little Jumbo, \$25. Shropshire—premium to Captain, \$25. Pen Hampshires—\$25. Cotswold—premium, Cherry, \$25. Leicester—premium, Sandie, \$25. Lincoln—premium to Gra-

ham, \$25. Cotswold—wether 2 yrs. old or over, first premium, Cherry, \$25. Hampshire—wether 2 yrs. old or over, second premium, Dandy, \$15. Wether—1 and under 2 yrs., first premium, Charlie, \$25. Wether—under 1 yr., first premium, Stanford, \$25. Shropshire—wether 2 yrs. old or over, first premium, Captain, \$25. Heaviest fat sheep—premium, \$25. Lot 49—gain per day; wether over 6 mos. of age showing greatest average gain per day, including weight at birth; premium to Snowball, \$25. Pen of Leicesters, \$35. Pen of Lincolns, \$35.

The Western Fair Association has requested the Fat Stock Show managers to admit breeding stock and offer premiums. One or two prominent breeders are advocating \$500 instead of \$250 as grand sweepstakes premium. The Board seems to hesitate about making it so high.

Cattle men who attended the show seemed to feel in good spirits generally, and were nearly all hopeful and confident of better prices for live stock within 18 months.

**Conditions which Affect the Digestibility of Feeding Stuffs.**

In answer to numerous correspondents who desire us to explain feeding rations in connection with the composition and digestibility of the foods, we continue our article of last month, and give a table containing the composition and digestibility in another column, with rules as to the working out of nutritive ratios.

As we pointed out in our last issue, the composition of foods vary materially, so that by taking average figures, many irregularities may occur, and the value of nutritive ratios is still further diminished by the fact that there are also wide variations in the digestibility.

In the first place these variations may be mechanical, that is, depending upon the manner in which the food is fed. For example, if meal is fed to ruminant animals without admixture with coarse fodder, it will go directly into the fourth stomach, and the digestive effects will, to a large extent, be lost, especially when the feeding of such a concentrated ration is followed by the drinking of much water. On the other hand, when the meal is thoroughly mixed with cut fodder and slightly moistened, the highest digestible effects are attained, especially with animals which chew the cud.

Now if a food contained only one constituent or nutrient, the question of digestibility would present but few complications; but as all foods contain many nutrients, the digestibility of each must be considered separately. Every feeding stuff contains the following nutrients:

1. CRUDE PROTEIN.—This substance contains all the nitrogen of the food, and is found by multiplying the nitrogen obtained by chemical analysis by the factor 6.25. However, this protein (also called albuminoids) is made up of many kinds of nitrogenous compounds containing variable percentages of nitrogen, and the digestibility of each presents many variations. With some of these compounds, 5.5 would be a more correct factor, and in other cases 6 would be more correct. It is even well known that some of these compounds, which vary much in the different foods, have little nutritive value, and do not even perform the same functions as the true protein. It is assumed in the calculations that the protein contains 16 percent of nitrogen, which estimate is not very accurate, although it is near the average.

2. CRUDE FIBRE.—This nutrient contains several compounds, all of which vary in digesti-

bility. The most important of these compounds is cellulose, which, when pure, has the same composition as starch and sugar. The digestibility of the crude fibre depends largely upon the percentage of cellulose it contains, the latter being to a large extent digestible, while the next most important compound, lignin, a woody substance, is very indigestible. The exact percentage of cellulose in a food cannot be ascertained by any known method of analysis.

3. CRUDE FAT.—All the substance which can be extracted from the food by means of ether is called crude fat. In the grains this fat is pretty pure; but in coarse and green foods portions of the crude fat are quite indigestible, and the digestible portion cannot be separated from the crude fat.

4. NITROGEN FREE EXTRACT.—This substance is the portion of the food which remains after the crude protein, crude fibre, crude fat and the ash have been removed from the dry matter. This is not obtained by analysis, but by taking the difference. This nutrient is composed of starch, sugar, and other substances of similar composition, all of which have about the same nutritive effect; but in the coarse and green fodders varying quantities of more or less indigestible substances, such as lignin, are found. All the non-nitrogenous substances except fat have nearly the same composition as starch, and are therefore called carbo-hydrates—that is, composed of carbon and the elements of water.

5. ASH.—This is the inorganic or mineral portion of the food, and remains as ashes after combustion, the other portions just described being the organic part of the plant. The ash is composed of potash, lime, phosphates, soda, magnesia, iron and a few other salts. The ash is not taken into account in calculating feeding rations, although no animal can exist without it, and in selecting foods, especially for young stock, those with a large percentage of mineral matter are very desirable.

It will be seen from the above descriptions and definitions that the question of digestibility is a very complicated one, and it is still more so when the different animals to which the foods are given are considered, some animals digesting higher percentages of certain nutrients than other animals.

Protein is often called the flesh or muscle-forming nutrient, but this description is not very accurate, for it can also be converted into fat as well as muscle. All the other nutrients may be classified under the head of non-nitrogenous substances, and it is popularly expressed that they produce fat and heat. However, the fat may be converted into carbo-hydrates to support respiration, and under certain limited conditions, the carbo-hydrates may be converted into fat.

Taken as a whole, the digestibility of the food is increased by being well masticated. Of the various nutrients in the food, the greatest variation in the digestibility is generally found in protein, varying from 35 to 75 percent in clover and meadow hay. With reference to the condition of the fodder, the digestibility is much greater in early than late cut hay, experiments having shown that it is 40 to 50 percent greater in hay cut towards the commencement of blossoming than at the end of the blossoming period. Steaming or cooking reduces the digestibility of the protein and nitrogen free extract, but may increase that of the crude fibre, but the animal may eat a larger quantity, if the food is more



palatable. Steaming bran does not increase its digestibility. Increase of work or exercise does not increase the digestibility, but increases the quantity eaten. All ruminants have about the same digestive powers. Horses digest 11 to 12 percent of the total dry matter less than ruminants, but both digest about the same percentage of protein. Horses digest 25 to 50 percent less fat, 7 to 10 percent less nitrogen free extract, and over 20 percent crude fibre less than ruminants. Age or breed has little or no effect on the digestibility; but there is more difference in individual animals than in breeds or races. However, the nutritive effects of the food digested is greater in some breeds than others—that is, if the food digested does not produce milk or growth, it is wasted in the urine. Animals that in youth have been stunted digest 7 to 15 percent less than when well fed. Protein, when added to coarse fodders, does not lessen their digestibility. An addition of much starch, however, depreciates the digestibility considerably. Roots, although totally digestible, reduce the digestibility of the protein, crude fibre, and nitrogen free extract of other food. Foods rich in protein and poor in crude fibre are more easily digested than foods poor in protein and rich in crude fibre. When the food is poor in both of these nutrients, the protein is difficult to digest, but the nitrogen free extract is easy of digestion. Heavy rains have been known to wash out over 13 percent of the protein, and over 25 percent of the nitrogen free extract, thus greatly reducing the digestibility. Of the total dry matter in hay, 17 to 18 percent has been washed out by heavy rains, and a larger percentage in aftermath.

Taking all these points into consideration—and there are many more which we have not space to describe—it will be seen how difficult it is to work out nutritive ratios with any degree of accuracy, especially when the feeder has only access to average figures as to digestibility, and when the variations in the composition of the foods are also added, the working out of feeding rations becomes very complicated, if satisfactory results are to be obtained.

Horses suitable for express work should be sound and kind, with an average weight of 1,250 to 1,400 pounds. The most desirable age is five to six years. The manager of the Adams Express informs us that the horses for this company are brought from Ohio, Indiana and Illinois. Good Percheron or Norman grades about 1,300 pounds weight, active and docile and five years old, are eagerly taken at an average price of \$300. Most of their horses are bought through agents, but they are always ready to buy a suitable animal wherever it can be found. As a rule, mares are not wanted for city work. Sound horses with good care generally stand the express work about five years, unless their feet give out. The American Express Company also buy in the West, but are not so particular. They try to obtain active "blocky" horses of any breed. They use many mares, and their horses are a trifle lighter than those used by the Adams. They like to take horses on trial and keep the best that are offered. The express horse must be a good traveller and must possess superior intelligence. Good express horses are about the most profitable animals the Western farmer can raise. There is always a prime demand for them. A cross of a good Percheron stallion on a large, active mare, produces a horse that will always be gladly bought for this purpose.—[Rural New Yorker.

## SECOND PRIZE ESSAY.

### The Winter Care of Cattle.

BY JAMES R. LAWLER WHITBY.

The two important points to be attained in the winter care of cattle are economy and good condition of stock. Although cattle can and do live out in our winters without shelter of any kind, yet the cost of bringing them back into good condition the following summer is greater than that of keeping them well stabled and fed during the coldest part of the year. In the other extreme, some breeders have given too much attention to the fact that cattle in cold stables require a greater supply of food to keep them in condition than they do in warm places; and in order to economise food as much as possible, they close up every entrance for fresh air and keep the stable hot by filling it full of hot, impure air, which is as much to be feared as too little heat.

To obtain the best results, without artificial heat, the stable should have solid wind-proof walls, so that no draught can fall upon any of the animals. It should be free from dampness, well lighted and sufficiently ventilated. Such a stable will of necessity be colder than those in which the foul hot air is not allowed to escape, but cattle will thrive better in it than in a damp, dark, hot hole, which many of our stables are.

Another much neglected part of our winter care is that of watering. Some few farmers still continue the old practice of allowing the cattle to wade through snow-drifts to the pond or creek, and there wait until a hole is made in the ice, through which the poor beasts are expected to drink water only a few degrees above freezing point. Such a course is shiftless and cruel. Not only is there a loss of time and great inconvenience, but there is a loss of flesh and sometimes a loss of life in the herd so treated. A pump in the barn-yard serves the purpose well, provided you are sure that no soakings from the manure heap can possibly get into the water. Such impurities not only cause sickness among the animals, but also, in the case of milkers, there is great danger that the germs of disease may be carried into the family through the milk, which is one of the most common carriers of fever germs, etc.

The most favorable solution of this question is perhaps in placing the well a short distance outside the yard, and, if possible, on higher ground. The cistern plan, too, as followed in many districts, has much to commend it. A good sized wooden cistern placed inside the barn (not the stable) may be connected with a trough in the yard, and so arranged that no trouble is experienced from frost. Such a cistern is easily kept filled from the eaves of the barn, and has the advantage of containing nothing but pure water.

With either of these plans the cattle can be let out into the yard while the stables are being cleaned, and having but a short distance to go, will drink all that they require. To make cleaning as easy a matter as possible, the cattle should be kept for the most part in open stalls, box stalls being used for the calves alone. The floors of the stalls, which are best made of cement, should slope gradually back to a gutter, which should be filled with sand, sawdust, dry earth or other dry absorbing material, to soak up the urine, which is the most valuable part of the manure but which, if permitted to sink into the stable floor, is apt to be productive of disease.

In the matter of bedding, many breeders have come to the conclusion that the straw should be cut into lengths of about four inches. The labor of cutting is not great, while the saving in time and material is very considerable, and the manure is much sooner fitted to be put out on the fields than when the straw is left long.

With regard to feeding, there is as much difference of opinion as in reference to stable heating, and it depends altogether upon the surroundings of each particular farmer. Those who can profitably grow large quantities of roots need very little hot feed, while those whose land is better fitted to grow dry feed, will no doubt gain much by steaming or boiling. But it must ever be kept in mind that hot-fed cattle never stand long journeys as well as those dry fed. If hot feeding is followed, it is best to use a "farm furnace" or some other variety of stove made expressly for this purpose, as they require much less fuel to heat a large amount of water than the ordinary stove. The cut feed may be placed in covered bins, so that when the water is thrown on the feed may get a thorough steaming, or the boiler may be fitted with a tin cover and a tube run from the boiler to the feed box, the cooking thus being done entirely by steam.

Whether or not hot feeding is followed, the strictest attention should be given to the cleaning of the mangers and feed boxes, as food left quickly sours and contaminates that put in on top of it, thus causing much waste and often much sickness amongst cattle.

You can tell at once, when all uneaten food is cleared away every day, how each animal is doing, and so regulate the feeding as to obtain the best results. In conclusion, it must be remembered that the object of this work is to obtain the greatest return with the least outlay, and that the object of feeding must always be kept in view, and that each feeder must, by careful attention, find for himself those methods which produce the most and best meat, milk or bone, as the case may be.

Most of the horses used on the various street car lines are bought at "Bull's Head," says the Rural New Yorker. Many of them are animals rejected for use in other lines of work. There is no particular breed or shape of horse desired. "Any horse that can do the work" is drafted into the service. Horses too light for truck work, too clumsy for express wagons or too stupid for lighter work, will pull well on the cars. Trotters that show no speed and are too light for farm work, light roadsters, and misshapen colts from big stallions out of smaller mares, all find their way in the general sifting of the horse business to the street car lines. The average weight of these horses is about 1,100 pounds. They begin the service generally at about six years of age, and three years usually limit their effectiveness. The price paid for them averages \$160. Most of them are long-bodied with light hind-quarters. One rarely sees a horse that would be suitable for truck or dray work on a horse car.

When the colt comes to the stable it should be broken to the halter. A good plan is to put a halter on it and tie it alongside of the mother. When it gets used to this, lead the mare away and then lead the colt after her. In this way it will soon follow with the halter to restrain it, and by being gentle it will soon follow the trainer and be perfectly governable. Coax it with a little sugar or salt. Do not get mad and jerk and drag it about, the poor thing.



**A Famous Clyde Stallion.**

During our visit to the Industrial Exhibition, we entered the show-ring, and was at once struck by the majestic appearance of the Clydesdale represented in the illustration on page 355. Having inspected the other stallions in this class, we expressed the opinion that the indefatigable Graham Bros., the owners of Macarthur, would receive the first prize, if the judges understood their business. We have never seen a stallion in which majesty, strength, symmetry, and action were so harmoniously blended together. His sprightly countenance and lofty crest were the attractions amongst all his compeers. His color is a rich bay, with striped face and white pasterns. He is 4 years old, weighs 2,100 pounds, has fine strong bone, clean limbs, possesses graceful action, a compact body, and his development of muscle and sinew are indicative of marvellous strength.

Since 1882 Messrs Graham Bros. have been engaged in importing and breeding Clydesdales and Shetland ponies, and have enjoyed a most successful career. They import 20 to 30 mares and stallions every year, the last importations being made in August last. Macarthur (3815) was imported in 1886. He was sired by McGregor (1487); dam Bet of Achengoll (2417), by Prince (609). He took several prizes in Scotland as a one and two-year-old. He took first at Markham in the spring of 1886, and second at the Toronto Industrial the succeeding autumn. He took the first prize and champion medal at the Toronto Industrial last fall (1887); also the first and medal as the best Clydesdale stallion and the champion gold medal as the best stallion of any breed at the Port Perry Central Exhibition. At the Markham Agricultural Show last fall he took the first prize and champion medal for the best stallion or mare on the ground. At the Goodwood Agricultural Society's Show he took first and champion premium, and he won the same honors at the show of the Uxbridge Agricultural Society.

Messrs. Graham Bros. have a long list of famous mares and stallions for sale, amongst which we take much pleasure in noting the following:

McPhail (4567), full brother to Macarthur, 3 years old, and of same color and description. He was the first winner at the Royal Agricultural Show, England, in 1886; also first at the Toronto Industrial, 1887; first at Markham and first at Goodwood.

Grange (3671), four years old, sired by Jacob Wilson (2178), out of Rose of Netherlow (641).

Bannerman (4825), by Jacob Wilson, dam Spyland Bet (937) by Young Sir Walter Scott (1031).

Bright Smile (4268), 4 years old, stylish, rangy bay, with hind feet, stripe face; sired by Prince Henry (1257) from Bess.

Royal Blue (5310), solid dark bay, 4 years old, sired by Blue Ribbon (1961), and out of Peggy of Aird (1659), by Ivanhoe (396).

Freedom (4382), by Liberty (222); dam Maggie of Tarbreoch (4543), by Bonnie Scotland (1076).

Macandrew (4551); by Prince Albert (616); dam Darling (1153), by Lord Byron (489).

Fred Archer (4380), by What Care (912); dam Honor, by Lord Byron (489); was a famous winner in Scotland.

Mac Innes (5193), foaled 27th March, 1885; bay, white face, three white pasterns; bred by

A. & A. Mitchell, Alloa, Scotland; sire, Macgregor (1487); dam Sallie 3rd (4904), by Farmer Drumflower (286); grand dam Sallie 2nd (594), by Lochfergus Champion (449); great grand dam Sallie, by Byron (101); g. g. dam Young Sallie, by Baronet (30), g. g. dam Sally. The best 2-year-old ever imported to Canada.

Golden Gem (5053), bay, star on face, white pasterns; foaled June, 1885; bred by Andrew Montgomery, Netherhall, Castle Douglas, Scotland; sired by Goldenberry (2828); dam Lovely II. of Borland (262), by Lochfergus Champion (449).

Lord Armadale (vol. x., B. C. S. B.); dark brown; foaled June 15th, 1885; bred by John Woddell, of Inch Bathgate; sire Young Duke of Hamilton (4122); dam Mons Meg (4221), by Crown Prince (207); g. dam Mye (672), by Prince of Wales (670); mother of Lord Armadale, champion brood mare of Scotland from 1879 to 1886; shown every year.

Royal Lawrence (vol. x.); dark brown; foaled May 15th, 1885; sire St. Lawrence (3220); dam Belle of Caro (vol. x.), by Scotland Yet (756).

Hatfield (vol. x.); foaled May 24th, 1885; sire Honorable Charlie (3693); dam Darling (74); dark bay.

Montrave Chief (5222); bay; foaled May 25th, 1884; sire Charmer (2014); dam Darling of Twynholm (2884).

Macraith (5201); dark brown; white star on forehead; foaled May 17th, 1885; sire Macgregor (1487); dam Bessie of Hermiston (3640).

Lord Ullin (5179); bay; white hind pasterns and stripe on face; foaled May 10th, 1885; sire Darnley (222); dam Tarbrax Tibbie (2420).

Albert Victor (vol. x.); bright bay color; white face and legs; foaled 1885; sire Prince Albert (616); dam Gyp of North House, by Farmer's Fancy (302).

Blacksmith (vol. x.); brown; white stripe on face; two white legs; foaled 1885; sire Charmer (2014); dam Kate, by Lofty (460).

Pride of Corsock (vol. x.); bay; ratch on face, and white feet; sire Sir Michael (1530); dam Sallie of Black Hills (282).

Royal Crown (vol. x.); bay; white face; two white legs; foaled May 13, 1885; sire Crown Jewell (2708); dam Dora (1292); from the same dam as Macmaster (3823).

Marmion (vol. x.); bay; foaled June 10th, 1886; sire Lord Marmion (2620); dam Jess of Newton (765). This was one of the best yearlings exhibited in Scotland in 1887. He gained first prizes at Kilmarnock, Edinburgh, and the Royal at Newcastle. At Edinburgh he also gained the champion cup, beating the unbeaten 2-year-old colt, the Macaulay. Won first at the Toronto Industrial; first at Port Perry, and first at Markham.

Mac Indoe (vol. x.); bay; foaled April 26th, 1886; sire Macgregor (1487); dam Maybloom (5367).

Jessie Macgregor, bay; foaled May 24th, 1885; sire Macgregor (1487); dam Bonnie Scotland (4430). This mare won first prize at Toronto this fall; first at Port Perry; first at Markham, and first at Goodwood.

Local Gem, bay; white feet; foaled 1883; sire Sir Michael (1530); dam Rosie (3711). Won first at Goodwood, and first at Uxbridge.

Macqueen.—This 2-year-old stallion was the sensation of the American Horse Show, held at Chicago, last month. He is a beautiful light bay, and possesses form and substance combined in a most admirable manner. The Breeders' Gazette says: "Such a fine shoulder, superb rib and quarter, flinty bone, beautiful, silky feather, faultless pastern, and sound hoof, is rarely, indeed, found in combination." He had no difficulty in winning first at this great show amongst many competitors.

Sultry weather has a depressing effect not only upon the cows, but also upon their milk. Such milk is unwholesome, and spoils quickly. It should not be mixed with sound milk or converted into butter or cheese.

**Garden and Orchard.****The Life of an Apple-Tree.**

The following useful hints on this subject are abstracted from a paper by a practical orchardist, read before the Missouri State Horticultural Society:

A prominent horticulturist has said that an apple-tree was of little profit after its twenty-fifth year; but I have seen abundant evidence that such need not be the case, and that we can add years of usefulness to this our king of fruits.

Causes of shortened life: 1. Poor or exhausted soil, or such as does not afford proper drainage. 2. Overbearing. 3. Allowing the tree to stand for years in the sod. 4. Omitting to replace by artificial means the fertility which the crops of fruit draw out. 5. The want of sufficient moisture during droughts. In short, it is the enfeebled condition into which it is forced that causes the tree to die prematurely. Some secondary causes of decay are injury by borers, rabbits, mice, cattle and sheep, the plowshare and double-trees, heavy pruning and the sowing of grain among young trees.

In order to give trees a longer lease of life, we must hold the following points in view: A rich, deep, well-drained soil. In 1847-48 my father planted some fifty acres to orchard, mostly of apple-trees. About one-third was planted on the flattened ridge of a hill, one-third on the eastern side of it, and the other third at the foot. In from twenty to twenty-five years the trees on the side of the hill gradually died off, those on the ridge soon followed, but those on the lower ground stood for years after the others were gone. The reason for this was obvious: while the trees on the hillside and ridge were being deprived of the rich layers of top soil by rains and melting snows, those on the lower level not only retained most of the original soil, but received valuable additions. Some of the same varieties which stood on the lower ground were also distributed on the side and ridge. It is a serious mistake to plant apple-trees on poor soil. Nor should it be so steep that the best soil is soon washed away.

For strong constitution build up from the start. All planters of experience agree that young trees start off quicker than the old ones, become better established, and will live longer. Rich soil and cultivation will not only make the tree thrifty and strong, but it also tends to save it from the injury due to over-bearing. In thus building up, the tree will require some time longer to come into bearing, but to the gain of the future. Trees which naturally come late into bearing are strong and robust growers (probably because of this), as for instance the Yellow Bell Flower, Northern Spy, Large Romanite and others. These outlive by from ten to twenty years such early bearers as the Winesap, Ben Davis and the like.

Over-bearing of young trees. By this many are irreparably injured. Many planters are so afflicted with the early nickel in their eye that they sacrifice the prospective dollar. Trees just coming into bearing should be carefully watched, and if the crop forming is too large for their strength, the evil should be averted by thinning.

When the soil is not sufficiently rich it should be made so by applying fertilizers, or clover plowed under. For strengthening and renovating apple trees, wood ashes are the true elixir of apple tree life. Nothing is so deleterious as grain, while long continued grass-sod comes in second. These drain the moisture just when the trees most need it. After a few years of cultivation, clover may be sown to advantage, the first crop be used as mulch, and the second crop plowed under.

Mulching is a prime factor in keeping a tree at a vigorous, healthy growth. Enriching the orchard soil with manure is with many an impossibility, but a mulch, to a great extent, answers the same purpose. It retains moisture, and the trees will flourish in even a moderate soil. We have proofs of this in rainy seasons when crops flourish in even ordinary soils. For this purpose, straw, cornstalks, grass and even weeds, or as mentioned, clover, cut in the orchard, is near and easily supplied.



An example of the value of mulching. In my yard is a Ben Davis twelve years old, from the body of which the bark was gnawed several years ago by mules to such an extent that I considered the tree past all redemption. It never bore, and the limbs on the injured side (almost one-third of the tree) were in a dying condition. Last winter I piled our stove wood all around it four or five feet high, and to a radius of six or seven feet. The fruit set, and kept on growing on the sound limbs, which showed a considerable improvement in growth, and even the diseased limbs showed signs of life. The improvement continued all summer, in spite of drouth, and the tree ripened 1½ bushels of fruit. It would have died in a year but for the mulching.

A word of caution to the inexperienced: Never apply mulch close to the tree; under cover of it mice will girdle them, old or young, like a rabbit; besides, the fibrous roots or feeders are farther from the trunk. To get the best results mulch with a lavish hand, especially on a poor soil. It should extend out beyond the extremities of the limbs, leaving an open space around the trunk from two to three feet or more in diameter.

### The Apiary.

#### North American Bee keepers' Association.

Editor Farmer's Advocate:

DEAR SIR,—A report of the North American Bee-Keepers' Association—the most important upon the American continent, if not in the world—which held its 18th annual meeting at Chicago, 16th, 17th and 18th November, 1887, will no doubt be read with interest by your many subscribers. The fat stock show at Chicago enabled those attending to secure reduced rates from all points in the U. S. to Chicago. There were about 100 members present from various parts of the U. S. and Canada.

Dr. C. C. Miller, of Meringo, Ills., the president of the association, occupied the chair. Reports were received from various parts, and results of the last year's work by individual members. The United States has suffered more from the drought than Canada, the State of New York excepted. Reports were received from members present: their number of colonies, spring count, was 3,767; number of colonies, fall count, 4,348; amount of comb honey secured, 33,300 lbs.; amount of extracted honey secured, 28,000 lbs.; amount fed back for winter, 10,300 lbs.; with about 1,000 lbs. of bees-wax secured.

It will be seen by this that bee-keeping during the season of 1887 has not been a paying one.

It was reported that the price of honey had gone up considerably, but not as high as it should, when the shortage of crop was taken into consideration. The reason of this was considered to be that honey had not yet come to be considered as a staple food, such as potatoes, and if prices exceeded a certain figure many preferred to do without it. The necessity of insisting upon store-keepers keeping honey in view of their customers, was also discussed; and the advisability of bee-keepers putting forth greater efforts to have honey introduced in hotels, and as a step in this direction every bee-keeper was advised to ask for honey at the hotel where he might chance to stop. The production of comb and extracted honey in the same apiary received very full attention. Those present testified that some colonies would be found to work to advantage for comb honey, others for extracted, whilst they would not work profitably at securing either. When such colonies were found, it would only be

a loss of time to make them do that which they had no inclination for, therefore it was almost a necessity to work an apiary of any extent for both.

Legislation for bee keepers has received some attention of late in bee papers. By this is meant that bee-keepers want to arrive at some method by which they can control a certain area of country for their bees, and after going to expense in putting up buildings for that special purpose, or planting certain honey producing plants and the like, they could feel safety from encroachment by other bee-keepers. The pros and cons were warmly discussed, the difficulty of correct legislation pointed out, and a resolution as follows finally passed:—"That under existing views of bee-keepers it is not desirable to make any effort to secure such legislation."

The necessity of having statistics supplied by the government in reference to apiculture, as is done in other branches of agriculture, was pointed out. A proper and timely report of the seasons' crop would be of immense importance to bee-keepers. A promise was made by every member present that he would make every effort to get the government to take this step.

Mr. T. G. Newman read an able and carefully prepared paper, the subject being "The Objects and Methods of a Thorough Organization of the Bee-Keepers of America. The plan was to have one great central association, and have all other bee-keepers' associations throughout America affiliated with it and pay into its funds. This association should secure statistics; defend bee-keepers' rights; sell honey for bee-keepers if desirable; give a number of medals and prizes at exhibitions, and in other ways advance the interests of bee keepers. The paper was accompanied with a revision of the present constitution and by-laws of the present association. A committee was appointed to see into the matter, which reported before the close of the convention, recommending that the constitution and by-laws be published and discussed during the coming year, and then action be taken as seen fit at the next annual meeting.

The question of foul brood was taken up, and as a very deep interest, and even concern, is felt by all bee-keepers in this disease, it received full attention. The starving process had its advocates; carbolic acid was recommended, not only to cure the disease, but as a powerful agent to prevent its spread. N. N. McLean, who has charge of an experimental station—which the U. S. has established, with its sole object to experiment, and thus advance the interests of bee-keepers, which is so rapidly growing in importance—reported that he had cured hundreds of colonies by salt. Salt is fed diluted in such quantities as will be taken up by the bees. The combs are also sprayed and dipped in the solution, and almost every colony had yielded to the treatment. He then gave them a mixture to stimulate brood rearing. Another member advocated salt to cure foul brood, but several testified to the contrary, and many felt anything but convinced that the disease would yield to such treatment. It is to be hoped that ere another year passes bee-keepers will be in possession of more information on this disease. Should apiculture be followed by the specialists, or may it be combined with other pursuits, was discussed. With the exception of two or three the opinion was that it could very well be combined with other pursuits, and many of our most

prominent bee-keepers, and who had done as much, if not more, than the specialists, were shown to have had other pursuits. Dairying, poultry keeping and fruit culture, if we except such small fruits as are ripe during the swarming season, were advocated. A farmer, unless the members of his family were one and all determined to be afraid to have a swarm of bees, was shown to be able to profitably keep a number of colonies. A man who could only take up one pursuit, and it only, and only one branch of agriculture, was considered to lose many of the sources of enjoyment of life. Of course no one advocated that it was well to undertake too much, but there was an opening for a profitable investment in bees to many who engaged in other pursuits.

The production of extracted honey for table use was the next subject.

The importance of having honey well capped and ripened in the hive, careful handling of it after extraction, and placing it upon the table of the consumer in such a condition that it would induce that consumer to purchase again, was dwelt upon. A discussion followed upon the best package for wholesaling honey, tin or wood. Four-fifths of the convention were in favor of tin, as giving less trouble when the honey was granulated to liquefy. As to the cost of production of honey, it was shown to vary from two cents per lb. to \$3 per lb., depending upon the season. If honey was sold at present prices it would pay fairly well to produce it. If, however, as low as it had been sold for in the U. S. for some years, it would not net the specialist the wages per day of an ordinary laboring man. It was questioned if the specialist could produce the honey any cheaper than any other bee-keeper.

R. L. Taylor read a very able essay upon the wintering of bees. He stated bees required to be made comfortable. The very first requisite was that they should have the proper kind of food. Winter losses had been greatest when bees had secured doubtful stores in the fall. As a proof, bees wintered poorly in cellar and bee houses the same winter that they wintered poorly outside. From his experience the surest food was sugar syrup fed in the fall; such stores were always reliable. The next point in wintering was that bees should have enough stores to free them from all anxiety from that source. Then they should have them where they could be readily reached. An even temperature should be maintained, but he had found no great difference between 35° and 50°; only rapid changes he had found injurious. Bees wanted to be comfortable, and under such conditions they would winter well.

In the discussion which followed the advisability of feeding sugar syrup for winter stores was questioned. It would throw more honey on the market, besides the public would say that bee-keepers used it as honey. The general impression was that if good honey stores could be given it would be better, and there was no use trying to hide it; if a bee-keeper fed sugar for winter, if this was done it would only attract more attention. Honey was natural food for the bee, but it was native to a country where it could fly out every few days, and what under such conditions might be perfectly good, might be improved upon under varied conditions.

The next place of meeting selected was Toledo, Ohio.

Dr. A. B. Mason, Aurburndale, Ohio, was elected President; W. G. Hutchinson, Flint, Mich., Secretary; Mrs. M. Harrison, Peoria, Ills., Treasurer; with seven vice-presidents, one for each state and province represented. Yours,  
A BEE-KEEPER.



**Poultry.****Red Caps.**

Very many (the writer included) saw this kind of fowl for the first time at the Industrial Fair, Toronto, last fall. They were sent over the herring pond by an enterprising English firm for exhibition and sale, and as they were purchased by a Toronto man, we will in all probability hear more of them in the near future. They are to all appearances a useful bird, being plump, of medium size, and with a rose comb. The comb is of enormous dimensions, usually falling to one side from its great size and weight. While this is a serious drawback to them here in our climate, it is one that can be readily obviated, as the cold climate would tend to reduce the size, and careful breeding would do more. On the whole they are the most promising new bird we have seen from over the water.

**The Ontario Poultry Association.**

Just where this Association is drifting to is hard at present to say, but if the prizes keep dropping in the same ratio for the next three years that they have for the past, the Provincial Government would be justifiable in withholding the grant. Three years ago the prizes were on single birds just \$2.50; second, \$1.50; third, 50 cents. This on cock, hen, cockerel and pullet makes \$18 on each variety. It has gradually dropped, until now it stands, first, \$2; second, \$1; and no third, making \$12 in all, or a reduction of one-third. We very much regret that this should be the case, but just where the remedy lies we confess we cannot see. But if none can be found, better throw up the sponge and be done with it. And what makes the enigma more difficult, some towns and cities are keeping up a show without a government grant of \$500, and paying \$9 and \$10 on each variety. If any explanation can be made, these columns will be open to receive it, but there is, we feel disposed to believe, little short of mismanagement in the matter.

**Winter Care of Fowls.**

While good houses are of great import to fowls, good feeding is of greater. Give fowls proper food and a dry place to roost, and the results will be much better than if kept in a fine house and improperly or prodigally fed. Good ventilation is of great importance, more so than is generally supposed. How often we find hens cooped up in warm houses, and in good flesh, and hear the owners complain that they get very few eggs. Certainly warm quarters are all right, but not if kept warm by the heat from the bodies of the fowls and the air they breathe. Good food, dry quarters, with the run of an open shed, will give better health, more eggs and greater size, than a warm house and the same feed without ventilation.

Enclosed please find \$1, to renew my subscription to your valuable journal for 1887. It affords me much pleasure to be able to attest to the usefulness and large amount of valuable information contained in your journal, and I feel that of all the papers subscribed to by me, I can least do without the FARMER'S ADVOCATE. I wish every farmer in this "Province by the Sea" was a subscriber, for in no other way can they receive so fitting an education for their profession at so trifling a cost, as all articles are written in a plain, concise and intelligent manner. I cannot afford to be without it and wish you every success.—J. HOWE AUSTEN, Halifax, N. S.

**Veterinary.****Administering Medicines.**

Medicines may be administered in several forms, notably by drenching, giving balls, powders, injections, etc., the three former being most practiced. Dr. Fleming, principal surgeon in the British Army, gives the following useful directions:—

**HOW TO GIVE A BALL.**—Much care is required in administering medicines in the form of ball or bolus; and practice, as well as courage and tact, are needed in order to give it without danger to the administrator or the animal. The ball may be held between the fore-fingers of the right hand, the tips of the first and fourth being brought together below the second and third, which are placed on the upper side of the ball; the right hand is thus made as small as possible, so as to admit of ready insertion into the mouth. The left hand grasps the horse's tongue, gently pulls it out, and places it on that part of the right side of the lower jaw which is bare of teeth. The right hand carries the ball along and leaves it at the root of the tongue. The moment the right hand is withdrawn the tongue is released. This causes the ball to be brought still farther back. The operator then closes the mouth and looks at the left side of the neck, in order that he may note the passage of the ball down the gullet. Many horses keep a ball in the mouth a considerable time before they allow it to go down. A mouthful of water, or a handful of food, will generally make them swallow it readily. If this does not succeed, the horse's nostrils may be grasped by the hand and held for a few moments. A running halter should be used, so that the mouth may be quickly and securely closed.

If the operator has had but limited experience in giving balls, he should station an assistant on the near side to aid in opening and steadying the mouth, by placing the fingers of his left hand on the lower jaw, and the thumb of the right on the upper jaw. Holding the mouth in this manner facilitates the giving of the ball, and saves the operator's right hand, to a great extent, from becoming scratched by the horse's teeth. A most essential precaution to observe is to have the ball moderately soft; nothing can be more dangerous than a hard one.

**TO GIVE A DRINK OR DRENCH.**—This requires as much care as giving a ball, in order to avoid choking the horse, though it is unattended with risk to the administrator. An ordinary glass or stone bottle may be used, provided there are no sharp points around the mouth, though the usual drenching horn or a tin vessel with a narrow mouth or spout are safer. When giving the drink it is necessary to raise the horse's head, so that the nose be a little higher than the horizontal line. This may be done, if the horse is quiet, by an assistant; but if he is restless, it is necessary to keep the head elevated by a loop of cord inserted into the mouth over the upper jaw, the prong of a stable fork being passed through it, and the handle steadily held by the assistant. The drink is then to be given by a person standing on the right side (the assistant being on the front or on the left side of the horse), the side of the mouth being pulled out a little to form a sack or funnel into which the medicine is poured, a little at a time, allowing an interval

now and again for the horse to swallow. If any of the fluid gets into the wind-pipe (which it is likely to do if the head is held too high) coughing will be set up, when the head should be instantly lowered. Neither the tongue nor the nostrils should be interfered with.

POWDERS may be given in a little mash or gruel well stirred up.

**Chronic Indigestion in Cattle.**

This malady is caused by the greedy consumption of large quantities of food, especially after long fasting; by partaking of indigestible or bloating foods, moreover if followed by a large draught of water; eating frozen foods; or, if the stomach has been weakened and become inactive by feeding too concentrated rations, a normal ration of wholesome food may cause it. The appetite and the chewing of the cud are depressed or capricious; the muscles of the stomach are inactive, and sometimes cease to act; the space between the ribs and hip, on the left side of the body, is easily distended, similar to a very slight attack of bloating, from which it differs that in the former the food contained in the rumen can easily be felt on pressure, while the latter is drum-like. The secretion of milk is impaired, the excrements are voided irregularly and sparingly, sometimes hard and sometimes soft, afterwards covered with mucous, and fever sets in. For the first few days oat or barley extract should be fed, and then, when improvement is perceptible, a third part of a regular ration of easy digestion, is given, which is gradually increased to a full ration. Medicinal agents will be to give every four hours 1½ grains of tartar emetic and 13 grains of peppermint, which are best administered by mixing with syrup and smearing them on the tongue of the patient. If this is without effect, give 25 grains of hydrochloric acid in one quart of wormwood tea, or give the tobacco decoction described under "Laxatives for Cows."

A cure is only certain if the greatest care is bestowed on the patient's diet, even after a good appetite has been regained. Regular feeding of good, wholesome food is the best preventative.

**Laxatives.**

**FOR COWS.**—Dissolve ½-1 lb. of glauber salts (depending upon the size of the patient) in a quart of luke-warm linseed gruel, and administer this in the form of a drench. Repeat this dose if it has had no effect inside of eight hours. Or prepare a decoction of 2 ozs. of tobacco, made by boiling it in 1½ quarts of water, and then pressing out the leaves. To the liquid add ½ lb. of common salt. Administer this quantity as one dose, and if necessary repeat in 24 hours.

**FOR SWINE.**—Dissolve 1-2 drachms of glauber salts in sour milk and place it in their trough. If they do not take this dose voluntarily, mix the same amount of salts with syrup and smear on the patient's tongue; in addition to this give an injection of 1½ quarts of luke-warm water. Administering drenches to pigs is both troublesome and dangerous.

Why make your pigs so fat? Put on more lean.

Nine hundred dollars a day is the average of the oleomargarine receipts at the Chicago revenue office, indicating the manufacture of 47,000 pounds per day. There are less than one-half the number of houses that existed a year ago.



**Progressive Farming.**

**Influence of Feeding Stuffs on the Flavor and Consistency of Butter.**

The influence of all foods on the composition and quality of butter has not yet been determined with precision, much experimental work being yet required, but sufficient knowledge has been gathered to enable us to avoid all ordinary failures. In general, it may be stated that all spoiled foods, those exposed under excessively wet weather, frozen roots or foods in which the structure of the plant has been changed, and those having a heating, musty, fermenting smell should be avoided, while most fresh, clean and well-harvested foods may make fine-flavored butter if fed in proper rations. Complaints of inferior butter are often heard after a wet summer.

The special effects of the various feeding stuffs on the quality of butter deserve to be distinctly noticed:

**GRASS AND HAY.**—Our ordinary grasses, especially our native blue grass, as well as our clovers, if free from ill-flavored plants, produce a good quality of butter.

**STRAW.**—Liberal rations of straw produce a firm, white butter; but oat straw, fed in large quantities, is said to give the butter a bitter flavor.

**TURNIP LEAVES** are not objectionable when not fed in greater quantities than 30 to 40 lbs. per head per day, and when fed with a sufficient quantity of concentrated and coarse foods.

**ROOTS**, especially mangels, turnips, carrots, and potatoes, produce favorable results in the secretion of milk. Carrots produce the best flavored butter, next come mangels, while turnips give the milk and butter a sharp, unpleasant flavor. All attempts made to overcome this flavor have not always produced satisfactory results.

**POTATOES—raw**—produce a hard, crumbly butter, if they are not mixed with cut fodder; but sometimes no distinction can be detected in the butter from cooked and uncooked potatoes.

**MEAL.**—A distinction is to be drawn between the meals from the legumens and those from the cereals. Of the former, bean-meal is least injurious to the butter; pea-meal more so, and vetch meal, which arrests the milk secretion, is said to produce a hard, bitter butter. With reference to cereal meals upon the flavor and consistency of butter, there is little to be said, except, perhaps, that oats produce a favorable effect upon the secretion of milk and aroma of the butter. Wheat and rye bran seem to produce neither a favorable nor an unfavorable effect.

**OILCAKE**—Cotton seed cake, which is rapidly coming into use in the dairy, often reaches its destination in a spoiled condition, in which case it acts injuriously, but when fed fresh and in a good condition, no injurious effects have been observed.

**LINSEED CAKE** gives a good flavored but somewhat hard butter, but rape cake produces butter of a soft quality. The latter should be fed dry; for, by moistening, oil of mustard is developed, which produces a sharp flavor in the butter. *Palnut cake* and *palnut meal* yield a hard but well-flavored quality of butter. Fresh *malt sprouts* and *brewers' grains* can be safely

fed to milch cows. Distillery refuse reduces the durability of butter and produces a bitter taste.

**ENSILAGE** should be fed more or less cautiously, depending upon the condition of the ensilage and the quantity of wholesome food fed with it. Two years ago, experiments were conducted in Halle with corn ensilage. The ration was 40 lbs. good corn ensilage, 10 lbs. lucerne hay, 8 lbs. barley straw, 3 lbs. cotton-seed meal, and 1 lb. wheat bran per cow, which produced a butter of very inferior flavor and very soft, while a ration consisting of 40 lbs. of mangels instead of the ensilage, the other foods being the same as those just mentioned, produced a faultless butter.

**Losses Sustained in Feeding "Scrub" Stock**

Having shown, in another column, that with the present low prices there is practically no profit in the very best methods of stock raising, it will not be out of place to inquire whether low feeding and inferior stock are profitable investments, an estimate of which will be found in the following table:

COST OF FEEDING "SCRUBS."	
400 lbs. whole milk	\$4 00
1500 " skim milk	4 50
Pasture	2 00
1000 lbs. straw	2 00
350 " hay	1 75
1080 " roots	1 80
<b>Total cost of first year</b>	<b>\$16 05</b>
Six months pasture	\$6 00
2000 lbs. straw	4 00
500 " hay	2 50
2700 " roots	4 50
<b>Total cost of 2nd year</b>	<b>\$17 00</b>
Six months pasture	6 00
<b>Grand total for 2½ years</b>	<b>\$39 05</b>

These steers would at the most gain 1 lb. a day or weigh 900 lbs. at 2½ years of age, and would sell to drovers or feeders at the very highest for 3c. per pound, or \$27, leaving a direct loss of \$12 to the person raising them.

In the above estimate, we allowed the manure to cover the labor, interest, risks, etc. The manure is, of course, of less value than that of highly fed animals; but the labor and interest are also comparatively less, so that there will be very little, if any, difference between these two items.

The figures should clearly prove that our best policy is to feed liberally good grades for the English markets, and abandon the raising of scrubs for the Americans.

Before the British Association, Professor W. Fream called attention to the preventable losses of the British farmers. As sources of preventable loss, he cited, firstly, the imperfect working of the soil, frequently a result of insufficient capital; secondly, the use of bad seed, the most objectionable rubbish being sometimes sown; thirdly, the encouragement of weeds, such as charlock, red poppy, dack, spurrey, and black bent; fourthly, the deterioration of grass land, farmers in their choice of grasses being content if they get something green to grow, no matter what; fifthly, farm pests, both insect and fungal, of which the farmer was also ignorant; sixthly, diseases of live stock, which were little understood; and seventhly, injudicious expenditure upon artificial fertilizers and feeding stuffs, too many farmers being unwilling to pay the moderate fee required for the report of a chemical analyst, and still larger numbers not having education enough to understand the meaning of a chemical analysis when placed before them.

**Pasturing and "Soiling" Dairy Cows.**

Some years ago Dr. Rhode-Eldena, of Berlin, published an interesting account of a valuable and carefully carried out experiment that extended through fourteen years—seven of pasturing and seven of soiling. During the first seven years from forty to seventy cows were pastured each year, and a separate account was kept of each cow. The lowest average per cow was 1,385 quarts during the third year of the experiment, when seventy cows were kept, and the highest, 1,941 quarts during the seventh year, when forty cows were pastured, and the greatest quantity given by one cow was 2,933 quarts. The average increased during the last four years from 1,400 quarts to 1,941 quarts. The average per cow for the whole seven years of pasturing was 1,583 quarts.

In the soiling experiment twenty-nine to thirty-eight cows were kept, and the lowest average per cow was 2,930 quarts in the third year of the soiling experiment, when thirty-eight cows were kept, and the highest average per cow was 4,000 quarts during the seventh year, with thirty-five cows. The highest quantity given by one cow was 5,110 quarts. The average per cow for the whole seven years of soiling was 3,442 quarts. Then the yield of the same cow is compared for different years. One of the cows gave during the first year 3,636 quarts; during the fourth year 4,570 quarts, and the seventh year 4,960 quarts. Another cow gave during the first year 3,293 quarts, the fourth year 4,483 quarts, and the seventh year 4,800 quarts. During the summer the green food given was clover and vetches. The most noteworthy feature in this experiment was the great increase in the milk yield of the stall-fed cows from year to year. Not only did the cows remain healthy during the seven years of soiling, but the persistent high feeding, cake, and rye-bran having been given in addition to the succulent food, produced a steady increase of milk.

**Farmers' Indebtedness.**

We hear much, writes John M. Stahl to the Cultivator, about the indebtedness of the farmers of this country. The total of farmers' indebtedness is put at two billion dollars. This is truly a large amount. We cannot comprehend it. It is more than the national debt. But the value of our farm products every year is four billion dollars. That is, every year we produce twice our total indebtedness. Such being the case, our condition is not desperate by long odds. Why, if we were to be very saving for only one year—cut down our living expenses a little and save fully all we produced—the gain would pay all we owe. The farmers of this country do a big business; they own much property; compared with their business and property, their indebtedness is small. Nevertheless, we are in debt too often and too much. Some go in debt for fertilizers, some for land, some for luxuries of living. Our indebtedness ought to be much less than two billion dollars. We ought to be creditors; yet there are twenty farmers belonging to the debtor class to every farmer belonging to the creditor class. Debt is a very bad thing. Few things should make a man more sad than to put a mortgage upon his home. Farmers are often scolded for their readiness to put their signature to papers; and we must confess that we are too ready to put our names to papers that are the evidence of debt.—[Southern Cultivator, Atlanta, Ga.]



### Sheaves from our Gleaner.

It is reported that Danish butter is deteriorating in quality owing to an increased desire to produce quantity of milk rather than quality of butter, brought about by changes in the methods of feeding. Now is the time for Canada to make a big push in the butter business. Only 20 percent of the Danish butter in the English markets is reported as first class.

A German man of science (Dr. Krauss, of Halle) not long ago made some studies about fruit trees. He says that they sleep during the day, and do most of their growing by night. The fruit of the cherry laurel, for example, increases nine times as fast in the night as in the day. Apples, however, are not quite so lazy during the day, for their rate of growth at night is 80 percent, and 20 percent by day; that is to say, they toil only four times as quickly by night as by day.

Agricultural interests in Great Britain, according to Lord Derby, have in the last few years depreciated \$1,500,000,000, while the tenant farmers have lost \$600,000,000 in addition. So unprofitable has grain-growing become in the United Kingdom that the loss to tenants, in consequence of the "cheapness" brought about by "British enterprise" in Indian wheat culture, is set down at \$20 to the acre. Whole agricultural districts are bankrupted, the land is going out of culture, the idle peasants are flocking into the cities, registering as paupers and emigrating to other countries. Mulhall computes that in 1876 the landowners of England were mortgaged 58 percent. Since that time the value and income of the land have fallen off from 30 to 50 percent, while the interest on the 58 percent mortgages remains the same.

At a late fruit banquet of the London Vegetarian Society, Dr. Nichols said that fruit was a perfect food, and the apple alone was able to sustain life and health for a very long time. Why, then, he asked, needlessly take the life of any creature, when they had at hand so much delightful food? He had been a vegetarian for fifty years, and during that time he had only one week's illness. Mr. A. F. Hills pointed out that the vegetable feeders were among the strongest of animals, for example, the horse and the elephant. Dr. Allison was of the opinion that vegetarianism would do away with the need for the services of members of his profession. Fruit contained vegetable substances that were very useful in carrying away the injurious mineral matters that tended to increase in the system. A mixed diet of fruit and grain was the most valuable that could be devised.

Undoubtedly the best way to use bran as a fertilizer is to feed it, saving all the droppings, liquid and solid. But it can be used profitably without passing through an animal. I proved this by the following experiment: Upon a poor ridge planted with potatoes I applied a handful of bran to each hill in alternate rows, dropping it directly on the seed. When the rows without bran were eight inches high the others were a foot high, and the difference in growth was noticeable all summer. I weighed each row as dug, and found fifty percent more potatoes in the rows to which bran had been applied, and a much larger percent of marketable tubers. I prepared the bran by mixing it with an equal bulk of rich loam, then moistened it, allowed it to heat, turned, mixed thoroughly, and spread it

out until the heat subsided, when it was well decomposed. A friend of mine applied dry bran in the same way, and the seed was destroyed wherever it came in contact with the bran.—Waldo F. Brown in Phila. Press.

A correspondent of the Farm Journal says: When I moved on my present farm in 1870, I found an orchard, containing a few trees planted 68 years before, some about 25 years old, and a goodly number planted but two and three years before. From that time to this it has been my pig and sheep pasture, from 5 to 40 pigs, and from 10 to 50 sheep having the run of it almost constantly during the open seasons. The oldest trees are gone, with the exception of a single stump. Those more recently planted have improved in appearance and bearing capacity at least one hundred percent, and are this year loaded with clean, smooth sound apples. The youngest lot, such of them as have not been destroyed by various causes, mainly the result of carelessness, have borne admirably for several years, and the fruit gets better, in quality, smoother, sounder and freer from knots and worms every year. This year it is splendid.

The following was recently sent from Washington: "The report of Consul-General Bonham, at Calcutta, British India, treats at length of the wheat interests of that country during the fiscal year ended March 31, 1886. The area devoted to wheat was about 27,500,000 acres, and the total yield 289,000,000 bushels. As compared with the wheat of the Pacific Coast, the Indian wheat is inferior, but when exported to Europe it is mixed and ground with wheat of a superior quality, by which process a fair marketable grade of flour is obtained. The method of cultivating the soil is, in the main, the same as it was centuries ago, and there seems to be great difficulty in inducing the farmer to invest in modern agricultural implements, and yet with all the simple and primitive methods the Indian farmers can, in the opinion of the consul-general, successfully compete with those of the United States in the production of wheat. This is due to the fact that the Indian farmer's outfit represents a capital of not more than \$40 or \$50, and his hired help works, feeds and clothes himself on about \$2.50 a month. A table is annexed showing that the export of wheat from British India has increased from 300,000 cwt. in 1868, to 21,000,000 cwt. in 1886, and that the increase of 1886 over 1885 amounts to about 5,000,000 cwt. The consul-general says that some of his predecessors have claimed that the United States have nothing to fear from India as a competitor in the production of wheat. In this view he does not concur, and believes that to-day India is second only to the United States in wheat growing. Furthermore, wheat-growing in India is yet in its infancy, and its further development depends principally upon the means of transportation to the seaboard. He fears that with the cheap native labor of India and the constantly growing facilities for transportation, the United States will find her a formidable competitor as a producer of the staff of life."

### Agents! Agents!

Active, responsible agents wanted to canvass for the Farmer's Advocate. An excellent opportunity of seeing the country. Steady employment and good terms.

### PRIZE LISTS.

(Continued from our Nov. issue.)

#### CATTLE.

##### John Leys, Toronto, Ont., Holsteins.

*Dominion and Industrial Exhibition, Toronto*—1st for bull, 3 years old and upwards; 2nd for bull, 2 years old; 1st for bull, 1 year old; silver medal, highest award; 1st and 3rd for cow, 4 years old and upwards; 1st and 2nd for cow, 3 years old; 1st, 2nd and 3rd for heifer, 2 years old; 1st for heifer, 1 year old; 1st for heifer calf under 1 year; 1st and silver medal, highest award for herd of 1 bull and 4 females over 1 year.

*Provincial Exhibition, Ottawa*—1st for bull, 1 year old; 1st for bull calf, under one year; diploma, 1st and 2nd for cow, four years old and upwards; 1st, 2nd and 3rd for cow, 3 years old; 1st and 2nd for heifer, 2 years old; 2nd for heifer, 1 year old; 1st for heifer calf, under 1 year; 1st and diploma for herd of 1 bull and 4 females, over 1 year.

*Great Central Fair, Hamilton*—1st for bull, 3 years old and upwards; 1st for bull, 1 year old; diploma for bull of any age; 1st and 2nd for cow, 4 years old and upwards; 2nd for cow, 3 years old; 1st and 2nd for heifer, 2 years old; 1st for heifer, 1 year old; 1st for heifer calf, under 1 year; 1st and diploma for herd of 1 bull and 4 of his get.

The Oakdale Herds were only exhibited at these three fairs in 1887, and won more medals, diplomas and money than were ever won at same number of exhibitions by any herd in Canada.

#### SHEEP.

##### Peter Arkell, Teeswater, Ont., Oxford Downs.

*Dominion and Industrial Exhibition, Toronto*—1st and 3rd, aged rams; 1st, 2nd and 3rd, shearing rams; 1st and 3rd, ram lambs; 1st and 2nd, aged ewes; 1st and 2nd, shearing ewes; 1st and 3rd, ewe lambs; 1st and 2nd, pen of Oxfords.

*Provincial Exhibition, Ottawa*—1st and 2nd, aged rams; 1st and 2nd, shearing ram; 1st and 2nd, ram lambs; 1st and 2nd, aged ewes; 1st and 2nd, shearing ewes; 1st and 2nd, ewe lambs; jubilee silver medal; 1st for fat ewe.

*Great Central Fair, Hamilton*—1st and 2nd, aged rams; 1st and 2nd, shearing rams; 1st, ram lamb; 1st, aged ewe; 1st and 2nd, shearing ewes; 1st ewe lamb; diploma for pen Oxford Downs.

#### PIGS.

##### Richard Delbridge, Wincheslea, Ont., Berkshires.

*South Huron, Exeter Fair*—1st for Berkshire aged boar; 1st for boar littered in 1887; 1st for sow littered in 1887.

*South Perth, St. Mary's Fair*—1st for aged boar; 1st for sow littered in 1887; 2nd for boar littered in 1887.

*Kirkton Fair*—1st for aged boar; 1st for sow under 1 year old; 2nd for boar under 1 year old.

### Commercial.

(FARMER'S ADVOCATE OFFICE.  
London, Ont., Dec. 5, 1887.)

The past month has been one of unusual drouth throughout the whole country. Farmers have been drawing water for miles, and wells that have held out all summer have the past month gone dry. This state of affairs has prevailed not only in Canada, but through nearly all the Western States. In some parts water has been conveyed by the railways for the use of the farmers, and also some towns. But a copious rain came down on the 25th, 26th and 27th, and the drouth is broken.

#### WHEAT

Has taken an upward turn, and now that the ball has been set rolling up hill, we may look for a considerable advance (with an occasional reverse) during the next three months. Wheat has been too cheap for the past two or three years, and now that a change for the better has begun we hope to see the reaction continue till a fair value has been reached, say 90c. to 95c. or the even dollar.

#### WHEAT IN SIGHT.

The total quantity of wheat in sight on this continent and afloat to Europe is 50,710,000 bushels, a decrease of 1,642,000 bushels compared with a week ago, a decrease of 152,000



with two weeks ago, an increase of 2,094,000 with three weeks ago, an increase of 5,739,000 with four weeks ago, and a decrease of 31,422,000 with a year ago.

The following table shows the total quantity of wheat in sight according to the Chicago statement of the visible supply and the amount afloat to Europe:

Table with 2 columns: Date and Bushels. Rows include dates from Nov. 26, 1887 to Nov. 27, 1886, with corresponding bushel counts ranging from 50,710,000 to 82,132,000.

The following is taken from the Cincinnati Prices Current, and gives the ideas of a number of leading provision and grain dealers in the Western States. Names are omitted:

While from a present standpoint we regret the advance at the present time in provisions, yet we cannot keep feeling that it is legitimate, and that later the product will be higher, and go into consumption at higher prices. We can only form conclusions from observations and what we hear, and from every point where we have inquired in regard to the supply of hogs we have had the same answer: "The hogs are being rapidly marketed, and all the good hogs will be in by Christmas." If this is so, there can be only one course for the market to take, and that is upward. Of course there must be a limit to the advance, and the only danger to the trade that we see is that speculation will put the price up beyond a legitimate value. We fear this will be the case. When the receipts of hogs begin to fall off and all the new Western houses are running, the demand for the hogs will be so urgent and competition so brisk for them, our impressions are that such will be the case, and that we will see our highest prices during January.

The questions you ask are very difficult to answer. The trade here is bullish, and even packers, when they sell on a bulge, buy the stuff back on any fair break, being afraid to stay short, and the general feeling seems to be that in 30 or 60 days hence we will see much higher prices than now. But the market is a nervous one, and the advance comes early in the season, and some look for a crash even before January. I expect to see higher prices in January than now. I don't know that any material break is looked for at any particular time, nor for any special reason. Receipts of hogs are not excessive, nor are they expected to be. Corn don't go down, but if corn should get a big break and very large receipts of hogs at the same time, the market would no doubt break, but I doubt even then if the decline would last long, unless prices were forced up very much higher than now.

We think that the tendency of both wheat and corn is clearly toward higher prices, the bullish influences being moderate stocks, good demand present and prospective, both at home and abroad, and a satisfactory and increasing speculative interest on the long side. "Outside" speculators have chiefly profited by the advance so far, encouraging them and others to take hold

again. In corn, reports of disappointing yield are also favorable to higher prices.

The depressing features both in wheat and corn are the prospects of increasing receipts and stocks, from the liberal supplies in first hands—and these influences, for the immediate future, may cause considerable reactions, especially as both markets may now be called very "long."

Since the publication of your last estimate of the supplies of wheat in this country, we have felt that higher prices are in order. Our conviction has been that the depression in the price of wheat for the past two years was mainly the result of previous over-production and the weight of excessive supplies on the wheat markets of the world. We now believe that these excessive supplies have been exhausted, and, if this be true, we cannot see that there is anything in the risings of this year to warrant a continuance of the very low range of prices that has prevailed. As the cereal year progresses we look for a permanent advance in the value of wheat, and we shall not be surprised to see this advance (which appears to us inevitable) anticipated in price by a renewal of speculative confidence, and speculative operations on the bull side of the wheat market.

The present strength in our market to my mind is a little premature, consequently I have not enthused much, though am bullish in my feelings, and look for much higher prices on the whole list ultimately, believing the actual conditions warrant it. I will not go into figures on either wheat or corn, for in this line you are much better posted than I am, but will give the outlook here as it appears to me. In wheat, the bearish feeling that has prevailed for past three years is not entirely eradicated, but to a looker on it is evident the majority of operators are gradually working into the belief that an "inning" for the bulls is about due, and where as a rule they have first sold stuff they now buy first, and act as if they believed stuff had some value. In this way confidence is gradually being restored, and trade generally shows marked improvement. To my mind, it is safe to look for an active business during the balance of this crop year, and for a better range of prices than have prevailed since the June panic, from legitimate causes.

We think the advance in provisions has been premature, and we shall have a liquidation of present holdings before there is any permanent advance. While the outsiders have been buying, there is not enough assistance from large centres to make the advance substantial; hence we anticipate for near futures lower prices, and probably later on shall have another improvement in values.

The statistical position of both wheat and corn seems to me to be stronger than in many years before. In wheat it seems that consumption has at last overtaken production, and that the market will not hereafter be depressed by overwhelming stocks. The rush of spring wheat in the North-west has caused no important increase of stocks, and the demand for flour is active at good prices all over the world. We have reached this condition of affairs without much advance in prices, and the trade seems generally in a more hopeful state, and I look for a steady advance. The gloomy outlook for the winter wheat crop emphasizes the strength of the position, though this will doubtless have more effect on prices next spring.

As to corn, I have no doubt we shall have very high prices for it. This is the first year in my recollection when feeding crops were short in all countries. The surplus of the large crop of 1886 has been used up, and there is now practically no stock at any point of accumulation in the world. There will be a good demand for export, both to the United Kingdom and the Continent of Europe, and we have produced less than our own average requirements for consumption. I don't see how we can spare much to go abroad. With the revival of speculation, already apparent, in breadstuffs, it does not require the gift of prophecy to foretell the possibilities of the corn market during the next six months. The short crop of 1881 sold above 75c. in Chicago. Taking the world over, there is much greater scarcity this year than then.

PORK.

Both dressed and live hogs are in good demand, and we look for steady prices the coming winter, although a good deal depends on the weather, steady cold weather being much more conducive to good steady markets for dressed hogs especially. The opinions and ideas expressed by the Chicago correspondents of the Cincinnati Prices Current given above, will give our readers a good idea of the views of dealers in provisions in the west.

BUTTER.

The following is from the Montreal Gazette: Shipments of butter from Portland last week were 650 packages, all on through account, and it is believed that exporters here have done little or nothing for this week's shipment. Local trade has been fair, and all choice butter has a ready sale, but when it comes to moving any quantity there is not much of a market.

Table with 2 columns: Location and Price. Rows include Creamery, Townships, Morrisburg, Brockville, and Western, with prices ranging from 15 to 20.

Elgin, Ill., November 28.—Butter market opened brisk at 30c., with offerings of good fair up to the close, and sold up to 31c.

CHEESE.

The cheese trade is not in a satisfactory state, and seems to lack animation. Holders who have been holding out for higher prices are now getting tired and beginning to weaken. The Utica Herald comments as follows:—

We expect ere long to see prices moved up somewhat, but it will take a considerable advance to allow the stock that was bought in August and September at 11 3/4c. @ 12 1/4c. to be marketed at a figure that will let the purchaser out even on the investment. September stock that was bought in late October or early November at 11c. @ 11 1/4c. stands on an entirely different footing, and is likely to make a little profit for the owner. There is fully 3c. difference between the market now and at the same time last year, and that difference is in favor of last season. But receipts since May 1 have been 93,661 boxes in excess of last year, and exports 78,666 boxes greater than last year, and with such a decided difference in these figures it is hardly to be expected that the market would show as high figures as prevailed last season. Even allowing that our export trade from now till May should be as good as it was in '85-6, we should still have a hundred thousand more boxes to dispose of the home trade than we had then, with that trade better stocked to begin with. We cannot discover any good reasons for higher prices, save that the merchants have got the stock, and by a combined effort can put it up. But it is one thing to ask more for the goods, and another thing to get it. We fear that any marked addition to prices would check the trade, and lessen the chance of disposing of the cheese. If business is allowed to take its natural course, there will be some natural advance that will not create antagonism; but if an attempt is made to corner the market, the result will be a dull trade through the winter, and a scramble to get out in the spring, with everybody feeling that the devil will take the hindmost.

We can see nothing to warrant more than 10 1/2c. @ 11c. being paid for finest September and October cheese, and we think factory-men would do well to sell at these figures, and close out the season's trade. It certainly would be much better to do that than to hold on into or through the winter, and then take the same money, or possibly less.



**Farm Produce.**  
PRICES AT FARMERS' WAGONS.

Toronto, Dec. 3, 1887.

Wheat, fall, per bushel	\$0 80	0 83
Wheat, red winter, per bushel	0 80	0 83
Wheat, spring, do.	0 77	0 80
Wheat, goose, do.	0 72	0 73
Barley, do.	0 60	0 78
Oats, do.	0 38	0 40
Peas, do.	0 00	0 63
Dressed hogs, per 100 lbs.	5 75	6 25
Chickens, per pair	0 33	0 45
Butter, pound rolls	0 22	0 55
Eggs, fresh, per dozen	0 20	0 22
Potatoes, per bag	0 95	1 00
Apples, per barrel	1 50	2 25
Onions, per doz.	0 15	0 20
Do. per bag	2 00	2 25
Carrots, per doz.	0 40	0 50
Turnips, white, per bag	0 40	0 30
Rhubarb	0 40	1 00
Cabbage, per doz.	0 50	1 00
Celery	0 40	1 00
Beets, per peck	0 00	0 25
Radish, per doz.	0 00	0 20
Caulliflowers, good	1 00	1 50
Peas, per bag	0 00	1 25
Beans, per bush.	0 00	1 50
Tomatoes, per bush.	0 75	1 00
Hay, per ton	10 00	17 00
Straw	10 00	14 00

THE HORSE MARKET.

The Toronto Mail says: Business has picked up very much this week. The local demand is better than it has been for some time past. On Tuesday a New Hampshire buyer shipped a load to the States. On Tuesday, at Grand's repository, 30 horses were sold at prices ranging from \$70 to \$135 for driving and general purposes.

LIVE STOCK MARKETS.

Buffalo, Nov. 28, 1887.

**CATTLE.**—Receipts, 11,820 against 9,520 the previous week. The offerings of cattle on Monday consisted of 217 car loads. With the exception of a few loads of extra which were taken for export the quality of the offerings was not up to that of last week. The demand for all other grades was limited from all parts, while prices were regarded fully 15 cents lower. Good 1,400 to 1,500 lb. steers \$4@4.85; good 1,300 to 1,400 lb. do., \$4.20@4.60; good 1,200 to 1,300 lb. do., \$3.80@4.10; good 1,100 to 1,200 lb. do., \$3.50@3.85, and common to good 1,000 to 1,100 lb. do., \$3.20@3.50; mixed butchers' and cows and heifers, slow at \$2.75@3.25; fat bulls, \$2.25@3; stock do., \$2; stockers and feeders were in better demand. There were 45 car loads on sale Tuesday. The offerings were mainly coarse heavy butchers' steers and light ones. All classes of cattle were dull and 10 cents lower. There were 15 car loads on sale on Wednesday. Good cattle were firm, but common were dull. On Saturday only 305 cattle were received. The market was quiet, closing at the following

QUOTATIONS:

Extra Beeves—Graded steers weighing 1,300 to 1,450 lbs.	\$4 75	@5 10
Choice Beeves—Fine, fat, well-formed steers, weighing 1,300 to 1,400 lbs.	4 20	@4 60
Good Beeves—Well-fattened steers weighing 1,200 to 1,350 lbs.	3 75	@4 10
Medium Grades—Steers in fine flesh, weighing 1,100 to 1,200 lbs.	3 50	@3 85
Light Butchers'—Steers averaging 1,000 to 1,100 lbs. of fair to good quality.	3 25	@3 50
Butchers' Stock—Inferior to common steers and heifers, for city slaughter, weighing 900 to 1,000 lbs.	2 50	@3 15
Michigan stock cattle, common to choice.	2 50	@2 75
Michigan feeders, fair to choice.	2 90	@3 10
Fat bulls, fair to extra.	2 25	@3 00

**SHEEP.**—Receipts 37,800, against 31,000 the previous week. There were 54 loads of sheep on sale Monday. The eastern demand was light, but there was a fair trade to fill orders, and prices were firm for sheep, and 10@15 cents higher for lambs. Common to fair sheep sold at \$3.50@4; good to choice, \$4.25@4.75, and fair to choice lambs, \$5@5.75. The market was steady on Tuesday and ruled firm on Wednesday.

The market on Saturday was dull and weak and lower. Common to fair sheep sold at \$3.25@3.75; good to choice \$4@4.50; fair to choice lambs at \$4.75@5.50.

**HOGS.**—Receipts 96,376, against 82,038 the previous week. The offerings of hogs on Monday consisted of 185 car loads. The demand was active at about Saturday's prices. Pigs, \$4.65@4.75; light mixed Yorkers, \$4.75@4.80; selected Yorkers, \$4.90@5; all the mediums sold to the trade brought \$5.05; extra medium weights, and choice heavy to outsiders, \$5.10@5.15; rough, \$4.25@4.50; stags, \$3.50; quite a number of loads arriving late were left over. The offerings on Tuesday were large, the demand fair at a decline of 10 cents, but prices on Wednesday advanced 5 cents. On Saturday the hog market was active and steady. Pigs, sold at \$4.40@4.60; good to choice Yorkers, \$4.90@5; fair do., \$4.63@4.80; selected medium weights, \$5@5.25; good to choice heavy, \$5.15@5.25.

Correspondence.

**NOTICE TO CORRESPONDENTS.**—1. Please write on one side of the paper only. 2. Give full name, Post Office and Province, not necessarily for publication, but as guarantee of good faith and to enable us to answer by mail when, for any reason, that course seems desirable. If an answer is specially requested by mail, a stamp must be enclosed. Unless of general interest, no questions will be answered through the ADVOCATE, as our space is very limited. 3. Do not expect anonymous communications to be noticed. 4. Matter for publication should be marked "Printers' MS." on the cover, the ends being open, in which case the postage will only be 1c per 4 ounces. 5. Non-subscribers should not expect their communications to be noticed. 6. No questions will be answered except those pertaining purely to agriculture or agricultural matters.

Correspondents wanting reliable information relating to diseases of stock must not only give the symptoms as fully as possible, but also how the animal has been fed and otherwise treated or managed. In case of suspicion of hereditary diseases, it is necessary also to state whether or not the ancestors of the affected animal have had the disease or any predisposition to it.

In asking questions relating to manures, it is necessary to describe the nature of the soil on which the intended manures are to be applied; also the nature of the crop.

We do not hold ourselves responsible for the views of correspondents.

**Chronic Indigestion in Horses.**—I have a valuable horse which is troubled with some disease which I at first considered to be colic, but the treatment for that disease gave him only very temporary relief. When out in pasture he throws himself down, groans and rolls violently. He then gets up, feeds for a short time, after which the same symptoms are repeated. When at work he attempts to pass water every few minutes, but only succeeds in raising a few drops of a creamy color at the time. His appetite is almost ravenous, and his skin seems to be itchy, for the hair at the root of his tail has been entirely rubbed off, but still his coat of hair is nice and smooth. His food, when in the stall, consists of sound oats, clean hay, carrots, potatoes and boiled barley and bran.—T. C. Morden, Man.

[Your horse is likely suffering from chronic indigestion, for which a good treatment is to give a purgative compound of 7 drachms of barbaodes aloes and 2 drachms each of ginger and bi-carbonate of soda; mix these together, dissolve them in a pint of water and give it as a drench. Follow this by a tonic containing equal parts of ginger, gentian and sulphate of iron. Of the tonic, give 3 drachms, night and morning, until the patient is well, and repeat the purgative in about 10 days. Feed only wholesome foods and not too much of them. If the itch does not stop after this treatment, wash the affected places with a solution of 2 oz. of bi-carbonate of soda in a pint of water.]

**Transplanting Grapes.**—Can grape vines be transplanted when 6 to 8 years old?—J. S. L., Blenheim, Ont.

[It is not a customary practice; but, on a small scale, we have been successful in transplanting vines of that age.]

**Hand Cream Separator.**—Would you kindly give me, through your paper, more information about the hand cream separator, for instance, the price.—Z. P. E., Lower Frink Village, N. B.

[There are two sizes manufactured, the smaller of which has been fully described in our April issue of this year. The capacity of the larger is about 50 percent greater than the smaller one. We cannot give Canadian prices, as they are, so far as we know, not sold in Canada. Messrs. J. S. Pearce & Co., of this city, tried to make arrangements to handle them last spring, but owing to some circumstances they were unsuccessful. They are likely to be had next season.]

**Pig Pen and Hen House.**—I am thinking of building a pig pen and hen house combined. I would like some of the subscribers of the ADVOCATE to give, through the ADVOCATE, a good plan of one, the building to be of wood, large enough to hold say fifteen pigs and forty or fifty hens.—W. E. A., Drayton.

[We have never seen a pig pen and hen house combined, and think it would not be a very desirable plan, especially if the two departments are not completely partitioned off. If any of our subscribers have had experience in the matter we would be pleased if they would forward it to us for the benefit of our correspondent.]

**Restoring Worn Out Land.**—The rear fields of my farm have been run out by the former owner growing oats and pasturing. I commenced on one field last year by sowing buckwheat and plowing under when in flower, following with winter rye; the rye did not succeed, so I decided to grow my roots and fodder corn there, and I gave it all my winter manure with some superphosphate and bone dust, and got middling good crops, considering the dry season. I propose next spring to sow black barley and clover, cut one crop clover early, plow down aftermath, and follow next spring with wheat, and seeding down to grasses and clover to remain in hay three years, and I cannot give it any more manure till it comes again in roots. I would like to follow this rotation on other fields, and will thank you to let me know in a few words in next issue of your magazine, if this will work, and whether the plowing down clover will leave the ground rich enough to insure the grasses catching, which is the main point in my question, as I know the effect of the clover on wheat? We cannot grow winter wheat in this section.—"CLOVER," Picton, N. S.

[Your plan will answer well on a clay or clay loam deficient in vegetable matter. But on a sandy soil it would be necessary to apply ashes or some other potash fertilizer in addition to those employed by you. To ensure a good growth of clover, it is desirable to apply a dressing of gypsum, but as this is not a direct fertilizer, and only acts by decomposing plant food, especially potash, which is much needed for clovers, its action will be of no use, unless the soil has been manured or contains natural fertility.]

**Marketing Hogs—Paying Notes.**—Please answer the following questions: 1st. Have pork buyers any right to take 2 lbs. off each hog after it has been weighed on the market scales? 2nd. Can a person be compelled to pay a protest on a note when he is not notified when it is due, and who holds it; or is it the law to notify before it is due at all? There seems to be something wrong about our laws. There were a number of sale notes sold, and every one of them was protested before the makers were notified who held them. They could have been all paid if notified in time.—W. C., Morriston, Ont.

[1.—Custom has established the law that one pound be deducted from the gross weight of all hogs weighing 100 lbs. or under, and two lbs. from all hogs over this weight. When the hogs are weighed on the market scales, the official weigher makes the reduction, and the buyer has no right to further reduce the weight; but if the buyer weighs the hogs on his own scales, he is permitted to make the necessary reductions. 2.—The holder of a note has a right to say whether it shall be protested or not if not paid at maturity. The maker is supposed to know when his note falls due, but in business he is usually notified. The maker can always know where his note is to be paid by writing in it the place of payment, which is usually at some bank. The maker can therefore not complain of hardships in the law. Business men do not usually protest notes, as their business would be injured by doing so; but bad customers may look out for protests. The notarial fees must usually be paid by the maker of the note.]



Family Circle.

Santa Claus in the Pulpit.

BY REV. WASHINGTON GLADDEN.

"One and a half for Billington!"

The speaker was standing at the ticket window in the Great Western Railway. Evidently he was talking about tickets: the "one" was for himself, the "half" for the boy who was clinging to the small hand-satchel, and looking up rather sleepily at the ticket-seller's face.

"When do you wish to go to Billington?" inquired that official.

"On the next train; eleven o'clock, is n't it?" asked the traveler.

"That train does not run Saturday nights; no train leaves here for Billington until to-morrow, at midnight!"

"But this train is marked 'daily' in the guide."

"It was a daily train until last month."

"Well, here's a how-d'ye-do!" said the tall gentleman, slowly; only three hours' ride from home, on the night before Christmas; and here we are with no help for it but to stay in Chicago all Christmas Day. How's that, my son?"

"It's bad luck with a vengeance," answered the lad, now thoroughly awake, and almost ready to cry. "I wish we had staid at Uncle Jack's."

"So do I," answered his father. "But there is no use in fretting. We are in for it, and we must make the best of it. Run and call that cabman who brought us over from the other station. I will send a message to your mother; and we will find a place to spend our Sunday."

This was the way it had happened; Mr. Murray had taken Mortimer with him on a short business trip to Michigan, for a visit to his cousins, and they were on their return trip; they had arrived at Chicago, Saturday evening, fully expecting to reach home during the night. The ticket-agent has explained the rest.

"Take us to the Pilgrim House," said Mr. Murray, as he shut the double door of theansom; and they were soon jolting away over the block pavements, across the bridges, and through the gaily lighted streets. It was now only ten o'clock, and the Christmas buyers were still thronging the shops, and the streets were alive with heavily-laden pedestrians who had added their holiday purchases to the Saturday night's marketing, and were suffering from the embarrassment of riches. Soon the carriage stopped at the entrance of the hotel, and the travelers were speedily settled in a second story front room from the windows of which the bright pageant of the street was plainly visible.

While Mortimer Murray is watching the throngs below, we will learn a little more about him. He is a fairly good boy, as boys average; not a perfect character, but bright and capable, and reasonably industrious, with no positively mean streaks in his make-up. He will not lie; and he is never positively disobedient to his father and mother; though he sometimes does what he knows to be displeasing to them, and thinks it rather hard to be reproved for such misconduct. In short, he is somewhat self-willed, and a little too much inclined to do the things that he likes to do, no matter what pain he gives to others. The want of consideration for the wishes and feelings of others in his greatest fault. If others fall in any duty toward him, he sees it quickly and feels it keenly; if he falls in any duty toward others, he thinks it a matter of small consequence, and wonders why they are mean enough to make such a fuss about it.

This is not a very uncommon fault in a boy. I fear; and boys who, like Mortimer, are often indulged quite as much as is good for them, have great need to be on their guard against it.

Before many moments Mortimer wearied of the bewildering panorama of the street, and drew a rocker up to the grate near which his father was sitting.

"Tough luck, isn't it?" were the words with which he broke silence.

"For whom, my son?"

"For you and me."

"I was thinking of your mother and of Charley and Mabel; it is their disappointment that troubles me most."

"Yes," said Mortimer, rather dubiously. In his regret at not being able to spend his Christmas day at home, he of course had thought of the pleasure of seeing his mother and his brother and sister and the baby; but any idea of their feelings in the matter had not entered his mind. Only a few hours before, in the Murray's home, Nurse with the happy baby in her arms had said to Charley and Mabel:

"Cheer up, children, and eat your supper. Your papa and Master Mortimer will surely be here by to-morrow."

But Mortimer so many miles away had not heard this. Now he glanced up at his father and spoke again:

"When shall we have our Christmas?"

"On Monday, probably. We can reach home very early Monday morning. We should not have spent Sunday as a holiday if we had gone home to-night. Our Christmas dinner and our Christmas-tree must have waited for Monday."

"Do you suppose that mother will have the tree ready?"

"I have no doubt of it."

"My! I'd like to know what's on it?"

"Don't you know of anything that will be on it?"

"N—no, sir."

Mortimer's cheeks reddened at the questioning glance of his father. He had thus suddenly faced the fact that he had come up to the very Eve of Christmas without making any preparation to bestow gifts upon others. He had wondered much what he should receive; he had taken no thought about what he could give. Christmas, in his calendar, was a day for receiving, not for giving. Every year his father and mother had prompted him to make some little preparation, but he had not entered into the plan very heartily; this year they had determined to say nothing to him about it, and to let him find out for himself how it seemed to be only a receiver on the day when all the world finds its chief joy in giving.

Mortimer had plenty of time to think about it, for his father saw the blush upon his face, and knew that there was no need of further words. They stood there silent before the fire for some time; and the boy's face grew more and more sober and troubled.

"What a pig I have been!" he was saying to himself. "Never thought about getting anything ready to hang on the tree! But then I've had lots of time for skating and tobogganing, and all that sort of thing. Wonder why they didn't put me up to think about it myself. Guess I am. I'd like to kick myself anyhow!"

With such discomfiting meditations, Mortimer peered into the glowing coals; and while he mused, the fire burned not only beneath his feet but within the breast as well—the fire of self-reproof that gave the baser elements in his nature a wholesome scorching. At length he found his pillow, and slept, if not the sleep of the just, at least the sleep of the healthy twelve-year old boy, which is generally quite as good.

The next morning, Mortimer and his father rose leisurely, and after a late breakfast walked slowly down the avenue. The air was clear and crisp, and the streets were almost as full of worshippers as they had been of shoppers the night before; the Christmas services in all the churches were calling out great congregations. The Minnesota Avenue Presbyterian Church, which the travelers sought, welcomed them to a seat in the middle aisle; and Mortimer listened with great pleasure to the beautiful music of the choir, and the hearty singing of the reading and in the prayer, though his thoughts wandered more than once to that uncomfortable subject of which he had been thinking the night before; and he wondered whether his father and mother and the friends who knew him best did really think him a mean and selfish fellow.

When the sermon began, Mortimer fully determined to hear and remember just as much of it as he could. The text was those words of the Lord Jesus that Paul remembered and reported for us:

"It is more blessed to give than to receive." And Doctor Burrows began by saying that everybody believed that at Christmas-time; in fact, they knew it; they found it out by experience; and that was what made Christmas the happiest day of the year. Mortimer blushed again, and glanced up at his father; but there was no answering glance; his father's eyes were fixed upon the preacher. The argument of the sermon was a little too deep for Mortimer, though he understood parts of it, and tried hard to understand it all; but there was a register in the aisle near by, and the church was very warm, and he began looking down, and after a while the voice of the preacher ceased, and he looked up to see what was the matter, and there in the pulpit, was who was it? *Could it be?* It was a very small man, with long white hair and beard, and ruddy cheeks, and sparkling eyes, and brisk motions. Yes; Mortimer had quite made up his own mind that it must be he, when a boy by his side, whom he had not noticed before, whispered:

"Santa Claus!"

This was very queer indeed. At least it seemed so at first; but when Mortimer began to reason about it, he saw at once that Santa Claus, being a saint, had a perfect right to be in the pulpit. But soon this did not seem, after all, very much like a pulpit; it had changed to a broad platform, and the rear was a white screen against the wall; and in place of a desk was a curious instrument, on a tripod, looking something like a photographer's camera and something like stereopticon.

Santa Claus was standing by the side of this instrument, and was just beginning to speak when Mortimer looked up. This was what he heard:

"Never heard me preach before, did you? No. Talking's not my trade. But the wise man says there's time to speak as well as a time to keep silence. I've kept my mouth shut tight for several hundred years; now I'm going to open it. But my sermon will be illustrated. See this curious machine?" and he laid his hand on the instrument by his side; "it's a wonder-box; it will show you some queer pictures—"

"Let's see 'em!" piped out a youngster from the front seat. The congregation smiled and rustled, and Santa Claus went on:

"Wait a bit, my little man. You'll see all you want to see very soon, and may be more. I've been in this Christmas business now for a great many years, and I've been watching the way people take their presents, and what they do with them, and what effect the giving and the taking has upon the givers and takers; and I have come to the conclusion that Christmas certainly is not a blessing to everybody. Of course it is n't. Nothing in the world is so pure and good that somebody does not preserve it. Here is father-love and mother-love, you youngsters abuse it by becoming selfish and greedy, and learning to think that your fathers ought to do all the work and make all the sacrifices, and leave you nothing to do but to have a good time."

Just here Mortimer felt his cheeks reddening again, and he coughed a little, and opened a hymn-

book and held it up before his face to hide his blushes.

"So the fact that Christmas proves a damage to many is nothing against Christmas," Santa Claus continued; "but the fact that some people are hurt by it more than they are helped is a fact that you all ought to know. And as Christmas came this year on Sunday, it was my chance to give the world the benefit of my observations, and there could n't be a better place than Chicago, so here I am."

This last statement touched the local pride of the audience, and there was a slight movement of applause; at which the small boys in front, who had begun to grow sleepy, rubbed their eyes and pricked up their ears.

"There is one thing more," said the preacher, "that I want distinctly understood. I am not the bringer of all the Christmas gifts." Here a little girl over in the corner under the gallery looked up to her mother and nodded, as if to say, "I told you so!" "No; there are plenty of presents that people say were brought by Santa Claus, with which Santa Claus had nothing at all to do. There are some givers whose presents I would n't touch; they would soil my fingers or burn them. There are some takers to whom I would give nothing, because they don't deserve it, and because everything that is given to them makes them a little meaner than they were before. Oh no! You must n't believe all you hear about Santa Claus! He does n't do all the things that are laid to him. He is n't a fool."

"And now I'm going to show you on this screen some samples of different kinds of presents, I have pictures of them here, a funny kind of pictures, as you will see. Do you know how I got the pictures? Well, I have one of those little detective cameras—did you ever see one?—that will take your portrait a great deal quicker than you can pronounce the first syllable of Jack Robinson. It is a little box with a hole in it, and a slide, that is worked with a spring, covering the hole. You point the nozzle of it at anybody, or anything, and touch the spring with your thumb, and, click! you have it—the ripple of the water, the flying feet of the racer, the gesture of the talker, the puff of steam from the locomotive the unfinished bark of the dog. I've been about with this detective, collecting my samples of presents, and now I'm going to exhibit them to you here by means of my Grand Stereoscopic Moral Tester, an instrument that brings out the good or the bad in anything, and sets it before your eyes as plain as day. You will first see on the screen the thing itself, just as its looks to ordinary eyesight; then I shall turn on my æolian light through my ethical lens, and you will see how the same thing looks when one knows all about it, where it came from, and why it was given, and how it was received."

"First, I shall show you one or two of those presents that I said I would n't touch. Here, for example, is an elegant necklace that I saw a man buying for his wife in a jewelry store yesterday; I caught it as he held it in his hands. There, is n't it a beauty? Links of solid gold, clasp set with diamonds; would you like it, girls?"

"H'm! My! Isn't it a daisy!" murmured the delighted children, as they gazed on the bright picture.

"Don't be too sure!" cried the preacher. "Things are not always what they seem. Look!"

A new light of strange brilliance now lit up the pictures, and every link of that golden chain was transformed into an iron fetter that fastened a woman's wrist—a woman's wrist that vainly strove to release from its imprisonment a woman's hand. The chain itself was a great circle of women's hands—wan, cramped, emaciated, pitiful hands,—each one holding a needle, each one clutching helplessly the empty air. Within this circle suddenly sprung to view a little group—a woman, bending by the dim light of a winter afternoon over a garment in her hands, and two pale children: lying near her on a pallet covered with rags, while the scanty furniture of the room betokened the most bitter poverty. It was evident enough that the poor creatures were famishing; the hopeless look on the mother's face, as she plied her needle with fierce and anxious speed, glancing now and then at the sleeping children, was enough to touch the hardest heart; a low murmur of pitiful exclamation ran round the room, and there were tears in many eyes.

"She is only one of them," cried Santa Claus. "There are four hundred just like her, working for the man who bought this necklace for his wife yesterday; it is out of their life-blood that he is coining his gold. And to think that such a man should take the money that he makes in this way to buy a Christmas present. Ugh! What has such a man to do with Christmas?" And the good saint shook his fist and stamped his feet in wholly wrath. Then the group faded, leaving what looked like a great blood-stain in its place; but that, in its turn, shortly disappeared, and the white screen waited for another picture.

"I have many pictures that are even more painful than this," said the preacher, "but I am not going to let you see any more of them. I only want you to know how the rewards of iniquity look in the æolian light. There are a few more pictures, less terrible to see, but some of them will be a little unpleasant for some of you, I fear. Here is a basket of fruit; it looks very tempting, at first; but let the true light strike it. There! now you see it is all decayed and withered. It is really as bitter and disgusting as it now looks. It was given, this morning, by a young man to a politician. The young man wants an office. That was why he made this present. A great many so-called Christmas presents are made for some such reason. Not a particle of love goes with them. The are smeared all over with selfishness. Christmas presents! Bah! Is this the spirit of Christmas?"

"I ut here is one of a different sort."



A pretty crimson toilet-case now appeared upon the screen.  
"Elegant, is it not? Now see how it looks to those who live in the æonian light."  
The crimson plush slowly changed to what looked like rather soiled canton flannel, and the carved ivory to clumsily whittled bass-wood.  
"What is the matter with this? I shall not tell you who gave it, nor to whom it was given; it is no real wrang-doing on the part of the giver that makes the gift poor; it is only because the gift represents no effort, no sacrifice, no thoughtful love. In fact, the one who gave it got the money to buy it with from the one who received it. There are a great many Christmas presents of this sort; it is not best to say any hard words about them; but you see that they are not, really, quite so handsome as they look. Nothing is really beautiful, for a Christmas present, that does not prove a personal affection, and a readiness to express it with painstaking labor and self-denial. Now I'm going to show you another, which will enable you to get the idea."

It was a little picture-frame of cherry wood rather rudely carved, that now appeared upon the screen.  
"The boy who made this for his mother works hard every day in school and carries the evening papers to help with the family expenses; he carved this at night, when he could gain a little time from his lessons, because he could not afford the money to buy anything, and because he thought his mother would be better pleased with something that he himself had made. You think it does not amount to much, don't you? Well, now look!"  
The transfiguring light flashed upon the screen, and the little cherry frame expanded to a great and richly ornamented frame of rosewood and gold, fit to hang upon the walls of the king's palace; and there, in the space that before was vacant, surrounded by all that beautiful handiwork, was the smiling face of a handsome boy.

The people, old and young, forgot that they were in church and clapped their hands vigorously, Santa Claus himself joining in the applause and moving about the platform with great glee.  
"Yes!" he cried, "that's the boy, and that's the beauty of this little frame of his; the boy is in it; he put his love into it, he put himself into it, when he made it; and when you see it as it really is, you see him in it. And that's what makes any Christmas present precious, you know; it comes from your heart and life, and it touches the heart and quickens the love of the one to whom it is given."

"I have a great number of presents of this sort that I should like to show you if I had time. Here, for instance, is a small glass inkstand that a little boy gave his father. It is one of half a dozen presents that he made; it cost only a dime or two, and you think it is not worth so much; but now, when I turn the truth-telling light upon it, you see what it is—a vase of solid crystal, most wonderfully engraved with his own hands. The boy did not make this with his own hands, but he gained every cent that it cost by patient, faithful, uncomplaining labor. He begged the privilege of earning his Christmas money in this way, and right honestly he earned it; leaving his play, whenever he was summoned for any service, without a word of grumbling, and taking upon himself many little labors and cares that would have burdened his father and mother. When he took his money and went out to spend it the day before Christmas, he was happy and proud, because he could fairly call it his own money; and the presents that he bought with it represented him."

"And now there is only one thing more that I shall show you, but that is a kind of thing that is common, only too common I'm afraid. It is a present that was all beautiful and good enough till it left the hands of the giver, but was spoiled by the receiver. Here it is."

A silver cup, beautifully chased and lined with gold, now came into view.  
"A boy whom I know found this in his stocking this morning. He was up bright and early; he pulled the presents out of his stocking rather greedily; he wanted to see whether they had bought for him the things he had been wishing for and hinting about. Some of them were and some were not; he was almost inclined to scold, but concluded that he might better hold his tongue. But this boy had made no presents at all. He is one of the sort that takes all he can get, but never gives anything. This is what Christmas means to him. It is a time for getting, not for giving. And I want you to see how this dainty cup looked as soon as it got into his greedy hands."

Again the revealing light fell upon the cup and its beauty and shapeliness disappeared, and it was nothing but a common pewter mug, all tarnished and marred, and bent out of form.

"There!" cried the preacher, "that is the kind of thing that is most hateful to me. It hurts me to see lovely things fall into the hands of selfish people, for such people can see no real loveliness in them. It is love that makes all things lovely; and he who has no love in his own heart can discern no love in anything that comes into his hands. What does Christmas mean to such a one? What good does it do him? It does him no good; it does him harm, every time. Every gift that he gets makes him a little greedier than he was before. That is the way it works with a certain kind of Sunday-school children. They come in, every year, just before Christmas, only because they hope to get something; they take what they can get, and grumble because it isn't more, and go away, and that's the last of them till Christmas comes around again. That's what they think of Christmas. They think it is a pig's feast. Precious little they know about it. I know them—thousands of them! But they never get anything from me,—never!

They think they do, but that's a mistake! I don't like to see my pretty things marred and spoiled like this cup. I'm not going to give to those who are made worse by receiving."

"No! I can do better. I can find people enough to whom it is worth while to give Christmas gifts because there is love in their hearts; and the gift of love awakens more love. Those who know the joy of giving are made better by receiving. And there are hosts of them, too, millions of them; tens of millions, I believe; more than Christmas than ever before since the Babe was born in Bethlehem; people whose pleasure it is to give pleasure to others; good-willers, cheerful workers, loving helpers, generous hearts, who have learned and remembered the words of the Lord Jesus, how he said, 'It is more blessed to give than receive.'"

Through all this part of Santa Claus' sermon Mortimer had known that his face was growing redder and redder; he was sure that the eyes of all the people in the church were being fixed on him; he felt that he could not endure it another moment, and he caught up his hat and was going to rush out of the building, when suddenly the voice was silent, and he looked up to see what it meant—and Santa Claus was not there; it was Doctor Burrows again, and he was just closing the Bible and taking up the hymn-book. Mortimer glanced about him and drew a long breath of relief.

As they walked back to the hotel, Mr. Murray asked Mortimer how he liked the sermon.

"Which sermon?" asked Mortimer.

"Why, Dr. Burrows's sermon, of course."

"Oh, yes; I forgot. It was a good sermon, wasn't it?"

"Excellent. What was the text?"

"'It is more blessed to give than to receive.'"

Wasn't that the way he ended up?" asked Mortimer, brightening.

"It was."

"I thought so."

"Thought so; didn't you hear it?"

"Yes, I heard that. But—I was hearing—"

something else about that time, and I wasn't sure."

"What else did you hear?"

"Lots. Perhaps I'll tell you some time," replied the lad.

Mr. Murray did not press the question, and Mortimer was silent. All that day and the next Mortimer seemed to have much serious thinking to do; he was a little reluctant to take his Christmas presents, and he received them at last with a tender gratitude that he had never shown before.

"It must have been Dr. Burrows's sermon," said Mr. Murray to his wife as they were talking it over the next night. "I didn't think Mortimer could get much out of it; in fact I thought he was asleep part of the time, but it seems to have taken hold of him in the right way. It was a good sermon and a practical one. I'm going to ask our minister to exchange some time with Dr. Burrows."

"I wish he would," said Mrs. Murray.

That was the way Mr. and Mrs. Murray looked at it. But I think that if they had asked Mortimer, Mortimer could have told them that it would be a much better idea to suggest to their minister that he exchange some time with the Reverend Doctor Santa Claus.

### Song of the Plow.

BY WILL E. CARLETON.

Ye drawing-rooms and palaces, I recognize your splendours,  
Your ladies' bright and beautiful—the power of their defenders;  
The while I creep across the field, and toil for man's existence,  
And see his roofs and minarets that sparkle in the distance.  
But well 'tis known that in the soil your best foundations be;  
What would you do me, what could you do, and were it not for me?  
Unless I pierce the darkness where the golden grain has birth,  
Your beauty and your brightness will go crumbling to the earth!

So drawing-rooms and palaces,  
Lay by your social fallacies,  
And listen for a moment, till you've heard the cheerful song  
Of the old plow, the bold plow, that moves the world along!

Ye rumbling manufactories, that loom as bold as mountains,  
And send your streams of smoke aloft in raven-colored fountains,  
I see your fiery temper gleam, in flakes of cinders burning,  
I strike a spark of flinty fire, the bright salute returning;  
But think how closely coupled in our varied works are we;  
What would you make, what could you make, and were it not for me?  
I build you and I feed you, and your servants all I keep;  
My stalks and blossoms toil for you when others are asleep.

To recognise my royalty  
In honest, earnest loyalty,  
And see a burnished sceptre in the sharp and gleaming prong  
Of the old plow, the bold plow, that moves the world along!

Ye sailors of the argosies that miles of ocean measure,

Trade's never ceasing pendulums are swinging to your pleasure,  
Your cities decked with spire and dome, in spite of waves and weather,  
Go travelling from shore to shore, a thousand leagues together!

And yet from my unceasing toil your grandeur is not free,  
Where would you sail, where could you sail, and were it not for me!  
But little might these gallant flights to you or others yield,  
If 'twas not for my voyages across the fertile field.

So share my grim emotions,  
Gallant plowmen of the oceans,  
And ring out a jolly chorus, and we'll make it loud and strong,  
For the old plow, the bold plow, that moves the world along!

Ye potentates of merchandise, ye traders and ye bankers,  
Into whose capacious harbors wealth is casting all its anchors;  
I bow to your magnificence—I like your brain and daring;

I know your table luxuries, the jewels you are wearing!  
But lay aside your vanity this humble truth to see,  
What would you own, what could you own, and were it not for me?

Look well, I clothe the fallow lands and feed the cattle fold;

You will not wear your iron, and you cannot eat your gold!

So drop all needless vanity,  
Good cash boys of humanity;

For your success is fastened with a never-breaking thong

To the old plow, the bold plow, that moves the world along!

Ye legislators, governors and dignitaries awful,  
Who make receipts for keeping men respectable and lawful,

Ye teachers and ye preachers, and you who the presses borrow,  
To raise your heroes high to-day and pull them down to-morrow;

Ye workers in all sorts of brain, on one affair agree;

How would you rule, how could you rule, and were it not for me!

The monarch of this western world would have marched behind the plow;

The boys who yet shall be the same are in the furrow now!

So bow to my utility,  
You men of brain utility.

And make me first and foremost of the great progressive throng.

Yes, the old plow, the bold plow, that moves the world along.

Though simple my biography, 't would fill out many pages;

I was within a tree-top born in very distant ages;  
They dragged me in my infancy o'er sleeping hill and hollow.

But where I went prosperity was ever sure to follow.  
Rich harvests were the children of this bantling of a tree;

How would they grow, how could they grow, and were it not for me?

So they shod me and they armed me with the metals of the mines

Till my loins are iron girded, and my breast with silver shines!

So crown me with sincerity  
As monarch of prosperity,

And as the foremost enemy of famine, siame and wrong;

I'm the old plow, the bold plow, that moves the world along.

### Questions.

What is life? Go, ask the tramp,  
Who begs from day to day;  
And he will tell you 'tis a cramp,  
That squeezes breath away.

What is life? Inquire of clown,  
Who laughs within the ring;  
And he will lay the maxims down,  
It is a serious thing.

What is life? The miser ask,  
And he will answer, 'tis  
A golden sun 'neath which to bask,  
Grasping the horde that's his.

What is life? Go, ask the bard,  
Who sings the song to men;  
And he will tell you 'tis most hard  
As dark as sin's own den!

What is life? Ask the Divine,  
Whose strength is spent in preaching  
And he will answer that its twine  
Is e'en beyond his reaching.

Thus life's a book we all must read,  
But who can criticise it?  
'Tis full of puzzles, problems, greed,  
And trickery underlies it.

I wish to express my sincere and best acknowledgments to the ADVOCATE, a paper I have taken from its first inception.—T. GUY, Oshawa.



### Minnie May's Dep't.

MY DEAR NIECES,—Paris—gay and beautiful Paris—is what I propose to chat about this month. Paris is France's glory and one of the world's noblest ornaments, gorgeous in its public spectacles, full of all that art and science can contribute to beguile the senses, the patroness of music, painting and sculpture, its people renowned for courtesy and politeness, the home of gayety and enjoyment, in fact the paradise of pleasure seekers. The cleanliness of the city, for which it is noted, is known over the civilized world. After this brief description, let me say a word about shopping, so dear to the hearts of ladies, who, of whatever country they be, are supposed to dress according to the mode de Paris. The fancy shops of Paris contain treasures of art. On the boulevards, in the Palais-Royal, near the Bourse, in the Rue de Rivoli, etc., the exhibition of jewelry and fancy articles is quite unique, and these places are the favorite resorts of visitors. Paris is unsurpassed in bronzes, oxydized silver, Sevres china, Gobelins' tapestry, embroidery, mirrors, wood carvings, Lyon's silk and Valenciennes lace, sweet meats, imitation pearls and jewelry, fans, kid gloves, ribbons, feathers and dolls. The bazaars teem with the most ingenious and attractive articles. Many things struck me as being very curious. For instance, nearly all the women going to the market or shopping, or for a walk, were bare headed, displaying their hair very neatly and becomingly arranged; and the extraordinary manner in which the drivers of busses and coaches crack their long whips, the streets resounding with loud reports is quite alarming. The fountains all over the city are distinctive in their construction and give a charm to every place in which they appear. The cafes are of splendor unequalled anywhere else. At night, lighted up by countless jets of gas which are reflected in the immense mirrors on the walls, they are more like fairy scenes than common life. These cafes are the homes of Parisians. Crowds sit inside and outside taking refreshments, drinking wine, smoking and generally illustrating the Biblical words: "Let us eat, drink and be merry, for to-morrow we die." The mirrors, the brilliant lighting, the sitting throngs, the moving throngs, the trees of the boulevards waving above all, make such a many colored picture as cannot be found in any other part of Europe. The French, mode of living is entirely different from ours. They begin the day with toast and coffee brought to their bedrooms, *dejeuner* or breakfast at 11 o'clock, tea or coffee in the afternoon about 4 o'clock, dinner at 6 or 7, after which they rush off to the theatre or opera or open air concerts, where all that the acknowledged taste of the French can accomplish in the way of clever ornamentation added to profuse illuminations is fully carried out. The immense number of theatres which Paris contains present to the stranger a highly characteristic feature of Parisian life. The Grand Opera House is the largest theatre in the world, covering nearly three acres. Nothing can surpass the magnificence of the materials with which the building is lavishly decorated, and for which the whole of Europe has been laid under contribution. Sweden and Scotland have yielded a supply of green and red granite, from Italy have been brought the yellow and white

marbles, from Finland red porphyry, from Spain "brocatello" and from different parts of France other marbles of different colors. The magnificent interior, with the staircase corridors, saloons and other details, is exceedingly effective, and is altogether an unrivalled work of its kind, and cost over \$9,000,000.

The Parisian has no home in the English sense of the word. The cafe is his home, his "own fireside." There he spends most of his leisure time, reading his newspaper, playing cards, smoking, drinking—without getting drunk—laughing, talking and making himself generally happy, with that freedom from care peculiar to a Frenchman.

But I must mention a few of the many places I visited in Paris, and give a brief sketch of some. Among them is the Louvre, Palais Royal, Bois De Boulogne, Place de la Vendome, Place de la Concorde, the Notre Dame, The Madeleine, St. Vincent de Paul, Pere Lachaise, The Pantheon, The Gobelins Tapestry Works, Hotel des Invalides, Palais du Trocadero, Luxembourg, Champs Elysees, etc., etc. First—The Palace of the Louvre. This masterpiece of architecture is not excelled by any production of antique art. It was formerly the residence of the sovereigns, and is now famous for its world-renowned galleries, which the government has spared no expense in keeping up. The first thing that strikes the visitor is the splendor of the decorated ceilings, the work of celebrated painters. There are upwards of 130 rooms. On the ground floor are the museums of ancient and modern sculptors; the Egyptian, Syrian, Algerian and Mexican collections. On the first floor are exhibited paintings of the Italian school, paintings of the Spanish school, paintings of the German school, paintings of the Flemish school and Dutch school. The second floor is occupied by the Marine Museum, Museum of Jewelry, Museum of Hebrew Antiquities, of Medieval Art, and are splendidly decorated and historically famous rooms.

Bois De Boulogne—This celebrated park is the play-ground of the Parisians. It is a splendid park of about 2,250 acres, with beautifully trimmed trees, grand drives, artificial lakes and water-falls. Besides, it contains a collection of camels, elephants, ostriches, asses, zebras and other animals; an aquarium, an aviary, a conservatory, winter garden, etc.

Place de la Concorde—Place, being interpreted, means "square" in English. This celebrated Place lies between the Jardin des Tuileries and the Champs Elysees. It has been called the finest Place in Europe. In the centre stands the Obelisk of Luxor, a monolith of red granite, 72 feet high, brought from the ruins of Thebes. It is a sister of Cleopatra's needle. On the north and south sides are fine fountains, adorned with tritons, nereides and various allegorical statues. The actual Place is bounded by eight colossal statues, typical of the chief towns of France. The Place de la Concorde has a bloody history. In 1770 a panic occurred at a display of fire-works, and more than a thousand persons were killed. During the reign of terror the guillotine stood upon the place now occupied by the monolith, and upwards of two thousand persons suffered, including Louis XVI. and Marie-Antoinette. The Place de la Concorde, at night, when lighted by an immense number of gas-lamps, presents quite a fairy-like appearance.

Cathedral of Notre Dame—The most important church in the city, which dates from the 12th century. It contains 28 chapels, and can hold 28,000 persons; rich carvings in wood and stone. The choir is adorned with magnificent work. In the sanctuary are angels in bronze, and statues of Louis XIII. and XIV. The treasury contains the "Crown of Thorns," brought by St. Louis from the Crusades. The towers are 264 feet high, and the largest bell weighs 32,000 pounds. A dry, architectural description of Notre Dame would be wearisome, but we may say that the interior fully justifies the expectations aroused by the external appearance, and that the

"Storied windows, richly light,  
Casting a dim, religious light."

cannot fail to impress the stranger, of whatever creed, with a sense of solemnity and awe.

The Madeleine—The Madeleine, in its majestic simplicity of massive outline, is one of the architectural ornaments of Paris. It is built in imitation of the Roman Temples, and more resembles them than a Roman Catholic Church. It is a massive building, surrounded by 52 Corinthian columns, and has a fine fronton, with an immense alto-relievo representing the "Last Judgment." The figure of the Saviour in the centre is 18 feet high. The Madeleine is approached by a flight of 28 steps, occupying the entire length of the building. The interior is gorgeously gilded and ornamented with paintings and sculptures, and richly decorated with abundance of gold and marble.

Pere La Chaise is the finest cemetery around Paris, and extends over 200 acres. It is named after La Chaise, the Father Confessor (Jesuit) of Louis XIV. Approaching the cemetery the streets on every side are filled with dealers in crosses, relics and immortelles, which alone form quite a distinct branch of industry. The tombs and monuments are very crowded, especially near the entrance, and sort of little chapels, containing altars, with a great amount of decoration, flowers, figures, burning candles and crucifix, are to be seen over many of the tombs, and upon peeping in, one often sees some poor creature, perhaps relation or dear friend, praying to the Saints or the Blessed Virgin. There are over 15,000 monuments in the cemetery, embracing some of the most illustrious, celebrated and notorious personages of the day.

"The dead—the honoured dead are here—  
For whom, behind the sable bier,  
Through many a long forgotten year,  
Forgotten crowds have come,  
With solemn step and falling tear,  
Bearing their brethren home."

"Beneath these boughs, athwart this grass,  
I see a dark and moving mass,  
Like Banquo's shades across the glass,  
By wizard hands displayed;  
Stand back, and let these hearse's pass,  
Along the trampled glade."

Hotel Des Invalides and Tomb of Napoleon I.—Hotel Des Invalides is a home for wounded or aged soldiers, and extends over 18 acres, with ample accommodation for 5,000 invalids. It contains a library of 30,000 volumes; banners from the Crimea, Italy, China and Mexico; about 4,000 specimens of various instruments of warfare, armour, etc. In the Church of the Invalides, situated immediately under the dome, in an open crypt, is the Tomb of Napoleon I. The crypt is in the form of a circular basin, with walls of polished granite. At the bottom, in the centre, rises the sarcophagus of red Finland granite, placed upon a block of green granite. A



covered gallery runs around the crypt, ornamented with bas-reliefs, illustrating the great works of Napoleon. Twelve statues, under the gallery, surround the sarcophagus; they are colossal figures, representing the great warrior's twelve principal victories. The mausoleum and tomb are bathed in a flood of golden light—coming, one does not know whence—which imparts a solemn glory to the scene. Over the door of the vault we read the well-known words from the Emperor's will:—"I desire that my ashes may rest on the banks of the Seine, in the midst of the French people, whom I have so dearly loved."

We have now seen some of the principal monuments and sights of Paris, though our inspection has necessarily been short. There are many buildings in Paris, to attempt a detailed account of which would be simply to write the history of France. The Louvre and Notre Dame, for example, are so closely interwoven with the events of the last four centuries that every chamber and chapel, nay, every corner, has its own historical interest.

Before closing I wish to advise my nieces, if ever in England, to be sure and go to Paris. The expense is not great, by joining one of Cook's or Gaye's excursion parties, which leave London two or three times a week in summer. By thus doing you are saved much trouble, for they secure hotel accommodation, look after your luggage, and a guide attends you from the time you reach Paris. You are driven in five horse coaches for several days, stopping at all places of interest, the guide explaining everything in English, so that even a knowledge of the French language is not necessary, and generally in the hotels and shops there is this advertisement on the window, "English spoken."

MINNIE MAY.

#### Christmas Cheer.

Christmas is again near, and let us try to make it as significant as possible of our deep gratitude by showing our good will to all both in word and deed, by banishing all feelings of resentment from our hearts, and by making amends for the wrongs we have done our fellow men. Unhappily many persons believe that Christmas good-will can only be expressed by costly or showy gifts. They mistake the spirit of the day. It is not the cost of the gift but the spirit in which it is given. Our great Christian festival is not made as much of by us as it should be. We should all try to do something on that day to make others happier, and we will find their happiness reflected back on our hearts two fold. Why not have a Christmas tree, girls? They are not expensive and give so much genuine enjoyment to young and old, both in anticipation and reality. All the decorations and gifts too can be prepared by all bright girls and boys at home, and the cost is so trifling you will feel yourselves well repaid. What girl cannot fashion scores of pretty trifles, useful and ornamental, with her needle, crochet hook or knitting needles. A cushion for mother's chair; the cover may be but bright chintz, and what farm house cannot furnish enough feathers for the pillow for it? A crocheted or knitted shawl for grandmamma or auntie, done at odd moments. A cheap basket brightened with a sateen lining and a bow of ribbon. Muffatees, mittens, comforters, even socks for father from bright yarn, pin cushions, scent sachets and one

hundred other trifles can be made at night as you chat around your home fire. A tidy for the arm chair, now so fashionable, is made just like a gill net, only of heavier twine; put links and floats upon it and tie up in the middle with a big bow of bright ribbon. A pretty and useful gift is a comfortable made of cheese cloth. Take two pieces the size of your bed, cover one evenly with cotton batting, tack at intervals, then place the other bit of cheese cloth on top and tack down six inches apart with tufts of blue or red yarn, and finish with a row of buttonhole crochet around the edge. A small iced cake for mother is a nice surprise; and enough candies for all. Make a number of small bright colored bags of muslin or cambric; put candies into each and tie with bright ribbon.

I shall now tell you how to proceed with the decorations of the tree. Plant a fir tree about six feet high in a tub of earth, and cover the earth with dried moss. Fasten a bright flag on the top of the tree, which can be made of paper if none other can be had. String long rows of pop corn on strong linen thread, and festoon the tree, beginning at the top. Then string red berries in the same way, and festoon them also. Make a number of bright red poppies from tissue paper in this way. Cut a circle of strong paper two inches in diameter, scallop the edge and use as a paper pattern. Cut a number of these circles at once by folding the paper in a square, and put a strong pin through to keep it in place while you cut. Take each circle by the centre and crimp by drawing through your hand. Twist four inches of fine wire through the center of the paper circle, gather it up around the yellow tuft, and you have a pretty poppy for decorations. Tie these in numbers over your tree and the effect is quite bright. Hang your gifts tastefully over it. The smallest and lightest at the top, and those too heavy to hang, can be laid on the soft moss that covers the tub. Walnuts make another showy trifle. Twist a piece of fine wire around the middle for a stem, and cover with silver foil or brush over with gold paint. Tie three or four together with ribbon and place at intervals. Balsam cushions make a most acceptable gift and they are within the reach of almost every farm house. I hope some of my readers will try and act upon the suggestions I have given in this letter, and let me know how they have progressed, and I know how fond my bright young country friends are of a frolic. They will find employment for weeks before Christmas and pleasant memories for weeks afterwards. I will give you a few recipes for Christmas candies, which are easily made and much more wholesome than the majority of those purchased.

**VANILLA CANDY.**—One quart sugar, a tablespoon of butter, 2 of vinegar, and 1 pint of water. Boil for about 40 minutes and try if it snaps when dropped into cold water. Take from the fire and stir for 10 minutes. Then add a tablespoon of essence of vanilla. Mix well and pour on a buttered dish. When cool enough to handle, pull until stiff. Cut into pieces.

**CREAM CANDY.**—One cup of sugar, 5 table-spoons of milk, boil 5 minutes and stir until cold. Pour into a buttered saucer of large size. Cut into dice before quite cold.

**ALMOND CANDY.**—One pint of granulated sugar, 1 tablespoon of butter, 1 of vinegar, and half a pint of water. Boil for 40 minutes. Then

try if it will harden by dropping in water. Take from the fire and stir for a few minutes. Have ready  $\frac{1}{2}$  pound of almonds, blanched and dried from moisture. Butter a square tin and spread the almonds evenly over. Pour over the candy and leave to cool. Turn out of the tin and cut in squares with a heavy knife.

**CHOCOLATE CARAMELS.**—One cup of chocolate grated, 1 cup molasses,  $\frac{1}{2}$  cup of milk, 1 cup sugar. When nearly done add a piece of butter the size of a walnut. Stir until all is dissolved, but not after. It is done when it hardens by dropping in water. Pour on buttered plates, and chop off in squares before quite cold.

MINNIE MAY.

#### Recipes.

**TOMATO CHOW CHOW.**—Take one peck green tomatoes, 8 large onions, slice them and lay in alternate layers with salt between them, a good teacupfull will do; let them remain over night; next morning pour off the liquid, put in a pan with strong vinegar, enough to cover them, 6 green tomatoes, 1 cup grated horse radish, 1 tablespoon ground cloves, same of allspice and cassia, 1 dessert spoon ground mace, 1 cup sugar; simmer till soft.

**PORK CHEESE.**—Two pounds of cold roast pork, pepper, salt, a little minced parsley, four leaves of sage minced very fine, a small bunch of savory herbs, a little nutmeg, and minced lemon peel. Cut the pork into very thin slices, put it in alternate layers with the herbs, etc., in a mould. Fill up the mould with good gravy, and bake rather more than an hour. When cold turn it out. Have about a quarter of a pound of fat to every pound of lean meat.

**BREAD GRIDDLE CAKES.**—One pint milk, 1 cup stale breadcrumbs, half teaspoonful salt, 1 egg, 1 teaspoonful baking powder; flour to make a thin batter. Soak bread in the milk 1 hour, then beat it smooth; then add beaten yolk, flour, baking powder and salt, and beat again. Then add the white of an egg beaten stiff.

**POTATO PUFF.**—Two cupfuls mashed potatoes, two tablespoonfuls melted butter; stir these, with a seasoning of salt, to a light, fine, creamy consistency. Beat two eggs separately and add, with six tablespoonfuls of cream. Beat all together well and lightly. Pile in an irregular, jagged form in a dish. Bake in a quick oven till nicely colored.

**PRUSSIAN BLUE.**—Procure one ounce of Prussian blue, one-half ounce of oxalic acid and put into one quart of rain water; cork it tight; let it stand a few days, when it will be fit for use.

**PUMPKIN BUTTER.**—Cook your pumpkin thoroughly, rub through colander, measure or weigh equal quantities of pulp and sugar, place in preserving kettle, boil carefully until thick; it should keep a round up appearance when dropped on a plate and look leathery; any seasoning you like; I use allspice. I make mine one-half apples, and use dark brown sugar, sometimes half molasses; to buy sugar is as cheap. Allspice and dark sugar make it dark, which I like. If you seal it up it won't require so much sugar or cooking.

In twenty-four hours the respiration of an adult produces 10.7 cubic feet of carbonic acid gas, and removes the same amount of oxygen. One burning gaslight in a room will destroy as much oxygen as a man; therefore, before retiring get a free draught of air to blow through your room. Indeed this should be done in any sleeping room.



Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES,—Yet once again we are spared to see the last month of another year—1887, with its record, will soon be laid away with the past. Christmas cheer is already in the air. The coming of the absent ones is fondly looked forward to. Not a few grey-haired "boys and girls" are anticipating a happy, yet sad review in the old homestead—happy because of the joyful occasion, sad because of the vacant chairs; while our native evergreens wait to grace the Canadian yule-tide, even as the holly and mistletoe proffer their garniture to the homes of "Merrie England." Each day will seem to pass with increasing swiftness; yet, if we are so inclined, there is still left some time for improvement, as one-twelfth of the year still is ours. The present is peculiarly a month of privilege. It is a month when, according to tradition, the angels brought to earth a message of "peace and good-will to men."—Would it not be profitable, then, to scan the work of the past eleven months, and, ere the year closes, do what we can to add to what has been good, and also endeavor to leave an unsullied page upon which to enter 1888. Much that is beautiful in sentiment and ideal in aspiration might be indulged in at this season, but I would seek to make the work which may yet be done of an intensely practical nature.

First, then, my nephews and nieces, are your names on some one's credit account for items of personal expenditure? I know, and am sorry to know it, that a bad habit of getting things on credit is obtaining largely—much more largely than it formerly did throughout the country. So far as my experience goes, I think my nephews are more guilty in this respect than my nieces, still I know even some of them cannot plead "not guilty." The sum may be trifling, or it may be considerable. I beg of you not to enter upon a new year with that blot to mar its pages. Make all possible effort to have it wiped out, and henceforth take for your motto in these matters, "Pay as you go." You will find it a good friend, blessing you with the virtue of self-control, and leaving, as tangible evidence of good fellowship, money in your pocket.

Then, again—and I fancy my nieces are the more wayward ones here—are there those between yourself and whom has sprang up a decidedly frigid atmosphere, there being no good reason why such a state of things should exist? One misunderstanding may have led to another, a kindly word of explanation might have remedied the trouble, but wilful neglect or thoughtless words have only festered the sore, and with unkind feelings are you going to enter upon 1888? Rather, in this season of "peace and good-will," invite those whose feelings have been hurt to your home, dispel the coldness by cordial hospitality, and rejoice that ere 1887 passed away you were enabled to add one more pleasant memory to its store, and leave no shadows to darken the hopeful New Year.

Again, during the last few months we have been reading some together, and this month, with all its preparation, gives grateful opportunity to enrich the mind and ennoble the thought by reading selections appropriate to the season. When gathered around the fireside in family reunion, is there anything more pleasant and profitable than the reading of such selections

as tenderly touch the emotions, and make the hearts fire glow with a brighter flame? I know a home where for many years, on New Year's eve, Tennyson's "May Queen" has been read, and most appropriate it is; part of the same author's "In Memoriam" is also very beautiful. Then there are always holiday numbers of periodicals, pure in thought and chaste in language, from which to select, and we would not forget, above all, the "old, old story," recorded so beautifully and simply in the second chapter of Luke's Gospel. I know my nephews and nieces will be more than satisfied if they try the experiment.

We have already planned much work for the last month, but would we not be selfish if we stopped there? It is said, and truly said, that the short cut to happiness lies in making others happy. So, in the midst of home comforts, we should not forget those who, though they see plenty on all sides, know what it is to want even the necessities of life. There are many around us, even in the country, to whose homes comes but little of the Christmas cheer. There are those who, with hearts longing for sympathy, in the dainty Christmas greetings, will be overlooked; to such as these will not my nephews and nieces be—even as the angels of the olden times—bearers of peace and good-will. Then, indeed, will your Christmas be a happy one, even as I wish it to be, and in the New Year awaiting you I bid you, with all my heart, God speed!

I would suggest that my nephews and nieces read the story of "Santa Claus in the Pulpit," in this month's issue.

The competition for prizes in the puzzle department closes this month, so you will have the names of the successful prize winners in the January issue. Send your answers in early, as well as some good original puzzles, to begin with the New Year.

Puzzles.

1—ILLUSTRATED REBUS.



2—DIAMOND.

Kind friends, to you I'll give a key, I'm a part of every little "pea"; Keep everything "silent," I tell you, Or "puzzled" you may be.

They say I'm "a pozer" by nature, That I live on "a vegetable" pure, Dwell in "a cave" fit for robbers; "A letter," kind friends, adieu!

FAIR BROTHER.

3—OCTAGON.

Diagram. (Reads the same each way.)

- o o o 1—To plant.
o o o o o 2—A girl's name.
o o o o o o 3—Profit.
o o o o o o o 4—To raise.
o o o o o o o o 5—Slandered.
o o o o o o o o o 6—Saltpetre.
o o o o o o o o o o 7—A boy's nickname.

FAIR BROTHER.

4—POETICAL PL.

"Nestror nath leest
Si het dowr fo teh tipsir;
Fitwser nath warsor
Eth thilg fo hte hurtt si;
Ragteer hatn range
Si velo atht tubhedus."

FAIR BROTHER.

5—LETTER PUZZLE.

E, E, E, E, N, N, S, S and T,
Rightly placed and a river see.

A. HOWKINS.

6—DROP VOWEL.

Th- -gh w- h-v- n- m- -ns t- p- rch- s-
C- stl- p- ct- r- s- r- ch- nd r- r-
Th- -gh w- h- v- n- s- lk- n- h- ng- ngs
F- r- th- w- ll- s- c- ld- nd b- f-
W- c- n- h- ng- th- m- -r- w- th- g- rl- nds
F- r- fl- w- rs- bl- -m- -v- rywh- r-.

ARTHUR T. REEVE.

7—ZIG-ZAG CROSSWORD ENIGMA.

First in witch, second in flight,
Third in morning, fourth in night,
Fifth in pastry, sixth in sweet,
Seventh in performance, eighth in feat,
Ninth in chips, tenth in blocks,
Eleventh in horse, twelfth in ox.
The totel will do, I believe,
My cousins, and I expect to receive.

ADA ARMAND.

No. 8.

My first is a circle; my next you will find
Much used by a very great part of mankind;
If you happen to speak of yourself, my third
Is sure to be there, and sure to be heard.
My fourth to progress, or advance, signifies
A motto for those who in life wish to rise;
My whole you possess—even now, it may be,
You are passing it while you seek for the key.

A. HOWKINS.

9—CHARADE.

Sitting one day by the window,
Looking out on the street,
I saw a FIRST passing by,
'Twas a little girl with bare feet.

She had on an old dress,
All tattered and torn,
While her SECOND, used so long
That it was shabby and worn.

It was pitiful to see
WHOLE in such a state,
I called her in and clothed her well,
And found her a better fate.

LOUISA F. REDMOND.

Answers to November Puzzles.

- 1—Small cheer and great welcome
Make a merry feast.
2—N
R A M
R A T A N
N A T U R A L
M A R E N A
N A N D U
L A U D
3—Honorable.
4—U M L
N A A
F L T
E L N
S E C R E T A R Y
M A L
E B I
L L N
E E G
5—The pleasures and delights which mask
In treacherous smiles life's serious task.
What are they all
But the fleet couriers of the chase,
And death and ambush in the race
Wherein we fall?—[Longfellow.
6—Chili, Persia, Italy, Quito, China, India.
7—Fill the three gallon measure and then
empty it into the five gallon measure; fill the
three gallon measure again and empty it into the
five gallon measure, but it will only hold two



gallons, and there is one gallon left in the three gallon measure; then empty the five gallons of liquor into the eight gallon measure, and the one gallon of liquor into the five gallon measure, then fill the three gallon measure again and empty it into the five gallon measure, which is as one gallon of liquor, and then it will have four gallons in it, and the eight gallon measure will have four gallons of liquor also.

8—Holland.

10—Grape, peach, pear, date, currant.

11—Get up a club.

Helen Connell, 'Louisa,' F. Redmond, Ada Armand, Arthur T. Reeve, Mary T. O'Brien, Jessie Robertson, Constance R. Whiting, R. G. Ricketts, Henry R. Moffatt, John Bowles.

**Santa Claus.**

Santa Claus is a benevolent German, who spends all the year making toys for all good little boys and girls. He lives alone on top of a high mountain, and his reindeers live with him. They are white as milk, and gentle and docile.

Old Santa Claus sat in his easy chair,  
His pipe was out and his fire was dim;  
His laughing blue eyes and long white beard  
Gave a cast to his visage by no means grim.

He patted the neck of his white reindeer,  
And thought of his journeyings, near and far;  
They must start very soon to distribute his gifts,  
From the southern cross to the polar star.

So he said to his reindeer, so gentle and fleet,  
"We must soon be starting, far over the sea,  
To make all hearts happy and loving and bright,  
On this Christmas—our year of jubilee."

"To Canada first we must straightway fly,  
The happy home of both great and small;



9—  
R O  
E r r o R  
G I  
A l o n G  
R I      Regardful.  
D r o w N      Originate.  
F A  
U n f i T  
L E

**Names of those who have Sent Correct Answers to Nov. Puzzles.**

Libbie Denike, Russell Boss, R. Wilson, Mary Morrison, A. Howkins, Drusilla A. Fairbrother, Henry Reeve, Emma Dennee, Edward Dunn,

He fills a sleigh with toys, harnesses the reindeer, and goes all over the world with them. The white reindeer do not travel like other deer; they fly through the air, never touching anything, except when they stop until Santa Claus goes down the chimney to fill the stockings he finds on the hearth; then they rest on the roof of the house. When he comes up out of the chimney they wait until he gets into his sleigh, then off they fly again. In the picture he has just finished making his toys, and feels very happy at the prospect of making so many others happy on Christmas morning.

The fairest land upon the earth,  
Where peace and plenty smile on all.  
"To all good children, both girls and boys,  
I give hoops, and horses, and tops, and dolls,  
And arks, and balls, and drums to beat,  
And golden trumpets to blow the calls.  
"So children, dear, if you want me to come,  
Be good, kind and loving, the rest of the year,  
And on Christmas Eve I will surely be there,  
And leave you a share of my Christmas cheer."

It is not what we earn, but what we save, that makes us rich. It is not what we eat, but what we digest, that makes us strong. It is not what we intend, but what we do, that makes us useful.



**Notices.**

Attention is directed to the advertisement of the Dandy Patent Bag Holder, which appears in this issue. This is a very simple and useful article; every farmer in the country should have one.

We would call attention to the advertisement of the Hamilton Business College, which appears in this issue. This institution, as it is becoming better known, is increasing its popularity every year.

Every young person intending to take a commercial course at January, in book-keeping, shorthand and telegraphy, should send to the St. Catherine's Business College for a catalogue, before deciding on what college to attend.

**FARM IMPLEMENTS—FARM APPLIANCES.**—A work edited by Mr. George A. Martin, and published by the well known firm of Messrs. O. Judd & Co., New York. This volume contains over two hundred illustrations, which should be of no inconsiderable value to the farming community.

**Fences, Gates and Bridges.**—Another work published by Messrs. O. Judd & Co., has come to hand, being liberally illustrated throughout, and one, we should imagine, that will meet with a favorable reception among agriculturists.

We are in receipt of a picture from the "Toronto News," entitled, "The Fathers of Confederation," which reflects credit upon that journal. It comprises the leading public men of our country irrespective of party; and framed, would be an acquisition to the homes of our Canadian farmers.

The Illustrated London News, of New York, in addition to their usual handsome weekly issue, have also forwarded us a copy of their Christmas Number, which we most candidly admit caused us no little surprise, as well as much pleasure. Such refined and excellent art cannot fail to have a salutary effect upon any community, and we unhesitatingly recommend it to our readers, feeling confident that they will never regret the outlay. Such a paper deserves support. We heartily wish them success, and they deserve it.

**THE CULTURE OF FARM CROPS.**—The reputation of the Author, Mr. Henry Stewart, is a guarantee of the excellency of the work; the book is presented by the publisher in a handsome and attractive form. It has a full table of contents and a copious index by which reference to any one of the numerous subjects treated is made quite easy. The subjects treated upon comprise the nature and condition of all the elementary matter which enters into the substance of plants; the nature and composition of the soil; the elements and processes of plant growth; plant food; composition of agricultural plants; what crops take from the soil; manures and the elements of them, and their action in and upon the soil; tillage, and its primary importance to the successful growth of crops. This book should be in every farmer's house and in every student's library; for the farmer it is a library in itself, and for the student a most valuable book for reference because of the very large amount of matter which is condensed in its pages. It is published by Duane H. Nash of Millington, Morris Co., New Jersey. Price of book \$1.50.

By the opening of the Canadian Pacific Railway the ranches of the district of Alberta have become accessible, and near this vast territory (which some ten years ago was denized by the buffalo) there are upwards of 100,000 cattle of a very good class. They have been graded up by the introduction of pedigree bulls from the leading herds in this country. The first lot of steers from these ranches have just arrived, and have been disposed of in London, where they have realised, considering the extremely low prices ruling in the market, the very handsome average of £16 per head. These, according to Canadian advices, can be landed at the Canadian Pacific Railway yards at Montreal for about 50s per head. As the rent for the land is only one cent per acre (and it is calculated that ten acres will carry a bullock) it will be seen that Lord Waldron, Earl Lathom, Lord Skelmersdale, Sir Frances de Winton, Mr. Staveley Hill, Q.C., M.P., and other capitalists in this country who had the enterprise

to invest in this venture will realise enormous profits. The effect of this new source of supply upon British and other meat producers, including the older provinces of Canada, will be watched with much interest.—[Liverpool Journal of Commerce.]

**NEW ADVERTISEMENTS.****ADVERTISING RATES.**

The regular rate for ordinary advertisements is 25c. per line, nonpareil, or \$3 per inch. No advertisement inserted for less than \$1. Special contracts for definite time and space made on application.

Advertisements unaccompanied by specific instructions inserted until ordered out, and charged at regular rates.

The FARMER'S ADVOCATE is the unrivalled advertising medium to reach the farmers of Canada, exceeding in circulation the combined issues of all the other agricultural publications in the Dominion. Send for an advertising circular and an estimate.

**SPECIAL NOTICE.**

THE FARMER'S ADVOCATE refuses hundreds of dollars offered for advertisements suspected of being of a swindling character. Nevertheless, we cannot undertake to relieve our readers from the need of exercising common prudence on their own behalf. They must judge for themselves whether the goods advertised can, in the nature of things, be furnished for the price asked. They will find it a good rule to be careful about extraordinary bargains, and they can always find safety in doubtful cases by paying for goods only upon their delivery.

**GREAT SALE**

at Elmira, Waterloo county, Canada, 10 miles north of Waterloo, G. T. R. Station, and 9 miles south of Alma, G. T. R. (Western Division).

on Friday, December 16, 1887.

**30 HEAD PURE-BRED SHORTHORNS**

consisting of young Bulls, Cows and Heifers. Many of the animals are of the Beauty and the Lady Day importation, the same as Oscar, who won the sweepstakes at the Iowa State Fair for the best bull of any age, and Baron Warlaby, who stood at the head of the Bow Park Herd and won the grand sweepstakes at the Iowa State Fair, and at the Minnesota and Dakota Fairs. This year's calves are got by Young Strathallan, dam Rose of Strathallan, who won the sweepstakes two years in succession in Canada for the best female of any age. A sister of Young Strathallan was sold for \$1400 to Mr. Cargill, M. P. P. Catalogues on application. The entire herd will be sold without reserve. 264-a

**HENRY GROFF, Elmira P. O., Ont**

**UNRESERVED AUCTION SALE**

OF  
**22 PURE-BRED SHORTHORNS, 10 GRADES,  
12 HORSES, 40 SHEEP, 10 PURE BERKS, &C.**

Having decided to retire from farming, I will sell by auction on

**Wednesday, December 21st, 1887,**  
the whole of my **Stock, Implements, Wheat, Roots, Hay, Etc.** Cows were purchased by me since formation of Dominion Herd Book for the foundation of a herd, and have never been fed for show purposes, and are in a good, healthy, breeding condition. This is an opportunity that will not likely occur again for anyone to start or increase their herds. For catalogues apply to

263-b **JOHN BALLACHEY, Brantford, Ont.**

Trains leaving London, Toronto, Buffalo, Tilsonburg, etc., and intermediate stations, on morning of 21st, stop at farm for visitors to get off and take them on again returning in the evening. W., G. & Bruce train met at Brantford at 12.30

**DAIRYMEN'S ASSOCIATION  
OF WESTERN ONTARIO.**

THE ANNUAL CONVENTION OF THE ABOVE Association will be held in the  
**TOWN OF LISTOWEL**

—ON THE—

**11th, 12th and 13th days of January**

next. Dairymen, and all interested in dairy products, are urgently invited to attend. Parties attending the convention are advised to purchase return tickets, as the Committee have heretofore failed to make any satisfactory arrangements with the railway companies for a reduction of fares.

By order,  
**C. E. CHADWICK,**

Secretary's Office, Ingersoll, Dec. 1, '87. SECRETARY. 264-a

**WESTON'S FAMOUS TEA!****HANDSOME OFFER!**

On receipt of price I will send a handsome tin caddie containing 5 lbs. 60c. tea (black, green, gunpowder or Japan), for \$2.75; 10 lbs. for \$4.50; 20 lbs. for \$8. These are pure teas, and guaranteed to suit or money refunded. Express paid on all orders of 5 lbs. and upwards. Send for full price list. Address

**WM. H. WESTON,**

Tea and Coffee Merchant, 64 Stanley Street, LONDON, ONT. 264-ff

**WANTED**

Reliable parties to introduce the

**Hartsfeld Automatic Continuous  
and Improved Economical  
Coke and Charcoal  
Ovens**

Of any capacity. Also, latest improved portable reduction works and prospecting hand-power diamond bit rock drill that will bring up a solid core 500 feet.

**New Water Jacketed Cupola Furnace.**

Keim's New Water Jacketed Cupola produces superior castings with a saving of a laborer and four percent of a saving in metal and fuel. It is especially adapted for the use of stove, brass and iron foundries, also for the treatment of phosphor-bronze, copper and bell metal. It is so constructed that it requires little if any repairs, and the bottom need not be dropped for months. Estimates furnished for portable reduction works, for the smelting of gold, silver, lead and copper ores. Assaying and Analyzing promptly attended to by the best of chemists. Your correspondence is solicited. Send stamp.

**THE HARTSFELD FURNACE CO., (Limited.)**

Box 459, Cincinnati, Ohio. 264-y

**Stock Notes.**

We call attention of our readers to the great closing out two days sale of Mr. John Ballachey. This will be a rare opportunity for any one wishing to increase their herds, as Mr. Ballachey spared no expense in starting the herd, and does not look for fancy prices; but bring what they will, they have to be sold, as he expects to leave the country before 1st January next.

Mr. Henry Groff's entire herd of Shorthorns will be disposed of on Friday, Dec. 16th. Our readers who desire to procure some first class stock, should not fail to attend this sale. His stock is well known throughout the whole of Canada; see advertisement in this issue.

Mr. Arthur Johnston, of Greenwood, writes us to say that his importation of Scotch Shorthorns are safe at quarantine at Quebec, having landed there on the 3rd of November in good health, but greatly reduced from a long and severe passage of 14 days. They are expected home about the last week of January, when he will be very glad to show them to intending purchasers and all Shorthorn men.



A horse's head indicates his character very much as a man's does. Vice is shown in the eye and mouth; intelligence in the eye and in the pose, in the mobile nostril, and active ear. The size of the eye, the thinness of the skin, making the face bony, the large, open, thin-edged nostril, the fine ear, and the thin, fine mane and foretop, are indications of high breeding, and accompany a high-strung, nervous organization, which, with good limbs and muscular power, insures a considerable degree of speed in the animal. The stupidly lazy horse that drivers call a "lunk-head" has a dull eye, usually a narrow forehead and contracted poll. He is not represented in this group, but occurs not infrequently, is always a blunderer, forgets himself, and stumbles on smooth ground, gets himself and his owner into difficulties, calks himself, is sometimes positively lazy, but often a hard goer. He needs constant care and watchfulness on the driver's part. A buyer of equine flesh should be able to detect the good and bad qualities of the animals he contemplates purchasing. This valuable knowledge is only acquired by a careful study of the various parts of horse physiognomy.

Should a wagon or buggy tire become a little loose from shrinkage of the felloes, instead of taking the wheel to the shop to have the tire cut and replaced, get half a gallon of linseed oil, and after heating it pretty well, pour the same in a shallow dish and give the rim of the wheel two or three slow turns around through it; the oil penetrating the felloes will so swell them that the tire will become as tight as ever.

Ohio farmers have always been grumbling that wheat growing doesn't pay, and a Delaware County girl resolved to put the matter to a test. She rented 5½ acres and counted every item in the cost of production; the biggest bill being 1,800 lbs. of bone meal, costing \$31.50. The total cost was \$98.12, from which outlay she realized \$142.10, being 203 bushels at 70c. each; average yield 35 bushels per acre; cost of raising a bushel 48c.; percentage of grain on the investment, 44 percent. Why don't all the Ohio girls raise wheat, and allow the boys to raise the bread, calves, etc.?

The time was, says the Stockman and Farmer, when the average farmer of the Central States would have considered it an insult to intimate that he should use "patent manures" on his farm. His land was rich enough, he thought, to produce corn, wheat and hay from generation to generation, without any such appliances. Happy for the present owner would it be had their predecessors—good honest men that they were—treated their land more fairly. In many cases they took crop after crop from the rich soil until it became very much impoverished, and it is found almost impossible to get a good set of grass. Farmers of to-day should learn from the experience of others. If you take from the soil its rich elements, and make no equivalent return, you are not only exacting usury, but are reducing the principal. Study the nature of your soil. Learn the constituents you take from it in the crop. Grow as large crops as possible, but take care to return to the soil the elements you take from it. The artificial fertilizers of to-day, carefully analyzed as they are, are admirably adapted to this purpose. Get those best suited to your wants, and keep up the richness of the land.



## BELL ORGANS

AT THE  
COLONIAL EXHIBITION

were patronized by the following distinguished persons:

The Marquis of Lorne and  
H.R.H. Princess Louise,  
Rt. Hon. Sir Robt. Bourke,  
Governor of Madras.  
Lady Douglas, of Victoria, B. C.,  
Sir Robert Affleck, and

The British Government  
a fine Organ for the use of the  
forces at Aldershot.

These Sales were made after a  
thorough test of all the Organs in  
the Canadian Court

W. BELL & CO., Guelph, Can.  
CATALOGUE FREE.



## COLEMAN Business

NEWARK, N. J. Open all the year. Best course of Business Training; best facilities; pleasant location; lowest rates; shortest time; most highly recommended. Write for catalogue and be convinced. H. COLEMAN, Pres't.



### THE DAISY CHURN

was awarded the Silver Medal and First Prize over all competitors.

AGENTS WANTED  
in every town in the Dominion. For Price List and Terms Address

WORTMAN & WARD MFG. CO.,  
LONDON, ONT.

## ONTARIO BUSINESS COLLEGE

Belleville, Ontario.

From the Atlantic to the Pacific.

Already in 1887, students from Bermuda, Nova Scotia and New Brunswick in the east, from British Columbia in the west, and from the intervening Provinces and the United States, have been in attendance. In all, eighteen States and Provinces have been represented among its 5,000 students. The reputation indicated in this record is unapproached by any similar institution. For circulars address, ONTARIO BUSINESS COLLEGE, Belleville, Ontario.

W. B. ROBINSON, J. W. JOHNSON, F.C.A., Principals.

## Ontario LADIES' College WHITBY, ONT.,

more popular and successful than ever. The literary course in some departments equals a full University course. Thorough Conservatory course in Instrumental and Vocal Music. The Fine Art Department is under the direction of Canada's best artist. Elocution and Commercial branches are taught by gifted specialists. The social habits and manners of the pupils receive due attention from a Lady Principal of known ability. New buildings, new apparatus and additional teachers mark the growth of the College and the fresh attractions for next year. College will re-open September 8th. Send for calander to

REV. J. J. HARE, Ph. D., Principal.

## CANADA BUSINESS COLLEGE

HAMILTON, ONT.

TWENTY-SIXTH YEAR.

Best equipped and most successful Business College in the Dominion. Over 250 students past year. Offers unequalled advantages to farmers' sons and others desiring a business education. For handsome illustrated catalogue write.

R. E. GALLAGHER, Principal.

## EDUCATED HEADS AND SKILLED HANDS

Are most readily acquired by attending the

## Central Business College

STRATFORD, ONT.,

A School possessing every facility for imparting a practical EDUCATION founded on sound business and economic principles. Its course of study embodies the every-day facts and most intricate details of mercantile affairs, and secures to its patrons a thorough knowledge of

BOOK KEEPING,  
COMMERCIAL ARITHMETIC,  
BUSINESS PEANSHIP,  
BUSINESS CORRESPONDENCE,  
BUSINESS PAPER.

Regular Classes continue from Sept. until Christmas, and from January to August.

For particulars, address  
W. H. SHAW,  
Principal.

Mention this paper. 261-c

## ST. CATHARINES Business College

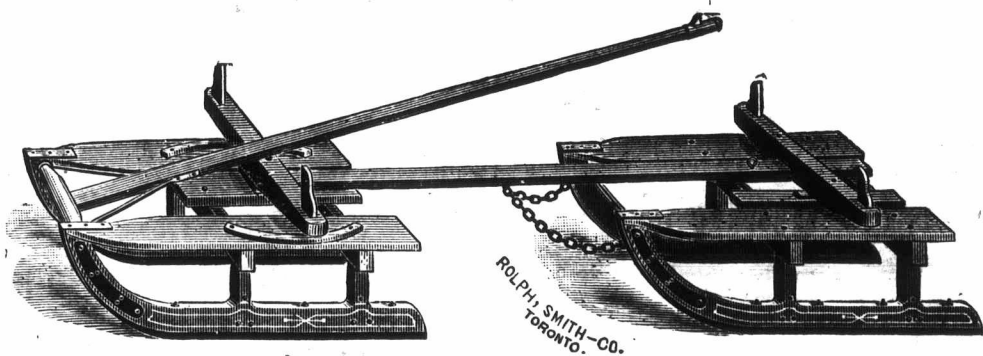
is unsurpassed as a school of Business Training. Young men fitted to take and hold first-class positions as Book-keepers, Shorthand Writers and Telegraph Operators. Students of fair education and some experience preferred, but those who are younger and less experienced are also received, and are guaranteed advantages that are unexcelled in any other college.

CATALOGUES FREE.

W. H. ANGER, B. A.,  
PRINCIPAL.



### The BAIN WAGON COMPANY'S **BENCH BOB.**



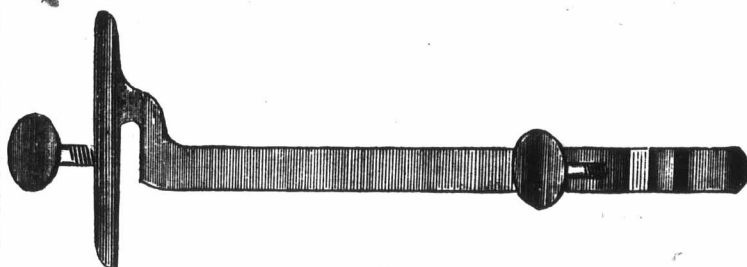
THE BEST IN THE MARKET FOR  
FARM WORK, LOGGING, TEAMING, ETC., ETC.  
**TWO-INCH STEEL SHOES.**

264-tf

Address **BAIN WAGON CO., Woodstock, Ont.**

### **CHALLENGE CROSS-CUT SAW SET and JOINTER** FARMERS and SAWYERS

have now the opportunity of procuring *one tool* that not only sets a saw properly but joints it perfectly. No one owning a saw can afford to be without it. Full description and testimonials sent free. **Price \$1 each** by mail. Usual discount to the trade.

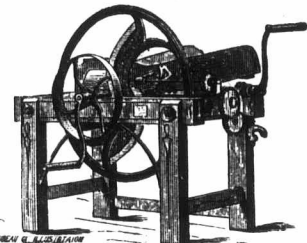


County rights for sale. Agents wanted.

**CHALLENGE SAW SET CO.,**  
Meadville, Pa., U. S. A.



**DAIRYMEN and STOCK RAISERS, Attention!**



**STRAW CUTTERS**  
Large or Small, for Power or Hand.

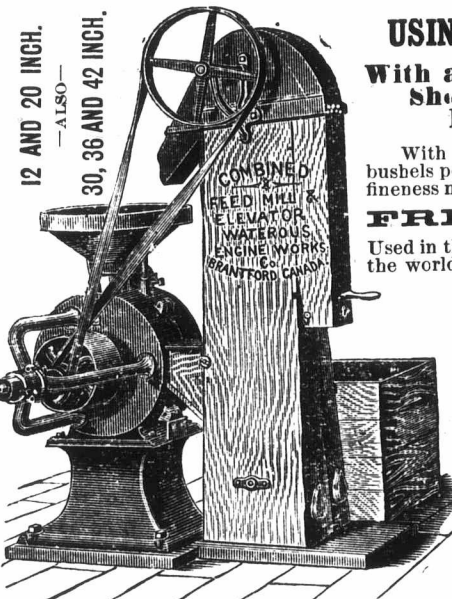
Large one three lengths of cut.  
Small one two or one length of cut.

Prices to Suit the Times.

**Root Pulper or Slicer.** Capacity by hand one bushel per minute.

Pulp or Slices Fine or Coarse to Suit.  
Address **B. BELL & SON, St. George, Ont.**

### **Standard Chopping Mills.**



12 AND 20 INCH.  
—ALSO—  
30, 36 AND 42 INCH.

**USING BEST FRENCH BURR STONES,**  
With and Without Elevator Attachment, as Shown in Cut, and Shaking Screen to Remove Nails, Bolts, Stones, Etc.

With Elevator one man can attend to mill and grind 10 to 35 bushels per hour, depending on power, size of mill, and degree of fineness meal is ground.

**FRENCH BURR STONES,**  
Used in these mills, are acknowledged by all the best grinders in the world.

The Mills are exceedingly simple; any one with common sense can run them successfully.

Eastern Offices: 154 St. James Street, Montreal,  
34 St. Paul Street, Quebec.

Send for new Link-Belt Catalogue; 128 pages: just out.

**Waterous Engine Works Co.**  
Brantford, Canada, and St. Paul,  
Minn., U. S. A.

263-tf

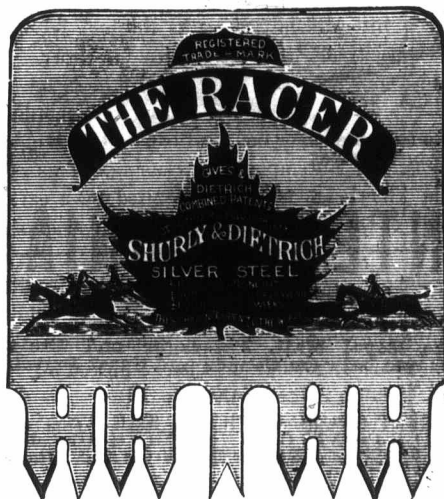
### **FOREST CITY BUSINESS COLLEGE** LONDON, ONT.

SEVENTH YEAR OF THE COURSE. It pays to take a course in an institution that has a recognized standing among business men. Young men from the farm will find it a good investment to take a three or four months course with us.

*Westminster York*

**THE RACER.**

THIN BACK, LARGE TOOTH, CROSS-CUT SAW.



It stands without a rival and is the fastest cutting Saw in the world. It has beaten the best Canadian and American made Saws 83 1/4 percent in every contest. Its superiority consists in its excellent temper. It is tempered under the Secret Chemical process, which toughens and refines the steel. It gives a finer and keener cutting edge, and will hold it twice as long as by any other process. We have the sole right for this process for the Dominion of Canada.

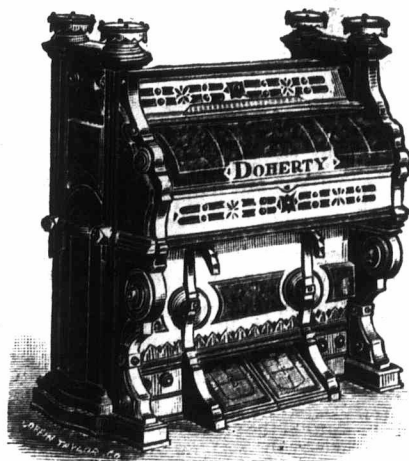
None genuine that are not like the above cut, with registered Trade Mark, with the words "The Racer," and the Maple Leaf with our name. Price \$1.00 per foot.

CAUTION.—Beware of Counterfeits. There are inferior Counterfeits on the Markets. They are intended to be sold at a high price upon the reputation of this Saw. We will send to any address a Saw exactly like any Counterfeit, warranted equal in quality, or no sale, at 60c. per foot. Therefore do not be humbugged into paying a first-class price for a second-class saw. A fact to bear in mind that if the material and temper are not of the very best quality the shape of the teeth amounts to nothing. A saw, like a knife, will not cut fast without it will hold a keen cutting edge. We have cut off a 14-inch sound basswood log in eight seconds with this saw. Manufactured only by

**SHURLY & DIETRICH,**  
Saw Manufacturers, GALT, ONT.

Mention this paper.

264-c



**The "DOHERTY ORGAN"**

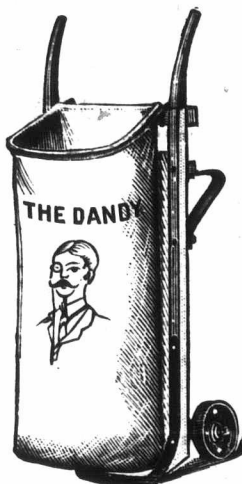
maintains its supremacy over all others.

**BUY THE BEST.**

261-y



**THE "DANDY" PATENT BAG-HOLDER.**



can be set upon the front of a grain bin, a bar screwed under the handles of a truck, or any other suitable support. It can be tilted forward when commencing to fill; afterwards, a touch of the shovel brings it to a level position. The inventor was awarded a bronze medal and diploma at the Ontario and Provincial Exhibition, 1887.

**PRICE ONLY 75 CENTS** for this useful article that will last a lifetime. Sample (free by express) on receipt of price.

**AGENTS WANTED** in several Counties. Exclusive territory for good men.

**C. W. ALLEN & CO.,** Commercial Buildings, TORONTO. General Agent for the Northwest—Jas. H. Ashdown, Winnipeg. 264-a

**THE INTERCOLONIAL Railway of Canada.**

The Royal Mail, Passenger and Freight Route between Canada and Great Britain

DIRECT ROUTE BETWEEN THE WEST AND ALL POINTS ON THE LOWER ST. LAWRENCE AND BAIE DE CHALEUR.

New Brunswick, Nova Scotia, Prince Edward Island, Cape Breton and Newfoundland.

NEW AND ELEGANT BUFFET SLEEPING AND DAY CARS RUN ON THROUGH EXPRESS TRAINS.

Passengers for Great Britain or the Continent, by leaving Toronto by 8.30 A. M. train Thursday, will join outward mail steamer at Halifax a. m. Saturday. Superior Elevator, Warehouse and Dock accommodation at Halifax for shipment of Grain and general merchandise.

Years of experience have proved the Intercolonial in connection with Steamship lines to and from London, Liverpool and Glasgow to Halifax, to be the quickest freight route between Canada and Great Britain.

Information as to Passenger and Freight Rates can be had on application to ROBERT B. MOODIE, Western Freight and Passenger Agent, 93 Rossin House Block, York Street, Toronto.

D. POTTINGER, Chief Superintendent. Railway Office, Moncton, N. B., Nov. 22nd, 1887. 253-y

**BOOKS 3 CENTS EACH.**

The following books, each one of which contains a complete, first-class novel by a celebrated author, are published in neat pamphlet form, many of them handsomely illustrated, and printed from clear, readable type on good paper: "Sir Noel's Heir," by Mrs. May Agnes Fleming; "A Bartered Life," by Marion Harland; "An Old Man's Sacrifice," by Mrs. Ann S. Stephens; "The Forcellini Rubies," by M. T. Calder; "The Old Oaken Chest," by Sylvanus Cobb, Jr.; "The Pearl of the Ocean," by Clara Augusta; "Hollow Ash Hall," by Margaret Blount; "Cliffe House," by Etta W. Pierce; "Under the Lilacs," by the author of "Dora Thorne"; "The Diamond Bracelet," by Mrs. Henry Wood; "The Lawyer's Secret," by Miss M. E. Braddon; "The Strange Case of Dr. Jekyll and Mr. Hyde," by R. L. Stevenson; "A Wicked Girl," by Mary Cecil Hay; "Lady Valworth's Diamonds," by "The Duchess"; "Between Two Sins," by the author of "Dora Thorne"; "The Nine of Hearts," by B. L. Farjeon; "Doris's Fortune," by Florence Warden; "A Law Marriage," by Miss Mulock; "The Guilty River," by Wilkie Collins; "The Poison of Asps," by Florence Marryat; "Moat Grange," by Mrs. Henry Wood; "Forging the Fetters," by Mrs. Alexander; "A Playwright's Daughter," by Mrs. Annie Edward; "Fair but False," by the author of "Dora Thorne"; "Lancaster's Cabin," by Mrs. M. V. Victor; "Florence Irvington's Oath," by Mrs. Mary A. Denison. We will send any Four of the above books by mail, post-paid, for 12 Cents; any Ten for 25 Cents; the entire number (26 books) for 50 Cents; the entire number, bound in boards, with cloth back, for 75 Cents. Postage stamps taken. These are the cheapest books ever published, and guaranteed worth three times the money asked for them. This offer is made to introduce our popular publications. Satisfaction guaranteed or money refunded. Address, F. M. LUPTON, Publisher, 63 Murray Street, New York. 264-a

**BOUND VOLUMES OF THE Farmer's Advocate for 1887**

ARE NOW READY. PRICE \$1.60. We have also a few volumes of 1884 and 1885 left. Price \$1.60. Address FARMER'S ADVOCATE OFFICE, London, Ont.

**BONE MILLS** For Grinding Bones Oyster Shells and Grain for Poultry. Every Farmer and Poultryman should have one. Circulars on application. WM. RENNIE, Toronto.

**Burlington Route** FROM CHICAGO, PEORIA OR ST. LOUIS WITH CHOICE OF ROUTES; VIA DENVER, COUNCIL BLUFFS, OMAHA, ST JOSEPH, ATCHISON OR KANSAS CITY. For dates, rates, tickets or further information apply to Ticket Agents of connecting lines, or address PAUL MORTON, Gen. Pass. & Tkt. Agt., Chicago, Ill.

**Christmas Budget Free!**

The Christmas Budget contains all the following good and useful things for holiday amusement: 6 Beautiful Engravings, 60 Portraits of Famous Men, 26 Portraits of Famous Women, 41 Fancy Work Designs, 300 Puzzles, Rebus and Conundrums, 200 Selections for Autograph Albums, 100 Popular Songs, 100 Money-making Secrets, 60 Parlor Games, 83 Tricks in Magic, 68 Amusing Experiments, 26 Popular Recitations, The Language of Flowers, Golden Wives Fortune-Teller, Dictionary of Dreams, Guide to Harmless Flirtation, Lover's Telegraph, Magic Age Table, Morse Telegraph Alphabet, Magic Square, Seven Wonders of the World, Map of the United States, Deal and Dumb Alphabet, and a Calendar for the Current Year. Special Offer! We will send The People's Home Journal, our large 16-page, 64-column illustrated Literary and Family paper, Three Months on trial upon receipt of only Twelve Cents in postage stamps, and to each subscriber we will also send, Free and post paid, The Christmas Budget, containing all the above; five subscriptions and five Budgets for 60 cents. This great offer is made to introduce our paper into new homes. Satisfaction guaranteed or money refunded. Address F. M. LUPTON, Publisher, No. 63 Murray Street, New York. 264-a

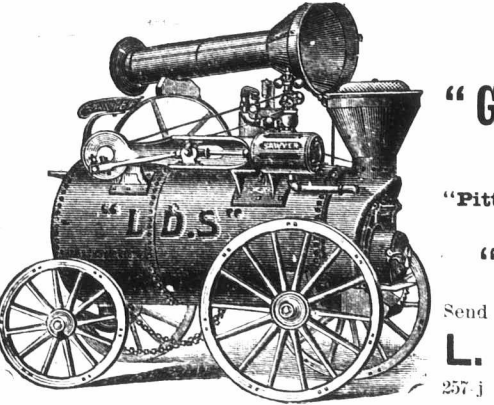
**VIRGINIA ARMS AND MILLS SOLD** and exchanged. Free Catalogues, R. B. CHAFFIN & CO., Richmond, Va. 254-b

*Hamilton Business College*

Corner of King and James Street's, HAMILTON, ONT. "It affords me great pleasure to testify to the efficiency of the Hamilton Business College, having completed the course of study there. I can state that the instruction is practical in every respect. I found the teachers both able and anxious to assist the students, and zealous to do all in their power to make the time of their pupils both profitable and pleasant. D. WISHART." 255-y

Send for circulars, RATTRAY & GEIGER.

**"L.D.S." ENGINES**



WOOD, COAL AND STRAW BURNERS, PLAIN AND TRACTION. "Grain Saver" AND "Peerless" SEPARATORS. "Pitts" Sweep-Powers, for 2, 4, 6, 8, 10 and 12 Horses. Tread Powers, for 1, 2 and 3 Horses. "ECLIPSE" LIGHT SEPARATORS. Send for Illustrated Catalogue and Price List for 1887. L. D. SAWYER & CO., HAMILTON, ONT. 257-j

**THE WORLD'S STAR KNITTING MACHINE**



NO HOME COMPLETE WITHOUT ONE. First prizes at all the leading fairs; knit goods of all descriptions; plain, ribbed or fancy knitting, beautiful full fashioned hosiery. Knit goods of all descriptions, coarse or fine plain rib or fancy work. First prize at all leading exhibitions; 2,000 machines sold at the Colonial Exhibition; London, England. Send for circular. 257-2y-eom

ORELMAN BROS., GEORGETOWN, ONTARIO.

**A CHOICE GIFT**

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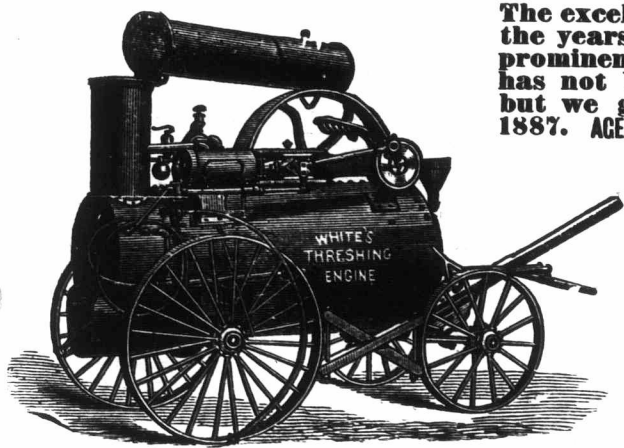
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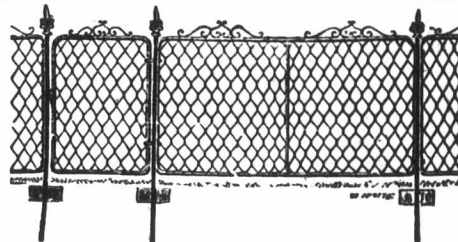
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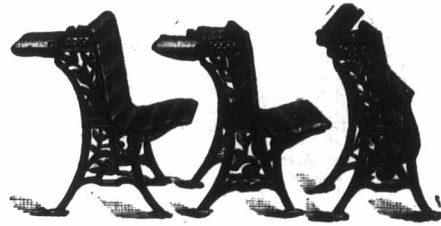
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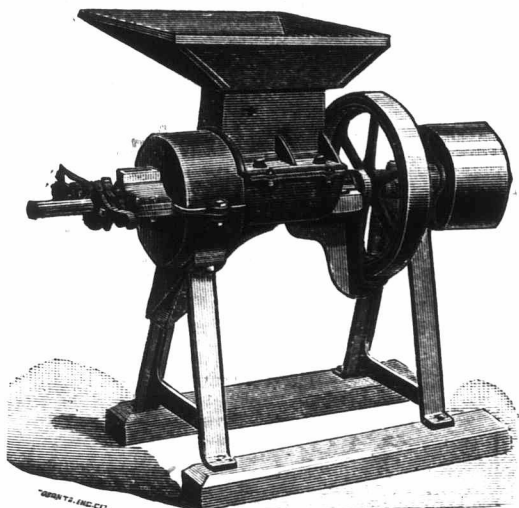
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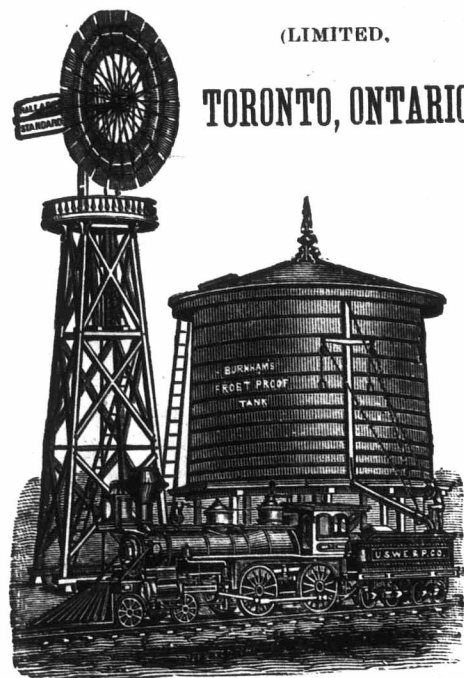
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