FARMER'S ADVOCATE

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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. Is impartial and independent of all cliques 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 always 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; otherwise we will make the selections ourselves. 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 *Improving the Soil by Green Manuring*, has been awarded to W. A. Hale, Sherbrooke, Que. The essay appears in this issue.

A prize of $5.00 will be given for the best original essay on *The Farmer's Garden.* Essays to be sent in not later than March 15.

A prize of $5.00 will be given for the best original essay on *Root Culture.* Essays to be sent in not later than April 15.

To Our Subscribers.

We have lately received letters containing money in which the senders have omitted giving their Post Offices. Please examine the date lal el on your paper and see if you have been credited with your remittance. The date on your label shows to what time your subscription is paid. If there be any error, notify us at once, so that it may be rectified immediately.

Editorial.

On the Wing.

We received invitations to attend two meetings in the United States, both of which appeared of importance. One was the National Agricultural and Dairy Convention; the other, the American Publishers' Association.

The first was held in the Grand Central Hotel, Broadway, New York, on the 8th and 9th of February. The meeting was composed of practical farmers, produce dealers, Congressmen, Senators, lawyers, medical men, ministers of the Gospel, these professional men being agriculturists also; the labor interest and even women's rights were represented, and representatives of or delegates from a large number of organizations from the Atlantic to the Pacific Coast, from the north and south, were assembled to devise, suggest and unite on action for the advancement of the national welfare.

It was stated that agriculture was the pitch of our national harmony; that it was being overburdened; that the masses of the farmers were being pauperized; that the farms were rapidly being mortgaged and absorbed by capitalists; that the products of the land had been reduced 14 percent, and the price of land reduced 8 percent additional; that despite the boasted wealth of the country, they were really poorer than they were 20 years ago, because of the reduction of the amount of products and the depreciation of values; that burdens would be increasingly felt, and serfdom or slavery must follow the present course of procedure; that the farmers are bearing an undue proportion of the burden; that monopolists were oppressive and unscrupulous, and that the only hope of remedial measures was the uniting of agriculturists and their friends to openly and fearlessly expose the deceptions, and unite in suppressing rings and advancing good measures. The only way to do this was by the ballot—to unite in demanding good measures, and reject from all offices those who could not be depended on to protect the interests of agriculture. It was stated that this organization had been the only one that had ever been able to bring power enough on Congressmen to enact any law for the protection of farmers. They had by their united effort secured the anti-oleomargarine act, and yet advocates of the monied monopolists were still in Congress ready to obliterate that act, if possible, despite the fact, as stated, that between seven and eight millions of hogs die annually in the United States from hog cholera and other perhaps more dangerous diseases, and that even after the death and burial of diseased hogs, they had been resurrected, boiled down and the fat applied for man's use; that from the consumption of this swine food deaths had been caused—to the use of this vile stuff tuberculosis, typhoid fever and consumption could be traced to an incredible and alarming extent. The sale of it is prohibited in New York. It cost this Association a large sum to pass this bill and fight the advocates of adulteration, disease and death for the sake of the profits to millionaires; and this is the first act that has ever been passed to protect the farmer's cow and the farmer's family from fraud and disease. It should deserve and receive the aid and support of every well wisher of the national honor and prosperity.

Mr. Clayton, representing the fruit growers' interest of California, asked the support of the Association to protect the vine growers from the injurious results of the sale of adulterated wines. He convinced the meeting of the superiority of pure grape wine, of its healthful effect, and also of the extremely injurious effects of the spurious or adulterated stuff, it being a dangerous, deadly beverage. One benefited the cultivator of the soil, the other the reverse, the adulterated article being boomed in the Senate by millionaire distillers who could buy up their supporters; the other being only supported by the cultivators of the vine. Similar questions were discussed, and the anti-adulterationist and the railroad attorney's bill were brought up. The latter is an attempt to prevent lawyers sitting in Congress whose chief aim and interest is to favor some corrupt measure that tends to strengthen the railroad monopoly to the injury of the agriculturist. It is plain that many legislators receive their pay from the country, but their energies and time are devoted to aggrandizement in any manner of the companies they are interested in, and every payment falls directly or indirectly on the farmer.

Considerable information was obtainable in regard to stock, the dairy interest, breeds of cattle, etc., which space prevents us giving now. The transportation of dairy products was discussed. It was shown that from one county alone—St. Lawrence Co.—the advantage of shipping via Montreal gave a saving of $28,000 last year, and better results than by shipping to Europe via New York. There was a resolution or two carried that it would have been beneficial to have had a longer discussion; but time was limited.

Another important question discussed was the extermination of the contagious stock diseases. It appears that even good measures have been rejected in Congress merely because opposing parties should not obtain the credit due to them. Congress has been and will again be solicited to guard and protect the interests of the agriculturist, and suggestions will be made to endeavor

to have moneys granted nominally for the advancement of the agricultural interest, really expended for that purpose.

Mrs. Twitchell, a farmer's daughter, an elderly lady, spoke very strongly and impressively of beneficial home influences on the farm —the moral and industrial home education of farmers' daughters, showing that it must be to them that the nation must look for the most ennobling statesmen—men who must save the country from disruption and ruin, if it is to be so saved. She strongly deprecated the injurious results that follow the gild and show of the farmers' daughters who rush to the cities. She cautioned farmers' wives against abandoning butter making and leaving it to factories. She said that she well knew what butter was, and that factory-made butter was not equal to home-made, family butter, when properly attended to. It would not keep as well; neither was it of as high quality. This was now known among the best families.

It was stated that republican government and slavery could not possibly exist together—that the nation was verging to slavery worse than it existed in the South. The President said that more light and more truth were needed in the country, and a stronger bond of unity among the agricultural classes; that much good had already been done by this Association, which was yet in its infancy; that the meeting was not large in numbers, but mighty in the material of which it consisted. He gave a fair hearing, and allowed as fair discussion on different questions as time would permit of. Invitations were received to hold the next meeting at St. Paul and other places. The place of the next meeting is left with the Executive Committee. The President introduced your humble servant as the editor and proprietor of the FARMER'S ADVOCATE, which paper he said he had carefully read for many years, and there was but one agricultural publication that stood as high in his estimation, the *Country Gentleman*. He could commend it to all who were interested in the welfare of the agriculturists.

Mr. A. S. Cadwalader, of Yardley, Penn., exhibited some nice specimens of ivoroid, a new and valuable substance made from cocaine or skimmed milk. This useful material is very hard, almost as strong as iron, and capable of receiving the finest coloring and polish. It has been made into jewelry and fine furniture, but its great use appears probably to be for electric purposes, as from accounts it appears to be the best non-conductor yet discovered. Mr. Cadwalader invited us to his farm; he keeps a large dairy, and sends his cocaine to the factory after taking the cream from it. We had not time to see the farm, but visited the ivoroid factory in Brooklyn with him, and have brought home some of the ivoroid, which may be seen in our office.

We hope to furnish fuller accounts of the proceedings of this Association from the official reports. The only Canadians we met there were Mr. Ward, of Montreal, and Mr. Pitnam, of Annapolis, Nova Scotia.

The meeting was very harmonious; all appeared to be convinced that improvements are needed, and seemed desirous of advancing the interests of agriculturists in every proper manner.

The American Publishers' Association met at the Power House, Rochester, N. Y., on the 16th and 17th February. Representatives of the leading American papers were there, the object being to suppress fraudulent, deceptive and injurious practices, and the demoralization of the press through improper modes of advertising. We believe this will tend to improvement. Mr. L. Cameron, of the London *Advertiser*, was the only Canadian we met there, the Toronto papers coinciding in the undertaking by communication.

When in Rochester we had an interview with Mr. Hiram Selby, one of the American millionaires. He is about 80 years of age, and yet perhaps one of the most extensive farmers of the States. He owns an immense quantity of land both in New York and in the Western States. "How many acres of corn did you have this year?" we asked. "Only a small piece this year; ten thousand acres. I have grown eighteen thousand acres. The crop was good this year, but the price is low. Farming is not as profitable now as it used to be. I grew 190 acres of the best variety of soiling corn ever grown; that paid well. I am receiving orders for it from the seedsmen and others from all over the States. That customs barrier between us is injurious to us and to you. You raise better peas than we can, and we want them, and you want our corn, but the trade is almost prohibited. We have a lot of fools at Washington; we are not going to be dragged into a war by them for a mess of fish. I would go to Washington if I felt well enough. We want peace; had enough of war. This country ought to be one people."

When in conversation with numerous gentlemen in New York and Rochester, expressions were made regarding annexation. The advantages accruing to both countries were discussed. We coincided in the feeling by saying we should be pleased to see the mother and child embrace each other, and believe such would be best for both nations and the world, if it could be amicably accomplished. We were highly pleased to hear the numerous expressions of satisfaction expressed on the condemnation of their boodle officials to Sing Sing. Many of their cities have been mulcted of enormous sums by these men. The feeling of the masses—that is all those that have not been partizans in these nefarious practices—is awakened, and investigations and convictions will follow. Canada generally follows the U. S., both in depression of business and in prosperity. We trust this wave of anti-boodleism will shortly strike some of our cities and legislators, and the manipulators of the sums of moneys granted annually for the benefit of agriculturists and the poor Indians, etc., etc.

The elections just closed have been more a contest for the boodle bags than for the elevation of our nation. The increasing demands for boodle and the devices for granting it have not yet been exposed as much as they will be. We believe in the proverb, namely, that "righteousness exalteth a nation." Without light and without truth, right cannot be maintained. What must follow? The party plank to carry an election will be anti-boodleism, both in the Local and Dominion elections. The sooner any party takes up this plank the sooner they are to take or hold positions after the next elections. All boodlers will object to these remarks, but they are only few in comparison to those that only want what is right. This may not be strictly agricultural, but it is for the benefit of agriculture we state this. We now deem it necessary for your advancement to step on the planks that may be most beneficial to you.

Fertility Leaching through the Soil.

The spring is the best season in the year for making observations as to the effects of drainage, and as to the quantity of fertility lost in the soil and in the manure heap. Observations should be made as to whether the water passes away mainly through the soil or over the surface; in either case a good deal of fertilizing material may be wasted, depending upon the character of the soil, and the substances so wasted should be restored in some form. Sir J. B. Lawes' experiments in this direction have lead to valuable conclusions, and his observations are thus summed up in the Rural New Yorker:

Some substances are held mechanically, some chemically, some are decomposed, one portion is retained, another portion is washed out. Clay has a strong affinity for various vegetable substances, many of which are highly colored; the black water from dung heaps will therefore pass through a soil and become clear. Sulphate and muriate of ammonia and potash are decomposed in the soil, and the acids form soluble compounds with lime, which are washed away. So completely has the lime been washed away on one of our pasture experiments where very large quantities of these salts have been applied for 30 years in succession, that the crop which used to cut four or five tons of hay per acre is now reduced to almost nothing. If we apply chalk or lime the crop will be as good as ever. Common salt passes through the soil unchanged. In our three drain gauges of 20, 40, and 60 inches deep of soil, the amount of salt found in the drainage water every year is the same in quantity as that found in the surface gauge. Our annual rainfall contains very considerable quantities of salt; if our drain guage were covered with vegetation a portion of this salt would be used by the plants, but as we have no vegetation, and common salt does not enter into combination with the soil, it all passes through in the water. All the salts of nitric acid are soluble in water and do not combine with the soil, but they are taken up greedily by vegetation. The amount which leaches through the soil varies greatly. Nitrates are formed in the soil; they are also under certain circumstances destroyed in the soil. From 40 to 50 pounds of nitrogen pass through our drain gauges annually per acre. The annual amount varies with the rainfall, but we have no clear indication that the amount is becoming less from exhaustion of the nitrogen compounds in the soil. Some recent experiments appear to show that soils fix the nitrogen of the air. As the rain does not furnish more than five or six pounds of the 45 pounds of nitrogen found in the drainage water, our soils must have lost 500 or 600 pounds of nitrogen per acre since they were under experiment, and we must before long expect to find some reduction in the annual quantity removed unless the fixation of nitrogen by the soil furnishes a portion of that removed.

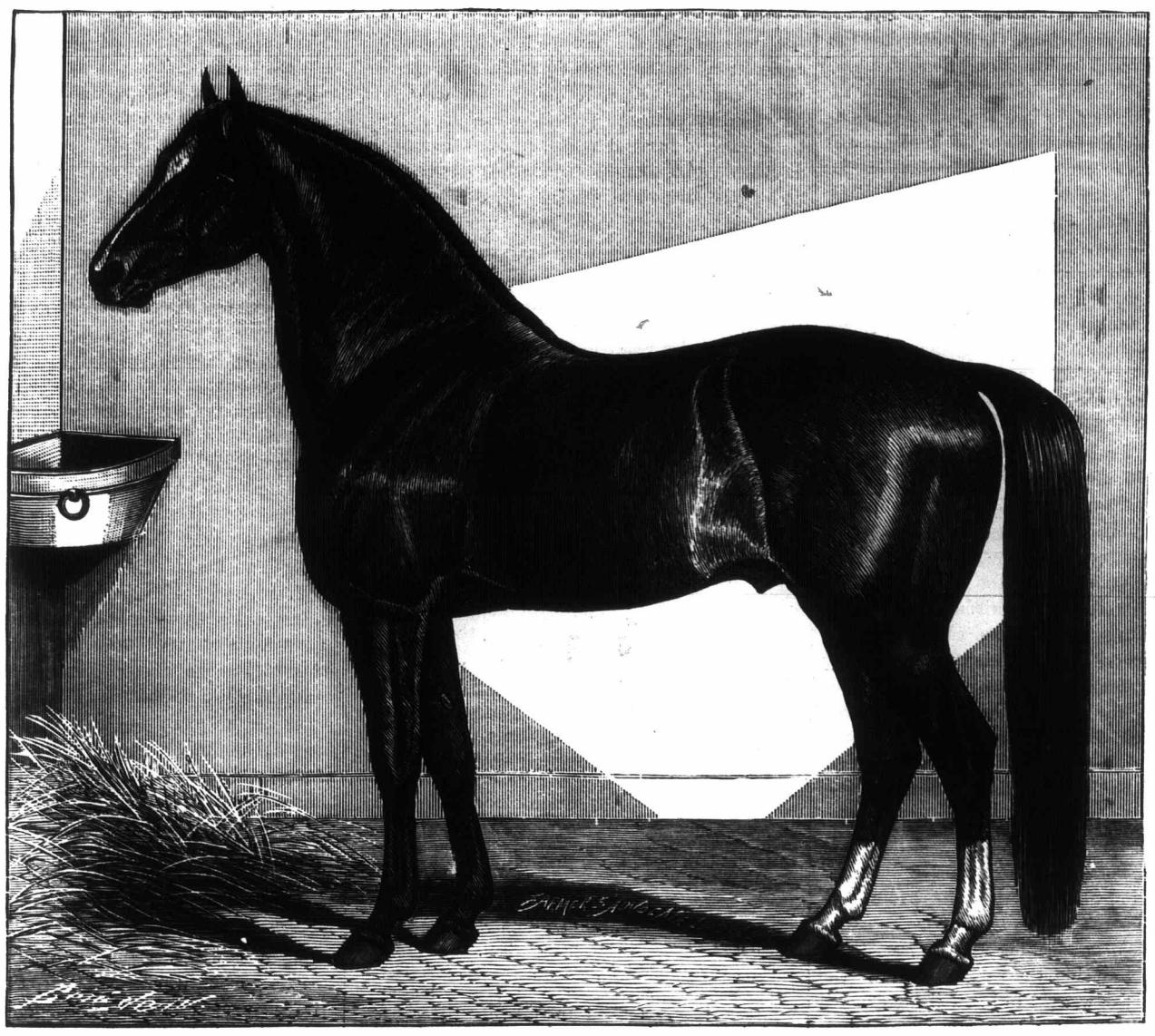
Warrior Chief.

It is with pleasure we call your attention to another of Canada's successful sons of toil. Mr. M. Richardson commenced his farming operations 21 years ago with $1,300; now he owns a 375 acre farm. He has one of the largest and highest barns we have yet seen; the height is 50 feet, the ground floor about 100x100, for his stock, with floor above; the manure all kept under cover; water at all convenient places. What is most remakable is, he has his dairy in the barn close to the cows, and so arranged by ventilators as not to hinder his successful cheese manufacture, which he has profitably carried on almost since he commenced. He never attended a cheese convention, and yet he has commanded the best average prices for his cheese. He keeps a good herd of cows, and makes cheese all the year.

He would not take his milk to the factory if there was one on an adjoining farm. He would not wish to mix everybody's milk with his; he can make as high an average from his cows as any he reads of. He does not believe in running headlong into debt; he has not everything in the order he would wish, but is getting things in order as he can afford. He prefers an improving farm to a degenerating one, and has more pleasure with it. He would not farm if he could not make it pay.

He also has some good horses. This cut represents one of them—one of the right kind to make money from. Mr. Richardson does not waste money on the turf, and has not prepared his horse "Warrior Chief" for it, still, he let him go on two occasions, and he has a record of 2.57, which itself is not bad for a horse of his size and weight, being 1,400 lbs., and 16¾ hands high. He is from the Royal George stock. There are not many horses that we have seen in Canada that would surpass him as a producer of the fine class of carriage horses now in such good demand.

Mr. Richardson's farm affords another pattern for you to follow, namely, he has two large pasture fields, or rather wood pastures, thick with shade trees, located on two distant parts of the farm. He follows a rotation in farming, and has his fields so arranged that from any field when so desired, the cows, in the heat of the day, can always go into one or other of his shaded pasture fields, as they all connect direct or by a lane. In the luxurious shade on such farms as these, with such a pattern to follow or to lead them on, young men can learn how to earn their own bread without the expectancy of becoming leeches on their father's purse or the Government exchequer. This man is happy, independent and prosperous, and has made what he has himself with the aid of his wife, who is the dairymaid and makes the cheese. We would rather take that man's position this day than the position of Czar of Russia, or any other official, and believe his wife has more happiness and contentment than any gilded, jewelled, painted lady, with one or a dozen footmen, and all that the art of the city can lavish. Farmers' daughters, learn how to make good butter and good cheese; do not be led away by the flippant dandy or the painted, fastidious gowks that you may possibly see.



"WARRIOR CHIEF," THE PROPERTY OF MAT. RICHARDSON, ESQ., OF CALEDONIA, BRANT CO., ONT.

Meeting of Shorthorn Breeders.

The advertised meeting of Shorthorn breeders was held in Toronto on the 24th ult. We attended the meeting, but owing to its being held so late in the month, and the pressure of matter upon our columns, we are unable to give a full report in this issue.

The by-laws of the Dominion Shorthorn Breeders' Association, section 14, reads as follows:—

"No animal shall be admitted to registry in the Dominion Shorthorn Herdbook except those whose pedigrees trace in all their crosses to imported cows, registered in the English Herdbook. Registration in the English Herdbook of stock imported previous to 1865 will not be required. No recorded animals that have not ancestors on record previous to Vol. 21 will be admitted. Those imported since 1846 must trace to ancestry distinctly designated, but owing to the difficulty connected with keeping proper records prior to that date, it will be sufficient to know that the ancestry has been imported."

The discussion was confined to this section. Those members whose animals were recorded in the Canada and British-American Herdbooks, but where declared ineligible for the Dominion Herdbook, attempted to amend this section so as to include animals recorded in the American Herdbook. After a heated discussion, the motion to amend the section was lost by a vote of 74 against 10. We reserve comment for our next issue.

Farmers' Clubs

Dominion Farmers' Council.

[This Council meets 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. The Council has now on hand pamphlets containing its Constitution and By-laws, with an account of its origin, also pamphlets containing 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.]

The regular monthly meeting of this Council was held on the 17th ult., President Leitch in the chair.

A large number of communications were read, and the discussing and answering of questions occupied considerable time.

FARMERS AND POLITICS.

A letter was read from G. F. Brooks, Co. Frontenac, asking if political questions were discussed by the Council, and if the Council intended to run farmers or independent candidates for parliament. He said the question of discussing politics was debated in the club of which he was Secretary, some having contended for the affirmative and some for the negative. He was endeavoring to organize several clubs in his neighborhood, meeting monthly, and having a central club composed of delegates from the local clubs meeting annually, and it was his intention to endeavor to obtain an amalgamation with the DOMINION FARMERS' COUNCIL. A meeting for the purpose was to be held on Feb. 24.

The Council welcomed this scheme. It was stated by the Vice-President and other speakers that they would adhere to their present practice, namely, to discuss no political questions except those mixed up with our agricultural affairs, and these must be discussed only from the farmers' standpoint, and not from that of party. This plan had, so far, worked very satisfactorily, and had not given rise to heated debates. With reference to running farmers or independent candidates for parliament, it was decided to say nothing on this subject until the Council had gathered more strength, which could be accomplished mainly by amalgamating more clubs, and these clubs would then be consulted in the matter.

FARMERS' CLUBS AND FARMERS' INSTITUTES.

A letter was read from W. R. Ham, Secretary for the Reach, Port Perry and Scugog Farmers' Institute, stating that the Institute had a large membership, but had not adopted any constitution or by-laws, and asking for suggestions or advice as to adopting the Constitution of the Council. He also wanted to know if the Council obtained grants from the Government, and how such grants were obtained. The Secretary stated that he had forwarded him copies of the Council's Constitution and By-laws.

The Council welcomed the co-operation of Farmers' Institutes, but considered that they could not be amalgamated as such, although they might retain the same officers and members. While sympathizing with the objects of these Institutes, the Council being an independent body and rejecting Government aid, could not carry on business with a body of farmers depending upon the Government for support. The Constitution of the Council prohibited such amalgamation.

GOVERNMENT EXPENDITURE.

Henry Anderson, who was appointed to read a paper upon this subject, stated that he had given the question thoughtful consideration, but confessed that he could not see how the Council at present could handle it without giving it a political coloring. He understood the policy of the Council to be either the reduction of agricultural expenditures or their employment in more profitable channels of agriculture. On the other hand, basing our calculations upon the enormous sums squandered in other branches of industry (not mentioning the other privileges), the farmers, as the most important part of the community, were not receiving half enough money or attention. The question was too vast to be satisfactorily treated in a single paper or discussion. He thought the farmers could vote their own grants and do their own helping, and if other branches could not do the same thing, then let the fittest survive. In any case, the money came out of the farmers' pockets, and it was better that they should give voluntarily than involuntarily. For the present, he did not believe in abolishing agricultural expenditures all at once, for he believed some of them were doing some good, but he thought that the principles which underlie these expenditures should be more thoroughly discussed, and sounder conclusions arrived at. So long as farmers depended upon the Government for support, their agricultural energies would be weakened, and party politics, the bane of our country, would reign in their stead.

GAS LIME AS A FERTILIZER AND AN INSECTICIDE.

John O'Brien read the following paper on this subject:

I tested the effects of gas lime as an insecticide and fertilizer on corn, plums and turnips. In the fall of 1885 I plowed a field of clover and timothy sod. The following May I spread the gas lime at the rate of four loads to the acre, or a little less than two cords, and plowed it in with the gang plow, harrowed it and sowed with the seed drill, forty inches apart, seven quarts of corn to the acre. (I can raise about one-fifth more corn to the acre when sown in drills than when sown in the usual way.) The absence of the black birds in the field, where the gas lime was spread, was remarkable, there being scarcely one to be seen. In the next field, plowed at the same time, there were scores of black birds following the plow. The same effect was observed when the corn came up; the birds did not touch it. There were four drills put in where a fence was removed, and they pulled it nearly all up.

We have a plum tree which blooms every year, and the plums fall off before they come to maturity owing to the depredations of the curculio. I was told to spread gas lime under the tree. I spread the lime around under it, covering a space of fifteen feet from the tree, the result being that we measured 3¾ bushels of plums. The tree had not borne a crop for six years.

On a turnip field I put four loads of gas lime to the acre, after plowing twice; then I plowed light, harrowed, drilled up and sowed the turnip seed, but scarcely one seed came up. I sowed some of the same seed in another field without gas lime, and there was a good crop of turnips.

In answer to questions from several members, Mr. O'Brien made the following statements: The lime was hauled from the gas works in a perfectly fresh condition, and placed in heaps in the field—about six sleigh loads in each heap—and there it lay for two months. I paid nothing for the gas lime, there being scarcely any demand for it, the gas lime company are glad to get rid of it. After spreading it on the field, it was gang-plowed under within six days. The soil was all varieties—gravel, sandy loam, clay loam, stiff clay and vegetable mould—but the best corn was on the clay where it does not usually flourish so well as on lighter soils. The gas lime also effectually destroyed the white grub. It produced no effects on the codlin moth.

Mr. O'Brien then proceeded to describe other experiments which he had made. Several years ago, he sowed salt on spring wheat at the rate of 2 bush. per acre, staking off a strip of 10 paces in the middle of the field on which he applied no salt, and noted the results. That strip was completely destroyed by the wire worm, while to the rest of the field, where the salt was applied, no damage was done. He applied many a ton of salt since that time and always with the same results. In 1881 he lost a six acre field of fall wheat by the wire worm, and he applied salt at the rate of 250 lbs. per acre, and since that time he could find no worm of any kind in that field. In the fall of 1882, he plowed up an old meadow, and sowed it to oats the following spring. The wire worm was very destructive in all the field, except along a narrow strip. He ascertained that on one occasion, before the sod was plowed, his boys were driving a load of salt along that strip, some of which was falling out of the wagon. He shouted to the boys not to waste so much salt, but the salt was not wasted, as the experiment was worth more than the salt; there was not a single wire worm where the salt was spilled out of the wagon.

CLUBS AMALGAMATED.

Moved by W. A. Macdonald, seconded by Henry Anderson, that the Granton Farmers' Club be amalgamated with this Council.—Carried.

Moved by Henry Anderson, seconded by John Kennedy, that the North Dawn Farmers' Club be amalgamated with this Council.—Carried.

Moved by J. W. Bartlett, seconded by Henry Anderson, that the South Dawn Farmers' Club be amalgamated with this Council.—Carried.

Moved by John O'Brien, seconded by W. A. Macdonald, that the Selman Farmers' Club be amalgamated with this Council.—Carried.

W. A. Macdonald stated that, in response to an invitation, he went to aid in the organization of the South Dawn Farmers' Club. The school house where the farmers gathered was full and considerable interest was manifested. He enjoyed the hospitality of Mr. D. D. Budd, President of the Club, and obtained a good deal of information respecting that section of the country (Lambton County.) Five members of the North Dawn Farmers' Club, including the President and Secretary, were also present, and they drove eight miles to witness the proceedings. He believed that the farmers of the township of Dawn were in real earnest, and he was struck with the intelligence with which they went about the organizing of their club. The county was comparatively new, lumbering being still a leading occupation, but the soil was grand—mainly a heavy clay—and it was one of the best dairy districts in the Dominion, although little attention had been paid to this branch of farming. The clovers and grasses flourished immensely. President Budd and other speakers ventilated a number of grievances which the farmers in that section suffered, and it was hoped that they would have them removed by means of efficient organization.

TESTING DAIRY COWS.

The following report of the committee was read and adopted:

RULES AND REGULATIONS FOR TESTING THE INDIVIDUAL MERITS OF COWS.

No lactoscope shall become the absolute property of any club until the Council is satisfied that diligent efforts have been made to test the quality of the milk from the cows in the locality in which the club has been organized, and until the Council passes a

resolution declaring the lactoscope to be the property of the club, the latter shall be responsibe to the Council for $2.00 in case of breakage of the instrument, or any part thereof.

Should the club decide upon testing one or more cows for registration in the Council's Herdbook, the tests shall be made under the following rules and regulations:

1. The *quantity* of milk shall be weighed. If the owner of the cow has scales, the daily yield of milk in pounds shall be recorded not less than once each week during the whole period in which the cow gives milk, and the morning's and evening's yield shall be recorded separately.

2. If the owner has no scales, the quantity of milk shall be determined in the following manner: A wooden pail shall be provided, and the club, or a committee thereof consisting of not less than three members, shall place the pail on an accurate pair of scales, causing the scales to balance; three pounds of water shall then be poured into the pail, and an indelible mark, made by a hot iron or otherwise, shall be indented into the pail (inside) just level with the upper surface of the water, care being taken that the pail stands exactly level. Three more pounds shall then be added, a similar mark made, and the process thus continued until the pail is full of water, a large mark being made every ninth pound, in order to facilitate the counting. The most accurate way is first to stick a pin into the pail at each 3-lb. gauge, making the indelible marks after the pail is empty. A corresponding row of marks shall be made on the opposite side of the pail. This pail shall be used instead of a pair of scales, for determining the quantity of milk, and the milk shall be recorded according to rule 1—with this exception, that the daily yield shall be recorded *twice* every week, and the milk shall be strained, or allowed to stand a short time, in order that the froth may not interfere with making accurate observations. It shall not be necessary to record any fraction of a pound; under one-half pound shall count nothing, over one-half shall count a whole pound.

3. The *quality* of the milk shall be determined by the lactoscope. A committee of not less than three members of the club shall be appointed, who shall control the lactoscope, and whose duty it shall be to visit the owner of the cow not less than once in two weeks, either in the morning or in the evening, to test the quality of the milk, to see the cow milked and the milk weighed, comparing their weights with those made by the owner, to see if the cow is in a healthy condition, to ascertain as near as possible the ration fed, and to report the results to the club. The owner shall not know beforehand when the committee are to pay their visits. Should a material discrepancy appear between the figures of the owner and those of the committee, a special committee of investigation shall be appointed, who shall report to the club. A majority of the members of any committee, regular or special, shall form a quorum, but the owner shall not be a member of any committee appointed to test his own cow. The date of every record, both for quantity and quality, shall be kept. In all cases of lactoscope tests, the cow shall be thoroughly milked, and the milk strained or thoroughly stirred before a sample is taken for analysis.

4. It shall be proper for any member, without being appointed by the club, to visit the owner of the cow in the same capacity as the regular committee, and his reports to the club shall have the same force and effect as those made by the regular committee, and the demand of any such member, after reporting his observations, to appoint a special committee of investigation, shall not be rejected by the club.

5. The committee shall report progress to the club at least once in two months, or, in case of adjournment of meetings of the club, once in three months; the secretary of the club shall send a synopsis of the reports to the Dominion Farmers' Council at least once in four months, and a final report at the conclusion of the test. If the reports are satisfactory, the cow will be recorded in the Council's Register.

SPECIAL OBSERVATIONS.—The Standard not yet being fully decided upon, the clubs may make preparatory tests, in their own way, of a number of cows in their locality, with the view of adopting the foregoing rules and regulations, commencing say in the spring of 1888, to be continued throughout the season, or they may adopt the rules and regulations during the coming season, commencing about a week after the cow drops her calf. The present standard is 4 percent of fat for the *quality*, and 5½ times the weight of the cow for the *quantity* of the milk, but this Standard is liable to be changed or modified, especially in such a manner that a lower percentage of fat may be made good by a corresponding quantity of milk, and *vice versa*. The clubs should discuss these rules and regulations, and suggest any changes that may be desirable. They may adopt more stringent rules if they choose; the more stringent the rules, and the oftener the tests are made, the more confidence will the community have in the tests. If the club has a lactometer and a thermometer, the value of the tests would be increased by taking the specific gravity of the milk with each analysis by the lactoscope. Where only a few cows are being tested, it is desirable to leave the lactoscope with the owners of the cows as long as possible, and let them make a lactoscope test with each weighing of the milk; this will also increase the value of the test, but will not interfere with the duties of the committee with reference to the lactoscope tests. In this case it will be the duty of the committee to compare their analyses with those of the owners, and report thereon in the same manner as with the weighings. During changes in the weather, or changes in the ration, it is desirable to make the tests oftener than under regular conditions.

WORK FOR AMALGAMATED CLUBS.

JOHN KENNEDY.—Judging from the "objects" adopted by the amalgamated clubs and the correspondence read, they seem inclined to undertake experimental work, and appear willing to undertake any work placed in their hands. There are many valuable experiments which farmers could conduct which would cost them no money, and little or no extra effort. Very few farmers know how much capital they have invested in their business, and they know less about how much it costs to raise their products. In many instances the gains made in raising some kinds of crops are cancelled by the losses in others, and still the business goes on from year to year without any knowledge of these facts. Agriculture can not become profitable to the masses of farmers until they take a more business-like view of their operations, and adopt certain standards to guide them in calculating the cost of production. I think this Council, with the aid of amalgamated clubs, could make certain estimates of the capital invested in 100 acre farms—stock farms, dairy farms, and mixed husbandry farms—and also estimate what the various tillage operations cost in order to establish standards bearing on the cost of production.

PRESIDENT LEITCH.—The suggestions made by our treasurer are good ones, but we must be cautious not to impose more work on the clubs than they are willing to undertake. We have all sorts of scientific standards which are as yet little or no use to us, and we should go vigorously to work and establish practical standards of our own, which would be of immense value to us. If we wait till our agricultural professors undertake the work, we shall wait a long time, the results would not be satisfactory, and it would cost us a lot of money, while, with a little effort, we could establish accurate standards with no expense to ourselves or anybody else. For my part, I am very willing to bring in an estimate, based upon my own experience and observations, of the capital invested in a dairy farm, the soil being light, and other members of the Council should be willing to bring in estimates of stock farms and mixed husbandry farms. We should also be pleased to receive estimates, for the sake of comparison, from our amalgamated clubs, and a general average should be struck. If these clubs are restricted as to time, it would be well for them to appoint a committee to do the work, and send us an average of their estimates. From the Granton Farmers' Club we might get an estimate of a stock farm, and from the other Clubs an estimate of a mixed husbandry farm.

The question was discussed and the plan was approved of. It was agreed to submit the following suggestions to amalgamated clubs, the Council also carrying on the investigations at the same time: Give the value of 100 acres, the number of acres cleared, the acreage in pasture, grain, roots, fodder, etc.; the value of the buildings; the number, kind and value of the stock; the kind of machinery, implements and tools and their value; the size of the orchard, including the number of trees; the size of the garden, including vegetables and small fruits. In each case, the character of the soil (heavy, medium or light) should be stated, and the large implements should be valued separately, while the tools and all small articles may be lumped together in one sum. Estimates also to be made of the cost of the various tillage operations; such, for example, as the acreage plowed per day (stating the number of hours) in a heavy, medium and light soil, stating the width and depth and length of the furrow, the condition of the soil while being plowed (wet, dry, baked, etc.), and the kind of team (heavy draft or general purpose). The clubs may take their own time in sending in these reports, and the estimates should be as accurate as possible. With reference to the estimates in tillage operations, the time occupied to plow, harrow, seed or cultivate an acre, or any number of acres, should be taken from accurate observations made by the farmer who sends in his report to the club, and care should be taken not to receive any reports as to the time occupied to perform any of these operations except when the work can be continuously performed from day to day, and not what can be performed in a single hour or day. These investigations should be continued throughout the spring and summer months.

It is to be hoped that the clubs will willingly co-operate with the Council in this work, or discuss what part, if any, they are willing to undertake, sending occasional reports to the Council. The results of these investigations will be published in book-keeping form, so that farmers can see at a glance what the average cost of producing farm products is.

Professor J. W. Sanborn, of the Missouri Agricultural College, is said to prefer Fultz to any other of the 150 kinds of wheat with which he has experimented.

Professor W. A. Henry, of the Wisconsin Agricultural Experiment Station, says of quack grass: "Plow it under, hoe it up, cut off at the surface of the ground every green stalk, and it must die as surely as an animal will when air is withheld."

A horse shies because he sees something which he does not understand. It may be some new or unusual object that the horse sees, or it may be an imperfect view of one. Even a familiar object, if it comes to view suddenly and unexpectedly, will cause a horse to shy or jump, just as an unexpected object or sound causes a nervous person to start. Harsh treatment only aggravates the matter. The more the horse is scolded and whipped, the more nervous he gets; and every time he passes the place where the fright and whipping occurred, he will recollect the unpleasant affair, and he will begin to prick up his ears and fidget, ready for another jump. The proper way is never to strike or scold a horse that is startled or frightened. Speak to him coolly, calmly, and kindly; give him time to see and collect his scattered senses, and make him feel that you are his friend and protector. When he sees that all is right, there is an end to all further trouble.

The Dairy.

New and Approved Plan of Creamery.

We present illustrations of building and ground plan of a creamery prepared by a practical creamery man for Messrs. Chas. P. Willard & Co., Chicago, Ill., including equipment and specifications of material. He gives the total cost as being about $1800; but this estimate is much too high for Canada. It will be quite easy for the intending builder to get estimates of the material from his lumber dealer, and the equipments from any dealer in dairy supplies advertised in the ADVOCATE. It is suitable for any system of cream gathering, including creaming by centrifugal separators.

PLANS AND SPECIFICATIONS.

Main creamery building 20x40 ft.; ice house 20x30 ft.; boiler room 16x18 ft.; divided as follows, and for use as described:

Main part divided into five rooms; receiving room 9x 20 ft.; floor 6½ ft. above sills. Drains run to outside of building. Can be used for receiving and straining cream, washing cans, etc.

Cream room 12x 20 ft; used as a cream tempering room; floor elevated three feet above sills, slanting floor draining into drain in churn room.

Churn room 9x20 ft.; has floors on a level with sills, slanting toward cream room, with drain at the junction with elevated floor of cream room.

Butter room 10x 10 ft.; slanting floor; drain connects with main drain in churn room.

Cold room, No. 1, 10x10 ft.: can be use i as storage for salt, tubs or butter

Cold storage room, No. 2, for storing butter, is 10x10 ft.; is built in ice house, and is covered with galvanized iron, and surrounded with ice.

MATERIAL.

The creamery is built in the following manner, viz.:

Sills 6x8, on stone or brick foundation. Joist for elevated floor, 2x8, spiked to studs, supported in center with 4x6 timbers, shored up on pillars. Ends shored up with 2x4 studs; outside walls 2x4 studding, 12 ft. long. On outside of studs nail rough inch boards; paper with building paper: fur on it with inch strips; side with drop-siding, or stock boards stripped; on inside of studs rough board, paper, fur out with inch strips and ceil with fence flooring, ceiling overhead with fence flooring; floor laid with clear flooring; partitions ceiled on studs set flat ways, on both sides, leaving 2-inch air space. Cream and churn rooms can be in one, or partitioned, as desired.

The above described creamery has capacity sufficient to manufacture from 700 to 1200 lbs. of butter a day. To enlarge its capacity add to the width of main building. The raised floors are constructed for convenience in handling cream. Cream taken into receiving room, strained and carried into vats, through conductor pipes; also from vats to churns, through conductor pipe, saving all lifting of cream in cans, rendering it possible for one man to do one-half more work than in a creamery without raised floors. An office can be taken off, of wash-room, if desired. The following will be found a complete bill of material for this creamery as shown:—

MAIN BUILDING.

Sills, 6 pieces 6x8, 20 ft. long.
Sills 2 pieces 6x8, 20 ft. long.
Lower joist, 32 pieces 2x8, 20 ft. long.
Upper joist, 32 pieces 2x6, 20 ft. long.
Rafters, 42 pieces 2x6, 14 ft. long.
Studding, 109 pieces 2x4, 12 ft. long.
Flooring, 1000 ft.
Siding, 1900 ft.
Casing and cornice, 1200 ft.
Sheathing, 4100 ft.
Ceiling, 4300 ft.
Strips, 1x2 in., 900 ft.
Paper 2000 square ft.
Shingles, 10,000.

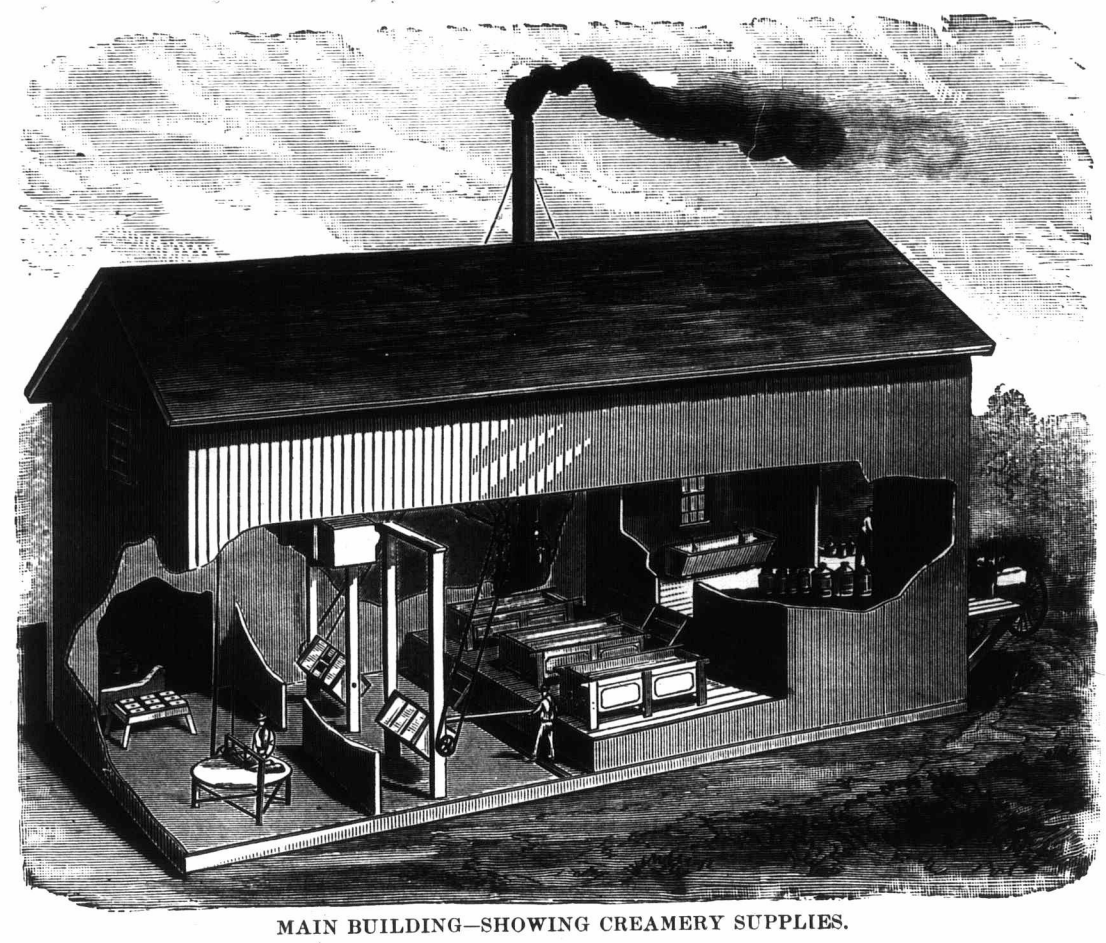
ICE-HOUSE.

Sills, 2 pieces 6x8, 30 ft. long.
Sills, 2 pieces 6x8, 20 ft. long.
Rafters, 32 pieces 2x6, 14 ft. long.
Studding, 62 pieces 2x6, 12 ft. long.
Sheathing and roof boards, 2300 ft.
Siding, 1750 ft.
Cornice and casing, 300 ft.
Strips, 1x2 in., 300 ft.
Shingles, 9,000.
Paper, 1400 square ft.

BOILER-ROOM.

Sills, 2 pieces 6x8, 18 ft. long.
Sills, 2 pieces 6x8, 16 ft. long.
Studs, 40, 2x4, 12 ft. long.
Rafters, 14, 2x4, 18 ft. long.
Sheathing, 1000 ft.
Ceiling joists, 2x4. 16 ft. long.
Siding, 800 ft.
Shingles, 3000.

Twelve 10x16 12-light windows.
One keg each of 6d., 8d., 10d., 20d., and 75 lbs. of 4d. nails.



MAIN BUILDING—SHOWING CREAMERY SUPPLIES.

Labor equivalent to four men's work for twenty-five days.

The lumber bill includes material for window-casings and doors. It will take about five and a half rolls of sheathing paper, costing about $5.50 total. A lumber company in Chicago estimate the cost of the lumber, including shingles, at $512.25.

In estimating on the machinery and apparatus it has been (says Messrs. Willard & Co., in a circular containing a list of their dairy supplies,) our object to make the outfit very complete, including the best goods, positively reliable. Quite a reduction in the cost can be made by substituting second grade machinery, with which the market is plentifully supplied.

The machinery, including an eight horse-power engine, and other portions of the outfit, is estimated at $962.90, but engines can be purchased cheaper here than in the United States, although there is little difference in the price of the other supplies. Good second-hand appliances can often be procured cheap.

To kill lice on animals the *Maine Farmer* says: "Make a strong soap suds from soft soap and saturate the parts of the animal infested. After the lapse of a week repeat the application. This remedy is as harmless as pure water, and as effectual as an application of poisonous material."

Testing Milk and Cream.

[A Lecture delivered by W. A. Macdonald before the Dominion Farmers' Council.]

No. III.

1.—THE LACTOMETER.

To our dairymen this is the best known instrument, and tests the quality of the milk by the specific gravity. Having shown, however, that all testing must hinge upon the percentage of fat, some of you may ask, What has the specific gravity to do with the quality of the milk?

If the specific gravity of water be taken as 1, that of milk will, on an average, be 1.031; in other words, if a given volume of water weighs 1 lb., the same volume of milk will weigh 1.031 lbs., or if the volume of water weighs 1000 lbs., the same volume of milk will weigh 1031 lbs. Bulk for bulk, therefore, milk is 3.1 percent heavier than water. An imperial gallon of water weighs 10 lbs.; therefore a gallon of milk weighs 10.31 lbs. For all practical purposes, it is correct enough to say that a gallon of milk weighs 10⅓ lbs. But the specific gravity of milk may vary in individual cows from 1.027 to 1.038, or in herds from 1.029 to 1.033. It is the custom to regard milk as being pure when the specific gravity ranges between 1.029 and 1.033. Now, if the farmer knows that his milk shows the latter gravity, he can add about 13% of water, which brings it to the former limit, and the lactometer will be utterly useless in detecting the adulteration. On the other hand, if the specific gravity is known to be 1.029, the milk may be skimmed until the gravity rises to 1.033, and the lactometer will be powerless in detecting the swindle. And yet this is not half the fraud which is permitted to be perpetrated under this test. The specific gravity of butter fat being 0.93, it is seen that the fat is lighter than the milk, and as water is also lighter, cream may be removed and water added in such a manner as not to disturb specific gravity. But I shall not dwell in detail upon this point for fear some "cute" farmer may take advantage of it; I have just said enough to make him bungle the adulteration business and get trapped. There is another circumstance which disturbs the accuracy of this instrument, viz.: dairymen, as a rule, take the specific gravity of the milk without paying any attention to the temperature. The temperature should be taken at 15° Centigrade. The extent

of the error in this direction may be ascertained by taking into account the fact that each 5 degrees of temperature makes a difference of 0.001 on the lactometer. Milk expands by heat and contracts by cold, so that 5 degrees of temperature above 15° would show 1 degree lower on the lactometer ; and 5 below would show a degree higher. For example, if the milk at 15° shows a specific gravity of 1.032, the gravity at 20° would be 1.031, and at 10° the gravity would be 1.033. The temperature at 15° C. corresponds to 59° Fahr.—the temperature at which the milk should be taken, but as correction tables have been prepared, it is no longer necessary to heat or cool the milk to bring it to this temperature. These facts and figures prove that the accuracy of the lactometer can be tampered with very considerably, although it has served a useful purpose where the principles upon which it works have not been understood. In skim milk the specific gravity ranges between 1.032 and 1.040. All the constituents of the milk, excepting the fat, show separately a specific gravity greater than that of water ; and, taken together, the specific gravity of all the solids other than fat is pretty constant at 1.6. While it is true that the addition of water lowers the specific gravity of milk, yet it cannot be said that a low specific gravity in unadulterated milk shows a quality rich in fat relatively to the other solids, for the fat, as I have shown, cannot be increased without also increasing the other solids. It may therefore be concluded that the specific gravity, by indicating the quantity of water, whether created before or after milking, is also a measure of the fat as a uniform percentage of the total solids, but where this relation is disturbed, other instruments must be used.

The lactometer, however, although indefinite and unreliable in itself, is very useful in connection with other testing instruments. In connection with an instrument which accurately gives the percentage of fat, the lactometer can be effectually used for ascertaining the percentage of total solids. Many formulas have been introduced for effecting this end, of which the following is most commonly used :—

$$t = 1.2 \cdot f + 2.665 \frac{100s - 100}{s}, \text{ and}$$

$$f = 0.833 \cdot t - 2.22 \frac{100s - 100}{s}; \text{ so}$$

$$s = \frac{1000}{1000 - 3.75\,(t - 1.2 \cdot f)}$$

In these formulas, t represents the total dry solids, f the percentage of fat, and s the specific gravity ; when any two of these quantities are given, the third may be found. The accuracy of these formulas has frequently been tested by comparing the results with those obtained by chemical analysis, and the variations have been so trifling that they may be dismissed from practical consideration.

The specific gravity test is also unreliable when applied to cream, varying from 0.95 to 1.028—average 1.010. This must be expected when it is considered that the fat in cream varies from 15 to 70 percent.

II.—THE LACTOSCOPE.

I desire to be specially clear and emphatic in my remarks about this instrument, because it is the one we have introduced for our purposes, and for those of farmers and farmers' clubs, and a prejudice has been raised against it for two reasons, viz.:—(1) That its supposed inaccuracy would not do justice to the breeds, and (2) that the testing of cows on their intrinsic merits would check the designs of those who desire their breeds to obtain undue advantage over other breeds which have not been boomed up to the same extent. There is also a class of men who pride themselves upon belittling our work because it is out of the ordinary rut—contending that a herd book based upon individual merit is a farce. But before I pass on to the lactoscope, it is necessary to say a word about chemical analysis, with which all other methods of determining the fat are compared with respect to accuracy. Chemical analysis is regarded as the most accurate, but it is impracticable for ordinary purposes, the apparatuses required being very expensive, the process very slow, and an experienced chemist being required. With regard to cheapness and quickness combined, nobody denies that the lactoscope is the best for determining the percentage of fat, so that all I have to do is to examine the instrument with respect to accuracy. Chemical analysis itself does not always give the same results, there being different methods employed, and of the two methods usually adopted in England I have observed a difference of 0.36 percent in analyzing the same sample of milk ; but in making comparisons between the lactoscope and chemical analysis, the most accurate methods of the latter have been employed.

I wrote to Prof. Babcock, Milk Inspector for the city of Boston, and one of the most reliable milk experts in the United States, and received the following reply :—

Boston, May 21st, 1886.

W. A. MACDONALD, ESQ.:

Dear Sir,—Your communication has been received. We use Feser's lactoscope in connection with the specific gravity as a preliminary test, and in the case of fresh milk we find the figures to agree very closely with those obtained by analysis ; but with old milk, or milk that has been churned up, the results given by Feser are not as accurate.

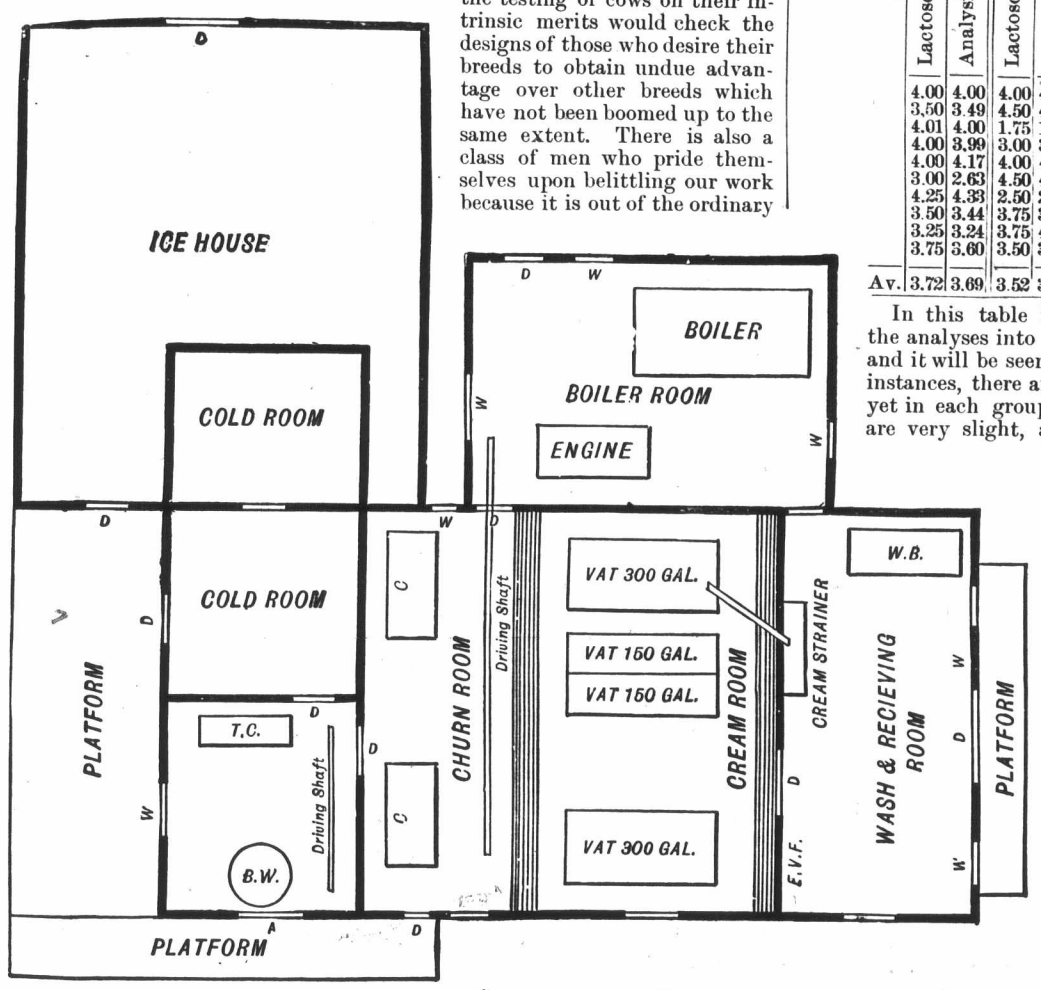
JAS. P. BABCOCK.

In the annual report of the New York State Dairy Commissioner, recently issued, careful comparisons have been made, the fat of thirty-one samples of milk having been determined by the lactoscope and by chemical analysis, with the following results :—

Lactoscope.	Analysis.	Lactoscope.	Analysis.	Lactoscope.	Analysis.	Totals. Lactoscope.	Totals. Analysis.
4.00	4.00	4.00	4.34	3.50	3.33	3.72	3.69
3.50	3.49	4.50	4 40	3.55	3.43	3.52	3.60
4.01	4.00	1.75	1.82	3.50	3.42	2.73	2.69
4.00	3.99	3.00	3.16	2 25	2 37		
4.00	4.17	4.00	4.18	3.50	3.54		
3.00	2.63	4.50	4.60	2.50	2.52		
4.25	4.33	2.50	2.52	2.50	2.53		
3.50	3.44	3.75	3.56	2 75	2.78		
3.25	3.24	3.75	4.04	1.25	1.10		
3.75	3.60	3.50	3.42	2.00	1.90		
Av. 3.72	3.69	3.52	3.60	2.73	2.69	3.323	3.326

In this table I have divided thirty of the analyses into three groups of ten each, and it will be seen that although, in a few instances, there are noteworthy variations, yet in each group the average variations are very slight, and in the grand totals, seen in the last columns, the lactoscope and the chemical analyses are practically identical, the former showing an average fat percentage of 3.323, and the latter 3.326 — a difference therefore of only 0.03 percent, which is very insignificant for any purpose whatever. Any variation of even ten times this amount would still make the lactoscope a very useful instrument for ordinary purposes.

I have also several hundred comparisons from French and German sources, of which the following tables may be taken as representative :



GROUND PLAN OF BUILDING.

	Examined by Eugling & Von Klenze. Analysis.	Examined by Eugling & Von Klenze. Lactoscope.	Examined by P. Vieth. Analysis.	Examined by P. Vieth. Lactoscope.
	3.94	4.25	3.36	3.25
	4.05	4.20	3.31	3.30
	4.65	4.40	2.76	2.80
	3.73	4.60	3.38	3.28
	3.93	4 55	3.33	3.25
	4.05	4.10	3 36	3.35
	3.71	3.60	3.27	3.40
	4.02	3.90	3.32	3.40
	4.09	4.10	3.38	3.40
	4.03	3.90		
Averages	4.02	4.16	3.274	3 270

Here again the averages correspond very closely, there being only a variation of 0.14 percent in the one examination, and 0.04 in the other. In normal milk, a material variation is not likely to occur, and if an average of eight or ten analyses with the lactoscope be taken, there is no risk of a variation worth calculating upon, providing the

cow whose milk is examined is in a healthy condition, and the food and milk are normal.

A short time ago I ordered and received a Feser's lactoscope graduated for testing cream as well as milk. I have been making tests with reference to the butter capacity of various qualities of cream, with satisfactory results, but the tests have not yet been numerous enough to justify publication.

The lactoscope is not sufficiently accurate for testing skim-milk, the results usually indicating 50 to 75 percent higher than those obtained by chemical analyses; the more completely the fat is removed from the milk the greater will be the difference. The average difference in centrifuge skim-milk amounts to nearly one percent; but by this method of separation, there is an average of only about 0.20 of fat in the skim-milk against 1 to 2 percent by the ordinary methods of separating the cream. This discrepancy arises chiefly from the fact that the fat alone is not the only cause of the opacity of the milk, the other solids also playing a more or less trifling part.

There are many styles of the lactoscope in use, but the one constructed by Prof. Feser is the simplest and most accurate.

(To be continued.)

Salting Butter with Brine.

Mr. G. D. Brill, a student in Cornell University, read a paper on the above subject before the New York Dairymen's Association, which is condensed as follows in the *Country Gentleman's* report: The cream was allowed to sour slightly, and was then churned until the butter was in granules. The butter was then washed in the churn, in pure water. Three pounds were taken out, and about one and one-half quarts of a saturated solution of salt poured on it and allowed to stand for thirty minutes, with an occasional stirring. The brine was then poured back into the dish, in which some of the salt still remained, and after being shaken up and allowed to settle for a minute, the brine was poured back and left, with an occasional stirring, for thirty minutes more, making one hour that the butter was in the brine. The salt had been weighed before it was dissolved, and now the water was drained from the butter back into the dish, and the butter packed tightly in a stone jar with scarcely any working. What brine was pressed out by the packing was also poured into the dish with the rest of the brine. The whole amount of the brine was then evaporated and it was found that the three pounds of butter had taken up 1.4 ounces of salt, or 47-100 of an ounce to the pound, which is almost half an ounce. A sample of butter was taken from the jar, and the water evaporated. It was found that it contained 11.29 percent of water. The average amount of water in butter is given as being from 9 to 14 percent, but some place it as high as 16 percent. So this butter contained rather below than above the average amount of water.

In another experiment he salted three pounds of butter with the brine and also three pounds with dry salt, at the rate of an ounce to the pound. After the butter had been worked enough to mix the salt with it thoroughly, the brine that had worked out was evaporated, and it was found that 1.3 ounces of the salt had worked out in the brine, leaving only 1.7 ounces in the butter, or 0.57 of an ounce to the pound. The difference between the butter salted with dry salt and the butter salted with brine was only 0.1 of an ounce in favor of that salted with dry salt. Of course more salt is used in salting with brine than in salting with dry salt. In this experiment about one pound and twelve ounces were used to the three pounds of butter. Whether the salt can be washed out of brine-salted butter or not he does not know, nor can he see the objection if it could as long as there is no more water in it.

The Apiary.

Spring Management of Bees.

BY W. H. WESTON.

This subject is of the greatest importance, and although many have written about it, there is always something to learn in respect to this trying season. When we can all say that we winter our bees without loss, it will then be time to confine ourselves to the spring and summer care of these lively little insects. I am sure there is hardly any person that keeps bees but what would like to know more about the spring management, as at this season there is usually a far greater loss than during winter. Men who have kept bees for a number of years generally have a way of their own—men who make a study of the subject; but it is not to them I am writing, but to the inexperienced, who are just starting to keep bees and are anxious to avoid mistakes. It is impossible to avoid mistakes once in a while, and in bee-keeping, as in all other industries, "the well laid plans of mice and men gang aft aglee." However, it is advisable to give them the attention necessary at this season, and thus avoid all errors and omissions possible. Bee-keepers often notice that a colony that appears very strong when put out will dwindle down to a mere handful in a few days. There is a very large number of bee-keepers who winter their bees in clamps, and to all such I would say, don't disturb them if they have sufficient food and a clean hive, till the warm weather comes and the willow is in bloom; then, on a warm, still day, take out the frames and put them into a nice, clean hive (which has previously been prepared for the purpose). It is necessary to retain as much heat in the hive as possible. So when you take the frames out of the hive in which they were wintered, lift them, bees and all, and brush off the dead ones, and the frames that contain the most honey, and those with brood, if any, and place in the new hive. Do not put in more frames than the bees will cover, and move up the division boards so that they will be as warm as possible. It is wise to pack between the division boards and the side of the hive with cushions of chaff or sawdust. Now cover the frames with a number of sheets of paper or enamelled cloth, or any other quilt that will keep the heat in, with a sawdust cushion on top. Contract the entrance and do not disturb them till they give signs that they require your attention. I might here remark that it is advisable not to open the hive till the thermometer shows the temperature above seventy degrees. Bee-keepers who winter their bees in the cellar used to carry them out as soon as possible in the spring, but now the most successful bee-keepers advise to keep them in the cellar till all chance of chilling winds are gone, and the fruit bloom has commenced, but should any of them show signs of diarrhœa, they should be carried out and given a chance for a flight and then carried in again and left till settled warm weather. Bees very often swarm out in spring when they have not been transferred to a clean hive; they do detest a dirty house.

Stimulative feeding is not advisable to the inexperienced, as they are very likely to do more harm than good, and I would not advise opening the hives in cool weather, as the brood might be chilled. Such a proceeding might also prove fatal to the queen, as the bees sometimes ball the queen when they are disturbed in cool weather.

A problem that has not been solved yet is, Why do not bees that have gone into winter quarters in the same condition, and have received the same treatment, come out the same in the spring? Some will come out very strong, and others very weak. I presume the queen in one hive is not as prolific as the one in the other. How will we treat them in a case of this kind? I would not advise building a very weak one from a strong one, but would rather advise uniting two weak ones, and in that way perhaps save a valuable queen, and be able to bring the colony to a fair size by the honey flow. It is far more profitable to have an extra heavy colony by the time when the honey flow commences, than to have two weak ones. Weak colonies can be placed in the cellar should they show signs of dwindling all away; they could then be kept warm, and by placing a wet sponge or cloth under a corner of the quilt, they could start breeding. When settled warm weather came they could then be set out with a better chance of success.

Bee Farming Notes.

In handling bees do so without jarring the hives, and avoid all quick motions.

Should a bee alight on your nose or other part of your face, allow it to walk off again, which it will usually do, unless you disturb it, as bees are, as a rule, very good natured when there is an abundance of honey coming in. On the other hand, they are exceedingly cross when there is no nectar in the flowers, or on a rainy day. It is the instinct of the bees to fill themselves with honey when disturbed. So bee-keepers usually blow some smoke into the hive, which causes them to fill themselves with honey, when they can be handled much easier. The smoke has no other effect than to cause them to fill themselves with honey. This is the only object for which it is used, except it be to drive them out of the way during manipulation.

Prof. Morrow, of the Illinois University, has made the following deductions from experiment: 1. Increase of weight in cattle is most cheaply secured by pasturage without any grain during the best part of the season. 2. Feeding whole corn in the autumn months to cattle on pasture is the most economical method of fattening cattle. The feeding is done with least labor. When hogs follow the cattle there is very little waste. The manure is all saved and distributed without cost. While comparatively low prices are to be expected for cattle marketed in the autumn or early winter, a fair profit has been made annually. Even with the prevailing exceptionally low prices, sales have been made (for November delivery) of most of the cattle purchased last spring at a price which gives fully satisfactory profit. 3. After three or four months of full grain feeding a considerable decrease in rate of grain may be expected. 4. Apparently from thirty to thirty-six months are the most profitable ages at which to sell cattle fattened on this system—unless those of a little greater age can be bought at a price which gives no profit to the grower. 5. It is not profitable to feed grain to yearling steers on good pasture, if it is designed to keep them another year and fatten for the general market. 6. Calves reared on skim milk, with addition of some meal, may make entirely satisfactory growth and beef animals of good quality. A high-grade Shorthorn steer now on the farms weighs 1,470 pounds at a few days over twenty-nine months, and with less than two months fall grain feeding. He has gained 185 pounds in the last forty-five days.

The Farm

Lime as a Fertilizer.

Having treated of gypsum and salt, we now come to the third and last substance, whose action in the soil is mainly indirect, and is therefore not valued for plant food, viz., *Lime*. This substance is found in various forms, notably (1) slaked, (2) unslaked lime, (3) carbonate of lime, including limestone, chalk, oyster shells, marl, etc., (4) gas lime. When carbonate of lime is burnt, the carbonic acid is driven into the air, leaving behind the caustic or quick lime, and when water is added, slaked lime is formed. If the latter is left exposed to the air, which contains small quantities of carbonic acid, this acid re-unites with the lime, the carbonate again being formed, but it exists in a much more finely pulverized condition than limestone can be ground into by any known means. The same effect takes place in the soil, especially in vegetable soils, which are rich in carbonic acid. In this feature it strikingly resembles the soluble phosphate of lime, which takes up lime from the soil and immediately becomes insoluble. Gypsum—also called plaster and sulphate of lime—is also a common form in which lime is applied to the soil.

There being numerous marl beds in Canada, it would be well to draw special attention to this form of the carbonate of lime, which, in marls, is found in a finely pulverized condition, although not so fine as the carbonate to which the slaked lime reverts when it comes into contact with carbonic acid ; the finer the condition of the carbonate, the more active are its effects. The word lime will now always express our meaning, only bearing in mind that the finer the pulverization, the more active the effects.

Six marls from different parts of Ontario were recently analyzed by Prof. James, Ontario Agricultural College, and they contained an average of about 90 percent of lime (the carbonate), the highest being 94.69 percent, and the lowest 83.78. A sample of the Model Farm marl was also analyzed, and showed the low percentage of 42.98. Of the four marls recently analyzed by Prof. Kedzie, Michigan Agricultural College, each sample having been taken from a different county in the State of Michigan, the average percentage was 81—proving that our marls are richer than the American ; and the same thing can be said with reference to our phosphates. Michigan marls are richer in the carbonate of magnesium than ours, which is less valuable than the carbonate of lime. Marl may be applied at the rate of 25 to 75 bushels per acre, but about 100 bushels may be applied on muck beds or other soils having a large excess of vegetable matter, and even more on stiff clay soils.

Gas lime varies very much in composition, but usually contains about 33 percent of slaked lime, about 20 percent of the carbonate, with 10 to 15 percent of sulphate of lime; but there are also small pecentages of sulphide and sulphite of lime, which are useful for destroying insects, but may also destroy vegetation, unless exposed for some time to the air before being applied, until they are oxidized into sulphate of lime. The sulphide also, when exposed to moisture, changes into that disagreeably odorous gas called sulphuretted hydrogen, which puts flying insects to the wing. Some gas limes also contain traces of ammonia.

Specially noteworthy is the action of lime upon the vegetable matter in the soil. It hastens the decay of humus into its resultant compounds, carbonic and nitric acids ; it hastens the decomposition into ammonium salts, as well as the decomposition of ammonium salts into salts of nitric acid. However, lime cannot produce these changes in the least degree so long as the soil is water-logged. Not till the soil is thoroughly drained can lime cure the "sourness," and hasten the desired results. On clay, lime makes the soil more porous and friable, and enables it to exercise its absorbent powers more affectually.

In applying lime, a consideration of the composition of the soil is much more important than the composition of the crop. In many parts of Canada, notably Ontario and the Northwest, where the soil is largely calcareous, liming is not attended with so many advantages as in other countries, and the merits ordinarily attributed to lime do not apply so effectually.

From a practical standpoint, we know of no agricultural literature in which the subject is so ably treated and concisely expressed as in the tenth edition, recently published, of a work on "Practical Manuring," by Emil Wolff, Professor of Agriculture at the Agricultural College, Hoenheim, Germany, who bears an universal reputation as an authority on all agricultural questions. We make the following translation from his excellent work :

1. Quicklime, as a fertilizer, should be applied in a finely pulverized state, which takes place when it is gradually moistened with about one-third of its weight of water, thereby becoming slaked. This condition is speedily and perfectly attained by placing freshly burned lime into a basket and then setting the latter into a vessel containing water, completely covering the lime with water. After three or four minutes the air bubbles will subside, which is a sign that the lime has taken up as much water as it requires for slaking it. The basket is then taken out, the slaked lime being emptied into a heap, where it crumbles into powder in about fifteen minutes.

2. The quicker the lime slakes, the greater is the heat developed, the volume thereby also becoming greater, and the better the lime becomes as a fertilizer ; but many poor limes, such as those containing high percentages of magnesia, also produce excellent effects, when reduced to a thoroughly pulverized condition. When the lime is too weak, or, containing much clay, is "burnt to death," it does not pulverize completely, larger or smaller hard lumps remaining in the mass, and it is then not so valuable as a fertilizer.

3. If the lime is to be preserved for some time before it is employed as a fertilizer, it is usually hauled immediately to the field where it is afterwards to be strewn, without first being slaked. Here it is thrown into small heaps, which are well covered with earth, nothing further being done than filling up, from time to time, any cracks that may open in the covering of earth. After a few days or weeks, according to the weather, the lime becomes pulverized. When the time for spreading arrives, the covering is removed, and if any unslaked lumps are observed, they are sprinkled with water in order to pulverize them.

4. The lime is spread by hand, or a suitable shovel may be used, and the work should be done in a still atmosphere and in dry weather. No pains should be spared in spreading the lime as evenly as possible over the surface of the ground.

5. The best time to apply is in autumn on the stubble, the land forthwith being lightly plowed; but it may also be applied in spring, providing the application be made shortly before seeding, and when the ground is sufficiently dry.

6. The quantity per acre may be 800 to 1,600 pounds, but more is often applied. It is better to apply small quantities often than too much at once. Too much liming may act injuriously several years after the application, the soil being first stimulated too much, and is then more easily exhausted.

7. A tough clay can stand much more lime than a light sandy soil, the latter standing the more the richer it is in humus. Upon a soil rich in humus, but poor in lime, this fertilizer is specially valuable. The existence of certain weeds, notably the sorrel, is a sign that the soil is greatly in need of liming.

8. Poor soils should not be limed. Lime produces the most favorable effects on land where barnyard manure was applied one or two years previously, another application of manure following soon after. The effects of lime last several years, but it cannot replace barnyard manure, although it heightens and assures its effects, and moreover brings the dormant powers of the soil into action.

9. On all cultivated plants, lime often produces strikingly favorable effects—always when it is lacking in the soil, or exists only in minute quantities, under different climatic conditions. It is applied in autumn with favorable results on clover aftermath for fall crops, for summer crops seeded with clover, and for potatoes and turnips. In the last case, barnyard manure should also be provided, but the lime should not be applied at the same time as the manure. A liberal application of lime highly promotes the growth of clover and other leguminous plants ; many a soil will hardly produce clover until limed, and an average yield is appreciably increased.

10. Pastures, when they are not too wet, may be limed with advantage. Moss, where it exists, disappears, and the nutrient foliage-plants develop more luxuriantly. For this purpose, either slaked lime may be applied by itself, or helped by an application of a strong compost, composed of good soil interlayered with some bone-meal and wood ashes, or, when the ashes are not available, other potash salts may be substituted, this mass being mixed with all kinds of vegetable refuse and allowed to decompose for some time before applied to the pasture.

11. The so-called "moor lime," which is finely pulverized, and is often almost pure carbonate of lime, not unfrequently found as under-strata, or in the vicinity of extensive peat-mosses, is also very well adapted for composts when mixed with humus, night-soil, bone-meal, wood ashes, etc., and makes a strong manure for pastures and cultivated fields.

12. It is also well known that marl is a most excellent substitute owing to its large percentage of lime. Greater or less quantities of marl may be applied according to its percentage of lime, in conjunction with the composition of the soil. A clayey and a vegetable soil can stand much more marling than a sandy soil, or a soil deficient in humus ; sandy soils must be marled with caution, and light quantities must be applied, particularly when the so-called sand or lime marls are used, while a clay marl may be applied in greater quantities under such circumstances. By close observation of the composition of the soil, as well as that of the marl, so by cautious employment, of the latter and when the soil has, before and after the application, received a liberal dressing of yard manure, it need not be feared that, after a few favorable seasons, any injurious effects will follow ; rather more after a longer or shorter time, the application may be repeated with good results.

Wet lands should be drained because we cannot unlock the fertility of the soil unless air takes the place of the water, says Prof. Scott, in the *Agricultural Gazette*. We drain to let water into the soil, as much as to take it out—not merely to carry off the surplus water, but to make the fertilizing rain filter through the soil. Amongst other effects, draining improves the texture of soil by making it porous, drier, looser, and more friable ; it makes land more easily worked ; it raises temperature of the soil ; it enables a greater variety of crops to be grown ; it gives an earlier seed-time and an earlier harvest ; and it makes manure more effectual. And even this does not exhaust the practical advantages of draining wet lands.

Interesting Facts and Figures from Prince Edward Island.

BY WALTER SIMPSON.

The Western Agricultural Convention of P. E. I. held its winter session in Cavendish, on the 12th of January. This convention, as originally organized, was composed of delegates from farmers' clubs, of which there were formerly quite a few in the western part of the Island. But from one reason or another, farmers' clubs are short lived, so the convention, at its last annual meeting, in order to secure its continued existence and increase its usefulness, amended its constitution to make it provide that any farmer on the payment of 25c., after being duly elected, might become a member.

This convention is doing a good work in the interest of agriculture. Its meetings are held quarterly, and are attended by our most enterprising and intelligent farmers, who discuss all questions relating to the farm in a free and easy way. The discussion is generally opened by the reading of a paper by some member who has been requested beforehand to prepare an essay on a particular subject. At the last meeting we had two such papers, one on apple growing, the other on the cultivation of wheat, both very interesting subjects.

Fruit growing has been greatly neglected on the Island heretofore, but our people are beginning to wake up to the fact that there will soon have to be a change in our system of farming on account of the very small price that we now get for our grain, and many are of the opinion that fruit growing must constitute an important part of the husbandry of the future. The show of apples at our exhibition last fall convinced everybody that saw it that this province can produce as good apples as can be grown in the world. Our failing to grow apples successfully in the past has been largely due to our not selecting the varieties suited to our climate. But our failures in the past, together with the necessity that exists for our making fruit growing pay, will spur us up to gain a knowledge of the business. The trees we are now getting are grafted with hardy Russian scions, and we believe that they will suit well in our climate. Grapes are being successfully grown on a pretty large scale in the vicinity of Charlottetown, his Lordship the Bishop having planted quite an extensive vineyard a few years ago as an experiment, and has proved beyond a doubt that grapes can be grown on the Island.

Some of our capitalists have conceived the idea of building a roller mill, and in order to ascertain if our wheat is suitable for manufacturing with rollers, have sent 100 bushels up to Ontario to be ground by the roller process. If the test is satisfactory we will probably have a mill built. This will be a good thing for farmers, as it will create a cash market for wheat, which we have not got at present, and will also enable us to compete with imported flour in our own market. At present our flour does not come in competition with the fine grades of Canadian, nor will it until we have a mill that will manufacture large quantities of as good an article as can be imported. If such a mill should be started it will give quite a stimulus to wheat growing. The prospective company have issued a circular containing a number of questions which they have addressed to leading farmers, with the request that they would answer as to whether wheat is a surer crop now than formerly, and whether they would be willing to supply wheat for about the same price as is paid at mills in Ontario, and also how many acres of wheat they would be willing to grow for the next five years to sell to this mill. I am not aware how the farmers have answered the above questions, but I have no doubt that the answers would be favorable to the launching of such an enterprise. The cultivation of wheat has succeeded better on the Island of late years, and is partly owing to our changing our seed by importing the best we can get from Ontario.

A few words about our exports: Our export of oats for the past year amounted to 1,861,958 bushels, worth about $558,587.40. Potatoes were exported to the value of about $300,000. During the year we exported about 1,300 horses, valued at an average of $120 each. We shipped about $1,800,000 doz. eggs, the price of which ranged from 10c. per doz. early in season, to 16c. late in the fall. We export large numbers of cattle and sheep, but I have not been able to get an estimate of their number or value. The greater part of our oats goes to Great Britain, while the bulk of the potatoes and nearly all of the horses, sheep and eggs go to the U. S. It will be readily seen from the above figures that oats has been our principal export, but it cannot be much longer, as the price has gone down far below what it costs to produce it. The failure of our oat market will necessitate a radical change in our system of farming, and compel us to engage in other and more profitable branches of husbandry, which we have been to a great extent neglecting, and of which I may have something to say at another time.

English vs. Canadian Stock, Implements, Vegetables and Fruits.

At a banquet held in Chatham in connection with the recent meeting of the Ontario Fruit Growers' Association, Mr. Allan, President of the Association, made pertinent allusions to the above subject. With respect to stock, he considered that the English surpassed us only in one point—that of the science and practice of stock feeding. Their forte was quality, and they wanted nothing but the very best. The best animal at the Smithfield show was a Hereford. There was nothing to equal the quality of the English beef and mutton; the flavor was superior to that of ours. He had seen just as fine sheep in Canada, excepting the Southdowns. He observed that there was a great deal of difference in the implements manufactured here and in England; theirs were very cumbersome and were built with a view to strength and the killing of animals. Especially was this the case with reference to their reapers and mowers; ours were much lighter, and did faster and better work. With reference to grain, our samples could not be surpassed by any country, and we should be proud of them. Our roots and vegetables attracted a great deal of attention, even when compared with those of theirs which were produced under a high state of cultivation. Theirs were not so large as ours, and did not yield so much food per acre, although they cultivated and manured much more highly than we

With regard to fruits, the Colonial Exhibition had dispelled the illusion that Canada was a land of polar peculiarities. They were at first very suspicious of our exhibits, and thought our fruits were made of wax, so we had to allow our specimens to be tested. Then they thought they were grown in hot-houses, so we had to put on labels indicating that they were grown in the open fields. Fruit growers and shippers labored under disadvantages by the existing system of placing our fruits on the English markets. If these obstructions were removed, our farmers and fruit-growers would realize the following prices per barrel in their own orchards for the varieties named: King of Tompkins, $1.50; Fallawater, $1.30; Twenty Ounce Pippin, $1.25; Baldwin, $1; American Golden Russet, $1.15; Mann, $1.15; Northern Spy, 90c. (for spotted specimens, but fine samples would bring $1.30); Swayzzie Pomme Grise, $2; R. I. Greening, $1. The last named variety would ultimately excel the Baldwin in price, as the prejudice against green fruits was dying out, and consumers were beginning to pay more attention to quality than to appearance. Shippers should pay separate prices for each variety based upon the market prices in England. Only the choicest samples should be selected, and all the apples packed into one barrel should be of the same size and color, the barrels then being branded with the names and addresses of the growers or shippers. Strict honesty should be observed all round, as the buyers soon learned the brands; they paid the highest prices for the honest brands, for in suspicious cases the barrels were emptied out and the quality examined much more frequently, thereby entailing extra labor and expense. Specimens from the same tree could be divided into two or three brands and priced accordingly; by so doing, higher prices would be obtained on the whole than by mixing the specimens. No shipments should be made to London by water up the Thames, as the fruit thereby became damaged by rough handling and pilfering, and the party or parties to be blamed could not be found out; such shipments also reached their destination nearly a week later than *via* Liverpool. The safest, cheapest and quickest way to ship was by rail from Liverpool to London, many fees thereby being saved, such as those to the Duke of Bedford, etc. The railroad charges were too high; but the Midland Railway now bought out a block of land whence our fruits could be distributed all over the country, evading the fees, which would be of advantage to our shippers and fruit growers.

A VOICE.—That's hard on the poor Duke of Bedford.

He shipped large quantities of our apples to Copenhagen, where he realized remunerative prices. He thought that Denmark would in future be an excellent market for our apples; the Danes appreciated the quality of our apples. Our system of packing, generally speaking, was very good; but our brands were not up to the mark. We should pack fewer culls. A limited trade could be done by shipping fancy samples in half barrels for the Christmas markets, and fancy prices could be realized. A large trade could also be opened up with India, but the trade would be limited for our best qualities, as the masses were too poor to pay high prices. Shipments to India would be greatly facilitated by the C. P. R., thence by steamers from our western coast. There were also trade prospects in France and Germany. Our apples brought 3s. per barrel in the British markets more than American apples; this figure was more under than over the mark.

A large immigration would follow our work at the Colonial Exhibition. He was in receipt of

numerous letters from prospective emigrants who desire to go into the fruit business, and he secured several situations for young men who had some capital, and who desired to learn the fruit business before investing on their own account. Many stated that they were not afraid of hard work, and he gave them all a most cordial welcome to our country.

Cider, Vinegar and Sugar from Sugar Beets.

We have recently received several inquiries on the above subject, especially from farmers who complain that the times are so hard that they must change their system or become bankrupt. This question is not in our line of journalism, but from all the inquiries we have made, we have not been able to see our way clearly in recommending farmers to make undertakings of this kind, our policy rather being to show them how to make profits in those branches in which they are already engaged. We have received the following communication from Mr. Andrew H. Ward, of Boston, Mass. His statements may be correct, but we are not sufficiently posted in the business to endorse them; we therefore ask the farmers to run the risk and form their own judgment. We should like to receive reports from all who try the experiment; we know however, that the pulp makes excellent food:

Sugar beets are a crop very easily raised, and in good soil the produce is abundant. All cattle are fond of the leaves, which add much to the milk of cows, without giving it that bad taste which is unavoidable when they are fed with turnips or cabbages, and which is chiefly owing to the greater rapidity with which the latter undergo the putrefactive fermentation.

The seed is sown in drills 20 to 24 inches apart, and thinned out to the distance of 8 to 12 inches from plant to plant in the rows. From four to six pounds of seed are required per acre, and they should be steeped 48 hours before planting; the best depth for sowing is from three-fourths of an inch to an inch; the culture is similar to that of carrots or parsnips, and the cost for seed, labor and fertilizers will amount to about $40 per acre.

The yield, according to the quality of the land fertilizer used and the cultivation bestowed, should average not less than 27¼ tons or 908⅓ bushels beets per acre, and 5½ tons beet leaves.

Analysis shows that 1000 pounds of sugar beets contains 184 pounds dry substances, 1.60 nitrogen, 7.10 ashes, 3.914 potash, 0.379 lime, 0.536 magnesia, 0.780 phosphoric acid. In manufacturing, these elements are distributed as follows:—

	d. s.	nit.	ashes.	pot.	lime.	mag.	p. acid
T's & B's	19	0.24	1.15	0.336	0.108	0.132	0.144
Fibre	46	0.44	1.71	0.585	0.390	0.100	5.165
Refuse	24	0.60	1.20	0.380	8.640	0.250	0.380
Molasses	25	0.31	2.47	1.741	0.141	0.009	0.015
Sugar	85	—	0.57	0.872	—	0.040	0.072

After harvesting, the roots are first topped, then washed and pulped in a grater, and pressed to extract juice.

Fifty pounds pressure to the square inch extracts 60 percent of juice, 80 pounds pressure to the square inch extracts 64 percent of juice, 400 pounds pressure to the square inch extracts 75 percent of juice.

Twenty-four pounds of pulp for every 100 square inches of press surface, is the best proportion to use. The cider press and grater, made by the Boomer and Boschert Press Co., of Syracuse, N. Y., is worked by power, and has a capacity with the labor of two men of grating and pressing one thousand bushels of beets per day of 10 hours, and yields 5000 gallons of juice.

The press and grater cost $510, and require less than six horse power to run them, and the press is the best and cheapest there is for this use. The ordinary cider press will answer, but it costs more to run it, and not as much juice is obtained on account of its not being able to produce as much pressure as the other.

One bushel of sugar beets, mixed with nine bushels of apples, makes a cider richer and of superior flavor to that made from apples alone. Sugar beet juice can be converted into vinegar in the same manner cider now is; it makes a stronger vinegar than cider does, of equally good but different flavor, and if treated the same as maple sap or sorghum juice, it will yield a good article of brown sugar, and all of this not used by the producer in the brown state, would be readily purchased to be refined by the refineries already established. To refine sugar requires costly machinery, such as vacuum pans, centrifugal machines, filters of bone, coal, &c., and also skilled labor, but the manufacture of sugar from beet juice requires only the evaporating pan and the addition of some lime to the juice to neutralize the acid.

The best pan is that made by the Blymyer Manufacturing Co., Cincinnati, Ohio. 4 × 15 feet of copper costs $210, has a capacity to evaporate 4000 gallons per day of 24 hours, and requires three cords of wood or its equivalent in coal. They also have larger and smaller pans, both iron and copper, the former being lower in price. I have no personal interest in presses or pans, and mention them, that each, for himself, can make an estimate of the cost of the machinery required, and what it will cost to convert his beets into cider, vinegar or sugar.

The estimated quantity of the sugar supply of the commercial world in 1875 was 2,140,000 tons of cane sugar and 1,317,625 tons of beet root sugar, of which latter France produced 462,256 tons as against 1,565 tons produced in 1828, which shows the progress of this industry there. The consumption of sugar in the United States is about 700,000 tons, and is rapidly increasing. We now produce of cane sugar 100,000 tons, and of beet sugar 1,000 tons, and there is no reason why this cannot be increased to the quantity we require, if the farmers will raise the beets.

In France there is a heavy tax on the beet root sugar they produce, and cane sugar is admitted free, yet, notwithstanding these disadvantages, they successfully compete with it; here the reverse is the case—a heavy duty on sugar imported and no taxes levied on its manufacture; certainly under these conditions we should produce all the sugar we consume, and have a surplus for export.

After the juice is expressed from the rasped beet, the dry pulp remaining is an admirable food for cattle, sheep and swine. The average amount of pulp is 20 percent of the original weight of the beet, and three tons of it for feeding purposes are equal to one ton of hay, and should be fed in connection with straw and oil cake or cotton seed meal. As the pulp is fed back to stock, the land is constantly growing richer, all the mineral substances taken from it being restored in the manure; this enables the farmer to raise larger crops of various produce, and consequently keep more stock, which enables him to make more butter and cheese.

The present cider mills and cheese factories could add to their present machinery the pans or presses as required, and by co-operation on this, as in other products, we can produce profitably all the sugar we require. This will bring the business of sugar making within the reach of small farmers, and is of vast importance.

The notion prevails that to make sugar profitably it must be made extensively. This is certainly erroneous, and the sooner the illusion is dispelled the sooner we shall begin to realize the productive resources of our lands and employ our now idle laborers on a very remunerative crop now grown only to a limited extent. The introduction of the cultivation of the sugar beet generally, subsequently to be converted into sugar or vinegar, would be of great benefit to farmers. It would insure to them superior methods of agriculture, increased crops, more remunerative prices, and enhanced value of farms.

It would create industry and diversity of labor, thereby increasing the general prosperity, intelligence and happiness of the community.

It would eventually reduce the prices of sugar, of bread, and of meat, butter and cheese, and render us more independent of foreign countries. One acre of land will produce 1000 bushels of sugar beet, which made into sugar, will yield 4,800 pounds sugar; or into vinegar, 5000 gallons, or into proof spirits, 1000 gallons; they are profitable to feed to cattle, particularly to milch cows, in connection with hay, and the pail acquaints the farmer with the fact.

Another Leading Township Agricultural Society.

To the Editor of the Advocate:

DEAR SIR,—I noticed a short article in the February number of your journal on Township Agricultural Societies, and was thereby reminded that I intended to have written to you on this subject for several months back. Since the advent of the Toronto Exhibition, which is, I believe, to a great extent self-supporting, the question has frequently been discussed—Should not all exhibitions be self-supporting? And therefore if they cannot subsist without government support, they must be a loss to the community at large, and we are better without them. The original intention of the government grant was to give an impetus to these institutions when the country was sparsely settled and the farmers were poor, and the science of agriculture was almost an unknown quantity. These conditions have all but passed away; the country is wealthy and enlightened, and I think it high time to drop the government apron-string, when the result would be the survival of the fittest, for anything that requires a prop to uphold it is leaning on a broken reed, and is sure to fall at last.

We have here in Erin Township, Wellington Co., a Society which has been in existence for over thirty years, and has now grown into monstrous proportions, the attendance at the last annual show being over 10,000 people, and yet I sometimes wonder if it does not do more harm than good. True, the Society, in addition to paying nearly one thousand dollars in prizes annually, has paid for a tract of ten acres, with commodious buildings and other surroundings. The entries are numerous, and many of the articles exhibited are of a superior description, as instance potatoes, which were exhibited here and at Guelph, and went thence to the Colonial Exhibition. But despite this fact, the people do not appear to take the same genuine interest in the show for its own sake that they did when there were not so many outside attractions. This Society has for a number of years encouraged itinerant shows of every description, admitting them within the grounds at a nominal license, until now it is something like the old story, instead of the head the whole body has got in and nearly crowded the Society out. In other words, the thing has become a nuisance, and the place a perfect bedlam, and fairly swarms with pick-pockets, gamblers, and all that is evil and demoralizing to young and old. At the last annual show it was even complained that the implements, vehicles, etc., on exhibition had to take a retired portion of the ground in order to make way for Punch and Judy shows and other brawlers of a like ilk, because, forsooth, they paid a license. This is a crying evil and I would be glad to have your views thereon, as also on the subject at length, as I have only in this letter given it a hurried notice. Yours, etc.,

Hillsburg, Feb. 8th, 1887. A READER.

The *American Cultivator* says the difference between old and new process linseed meal at present is that the new process meal contains about 2½ percent less of oil. The new process, some years ago, contained ten percent of oil, when pressed in thick cakes, but of late it is pressed in very thin cakes, and with the perfection of machinery they press out all but four or five percent of oil. This is all the practical difference between them, and they may be considered, practically, of the same value; the difference in the value of the oil would not, under any circumstances, amount to more than six or eight cents per 100 pounds.

At a recent meeting of the Penobscot farmers' club, Mr. Elijah Comins said: "I would recommend that stock be kept off the mowing field all seasons of the year. When we practiced feeding our mowing fields we cut from thirty to forty tons of hay a year; now we cut from seventy to eighty tons, and it is due to a great extent to not fall feeding our mowing fields.

PRIZE ESSAY.

Improving the Soil by Green Manuring.

BY W. A. HALE, SHERBROOKE, QUEBEC.

My own personal experience with green manuring has been such as to induce me to resort to it whenever practicable, believing it to be a most valuable auxiliary in keeping up the fertility of our farms. My first experience in this line was with a crop of buckwheat on a loamy soil about twenty years ago, believing then, as I do now, the theory that buckwheat, when in blossom, gives off continually more or less nitrogen, thus draining the soil of one of the most valuable substances on which growing crops feed. I determined to plow it under while still in bud, but the weather being dry, the plowing could not be done in a manner to cover the crop properly, and the result was that much of it ripened its seed and gave me such a foul field for grain the following year, that, though the land was otherwise visibly benefited, I have never since used buckwheat as a green manuring crop.

My next attempt was with a one-year-old red clover sod plowed down in August, six weeks after the crop had been cut for hay, and the land, a strong loam, was at once well harrowed, till not a vestige of green was to be seen. In the following spring the piece was cross plowed, and I had one of the cleanest and most mellow cabbage gardens I ever worked; hardly a weed showed itself, and the land was in perfect condition for any root or grain crop. The clover, owing to its having been so thoroughly covered, seemed to be entirely decayed, and so satisfactory in every way was the result that I have depended entirely on red clover for green manuring ever since. Soon after this I had a large market garden, which had been worked on shares, thrown on my hands in so foul a condition with weed seeds that all my neighbors said that bare summer fallow was the only practical way of ridding the land of the weeds. Never having had much faith in bare fallows, I determined to rely mainly upon red clover as a cleaning crop, and in September, after gathering the vegetables from amongst the weeds, I mowed and burnt the latter, and at once harrowed the ground thoroughly; then when the weed seeds were just germinating, I plowed the land with a broad and shallow furrow, and left the frosts of winter to kill those that started into life on the unharrowed surface. In the spring I cross plowed deeply as soon as the land was dry enough, and in a week harrowed it; then, on a fine, warm day a week later, I harrowed in barley and red clover seed, 15 lbs. of the latter to the acre. The barley was a splendid crop, and the clover growing well from the start, kept ahead of any weeds that might have been left. The next year I cut two magnificent crops of clover and one the year following, plowing the aftermath under. I then returned the land to root crops and vegetables practically free from weeds, and in every way improved by the operation. Since then I have never lost sight of clover as a means of assisting to keep up and even increase the fertility of the soil, and one reason why I prefer clover to any other green crop for this purpose is that you can vary the practice in so many ways, according to what you find the conditions of the soil, season and demand for fodder to be.

Wishing to try the plan of green manuring, pure and simple, I sowed clover by itself at the rate of 15 lbs. to the acre, on land of ordinary fertility and cleanliness, but, the weeds getting ahead of the clover, I had, in June, to mow the weeds high enough up not to cut the young clover plants, and in the end only obtained a moderate crop of clover hay, having to wait till the following season before I could, with advantage, plow it down. So, from experience, I have settled upon the plan of seeding down with grain, and in cases where I consider the land not strong enough to stand a crop of grain, and also yield sufficient clover for plowing down, I give it a dressing of wood ashes or some other easily applied fertilizer at the time of sowing the seed, and on land that is benefited by plaster (for some soils are not), I add 150 lbs. of it to the acre, after the grain and clover are well up.

The principal objections that we hear urged against green manuring are that it increases the richness of those parts of the field that are already rich, and gives very little to those that are poor. To this I would say, give to the poor portions some easily applied fertilizer at the time of sowing the clover seed, and so bring them up to the same conditions as the rest. Others say that clover is often worth more to feed out than to use as manure. In this case I would cut the first crop for hay and plow under the aftermath, or cut both for hay and depend upon the clover roots to benefit the land, always remembering that a heavy aftermath of clover left to rot upon the surface often smothers itself out. Again, we hear that on farms where a regular rotation is not practiced, it brings the meadows too often under the plow. In this case I always sow 8 qts. of timothy seed and 15 lbs. of clover to the acre, and find that practically the first year I get a clover crop with an aftermath also to cut or pasture, and that after this the timothy begins to assert itself, and thus I get a valuable sod for hay without a second breaking up, and am satisfied to know that the dead clover roots are in the soil fertilizing it as they decay, and leaving numerous drain pipes, as it were, to carry down any excess of surface water to the subsoil, while, at the same time, the vegetable matter of the clover roots acts as a filter, retaining much of the liquid portions of the manure and vegetable mould that otherwise might be carried down below the reach of shallow-rooted plants.

The soils which seem to be most benefited chemically by green manuring are such as are of a sandy nature, while clays and clayey loams are mechanically improved by being rendered more open and pliable, and peaty soils would probably show the least good results of any, being already of an open nature and well supplied with organic vegetable matter.

On many farms we find steep hill-sides and high table-lands, as well as distant fields, on all of which it may be difficult and expensive to haul manure even if we have it, and where that most useful implement, the manure spreader, will not work. On such places green manuring can often be most advantageously practiced in conjunction with some concentrated and easily spread fertilizer; for, be it distinctly understood, that green manuring *by itself* is not calculated to keep up the fertility of the soil for an indefinite period, and it is also an important fact to bear in mind that soils require and are benefited quite as much by a change of fertilizers as by a rotation or change of crops.

In plowing under all green crops, particularly on light soils, I would advise a broad shallow furrow, not over four or five inches deep, so as not to get the vegetable matter down below the decaying influences of the sun, air and rain, and if a second and deeper plowing is then thought best, the vegetable matter will still remain near the surface where its effects will always be most beneficial.

In the case of hill-sides, where a side-hill plow is not available and you cannot plow round and round, I always start the plow diagonally up the hill, bearing away to the right hand; this gives the horses the advantage of turning the sod down hill as they ascend, and the extra power while descending for turning the sod up, finishing the two gore pieces that would remain by plowing round them, and where the ground is free from stones, a sharp, circular revolving cutter on the plow beam, and a looped chain from the careener to the plow, to tuck the clover down in advance of the mould board, make clean and easy work. Lastly, if the crop which is to follow green manuring is to be fall wheat, plow for it in August or earlier, or the sod would not be sufficiently decayed to give the best results, and the same rule holds good for all root crops other than potatoes.

To those who have never tried it, I would say do so by all means, and as soon as possible; not on too large a scale at first, nor with the expectation that by this means *alone* you can make your land rich while taking other crops from it, but employed in connection with other fertilizers. I believe we have no cheaper or more beneficial way of improving our farms and our finances than by the judicious practice of green manuring.

To care for and apply the different kinds of manure produced on any ordinary farm to the best advantage is no simple matter. French farmers have a proverb: "It is not he that sows, but he that manures well, that gets the crop." Not merely to manure largely, but "well," is the problem. The products of the stable, cow-house, pig-pen and sheep-fold differ in manurial value and in composition, and are, therefore, adapted to different uses. Agriculturists of experience have laid down the general rule that horse manure is most valuable on stiff, clayey soils; that of cows and oxen most suitable to soils that are very light and dry, while the contents of the pig-sty and sheep-fold are very improving to meadow lands, but should be avoided in the cultivation of vegetables for cooking purposes, to which they often impart a rank odor. The general sensible practice on an ordinary farm of mixing the various kinds of manure in one heap, is due to the fact that what is lacking in one kind is supplemented by the qualities of another sort, making a good fertilizer for an average arable soil in which neither stiff clay nor dry sand predominates. It will pay any farmer, however, to study the special uses of each kind of farm manure. Then he will know where to put manures to get their greatest value out of them, as well as how best to fertilize particular lands and crops.

Joseph Harris in the *American Garden*, says:—Many false ideas prevail about asparagus. It is just as easy to plant and raise this crop as to plant and raise potatoes. The old directions in regard to trenching and manuring are obsolete. True, it will do no harm to work a lot of good manure into the soil and sub-soil, provided you do not turn up all the poor sub-soil on top. The best asparagus bed we have was neither trenched nor manured. We top-dress it with nitrate of soda every spring and occasionally with manure late in the fall.

Prof. Wallace (Professor of Agriculture, University of Edinburgh), in a lecture on "Cattle Feeding," says: "As to early maturity, I am not one of those who believe that all cattle should be finished and killed before they are two years old. In a bad or awkward climate, and where inferior forage is produced, I think it would pay to keep cattle longer, not only the climate and the nature of the forage being against the fattening powers of the animal, but the tendency to early maturity is not compatible with that hardiness of constitution which has been induced by adversity in the conditions of life.

Garden and Orchard.

Meeting of the Ontario Fruit Growers' Association.

The winter meeting of the above Association was held in Chatham, Feb. 9th and 10th, the President, Mr. A. McD. Allan, in the chair.

Mr. B. Gott, Arkona, read a paper on "The Fruit Garden for Home Use." He said the size of the garden should be compatible with the requirements of the family, and should be surrounded by a picket or wire fence. There should also be a cheap but serviceable greenhouse, and cellars and storehouses free from dampness, frost and vermin. The varieties he recommended were the following:

STRAWBERRIES: Early Canada, Bidwell, Crescent, Ontario, Manchester, Daniel Boone, Wilson and King of the North for early ripening. For medium ripening he recommended Crimson Cluster and Henderson. For late ripening, Prince of Berries, Maggie and Jewell.

RASPBERRIES: For early red varieties, Hansell, Marlboro, Herstine, Turner, Red Antwerp, and Franconia. For late red, Clark and Cuthbert. Early Black, Tyler, Soughegan and Seneca. Late black, Mammoth Cluster, Gregg, and Shaffer's Yellow or White, Caroline and Brinckle's Orange.

BLACKBERRIES: Gainor, Snyder and Kittattinny.

GOOSEBERRIES: Saunders' Pearl, Houghton, Smith's Improved, Downing's, and Industry.

CURRANTS: Fay's Prolific, Cherry, Raby Castle and Red Dutch. Black: Lee's Prolific and Black Naples. White: White Grape and White Dutch.

GRAPES: Moore's Early, Worden, Concord, Wilder, Roger No. 4, Brighton, Lindley, Delaware, Lady, Jessica, Niagara, Pocklington and Empire State.

Linus Woolverton, Grimsby (Secretary of the Association and Editor of The Horticulturist), regarded Moore's Early, Worden and Concord as the best black grapes for family use, and Niagara and Empire State as the best white varieties. He befriended the Pocklington, but did not consider it to be so hardy as the Niagara. He did not believe in fencing the family garden; it made too much work about the fences, where there was a breeding ground for weeds, vermin, etc. He would employ horse culture in the open field, and long rows were more easily cultivated than short ones. His favorite family strawberries were Cumberland's Triumph, Crescent and Wilson.

P. C. Dempsey advocated long-row horse culture, and added that the garden should be thoroughly protected by wind breaks. The rows should be set in the direction which would cause them to get the most sun. The market should not be endangered by the Champion grape, which was never asked for a second time; the Worden was only 5 or 6 days later. Moore's Early and Lady were shy bearers. The Worden was the best grape in the east.

W. E. Wellington, Fonthill, said that locality was a very important consideration in Canada; each speaker should state his locality and give some idea about the climate. For general use he would select the following varieties:

RASPBERRIES: Cuthbert, Gregg, Shaffer's Colossal, Caroline, Golden Queen and Herstine.

GRAPES: Moore's Early, Jessica, Worden, Empire State, Brighton, Roger No. 4, and Virgennes.

STRAWBERRIES:—Manchester, Crescent, Bidwell, Sharpless and Wilson.

CURRANTS: Cherry, White Grape, Fay's Prolific and Moore's Ruby.

GOOSEBERRIES: Downing's, Smith's Improved, and Industry.

Mr. P. P. Lyon, South Haven, Mich., President of the Michigan Horticultural Society, wondered why the Alpha strawberry was not mentioned; it bore a splendid reputation in Michigan. The Gregg raspberry was considered the worst quality grown in his State, but was very productive. He criticised quite a number of other varieties, but those which he recommended did not differ materially from those in favor amongst our own growers.

M. Pettit, Winona, one of the most extensive grape growers in Canada, recommended the following list for the farmers' fruit garden: Black—Moore's Early (early), Worden (medium), Concord (late). Red—Brighton (early), Delaware (Medium), Lindley (medium, also called Roger No. 9). White—Lady (early), Niagara (medium), Pocklington (late).

HIGH VS. LOW STEMMED TREES.

From the question box, the issue of high vs. low fruit trees was discussed.

L. Woolverton advocated the pruning of trees in such a manner that the trunks would be allowed to grow long before the branches began to spread, contending that an orchard pruned in this way could be cultivated to greater advantage, the teams being able to walk under the branches and closer to the trees.

W. E. Wellington advocated low set trees, the stems thereby not being so much exposed to the sun and inclement weather, which operated to the injury of the trees. He admitted that such an orchard could not be tilled so conveniently, but better specimens of fruit were produced. He considered that a five foot stem was high enough to begin with, which could be trimmed a trifle higher as the tree grew older.

L. Woolverton thought this might do for apple trees, but he found the best results from letting peach trees branch off near the ground.

W. E. Wellington allowed his peach trees to branch off three or four feet from the ground. In spring he never found the bark burst when the stems were short, which occurred on long stemmed trees.

M. Pettit allowed his apple trees to branch off when the stems were four or five feet high.

A speaker said that the trees, when the stems were too high, leaned to the east, caused by the action of the high winds. On low trees the apples could be picked at half the expense.

P. C. Dempsey thought four to five feet was about right. It would not hurt anybody to do a little hoeing under the trees; plowing too closely destroyed many of the roots.

F. W. Wilson, Chatham, thought a good deal depended upon what kind of stock, if any, was allowed to run in the orchard.

W. McKenzie Ross found the best fruit from low trees, and it was more easily gathered; but grass should not be allowed to grow around the stems of the trees, it being a place of refuge for mice and other vermin. In the fall the ground should be hilled up around the stems to keep off the mice. He preferred a short stem; three feet was what he considered short.

PEAR BLIGHT.

A discussion on pear blight took place, in which various remedies, more or less unsatisfactory, were mentioned. The President said the knife was the surest remedy, cutting below the blighted parts—or even below the ground in bad cases. Several members and listeners spoke of instances in which the application of large quantities of barnyard manure had caused blight.

Prof. Panton, Ontario Agricultural College, explained that, until recently, blight had been attributed to the following causes, which, however, were all theories: (1) the weather; (2) insects; (3) frozen sap, or alternate freezing and thawing; (4) fungoid growths; (5) thunder and lightning. It had now been fully demonstrated that blight was caused by bacteria in the sap. A perfectly sound tree, when innoculated by affected sap, always caught the blight; but by filtering the sap, no injurious effects were produced. The bacteria which caused the blight were related to those which caused the rot. The most rational remedy consisted in working upon the vitality or condition of the tree; the bacteria floated in the air, and the air was beyond our control. Any condition which stimulated or produced a luxuriant growth of wood was favorable to bacterial attack, and this was the explanation of the blight being caused by excessive applications of barnyard manure.

The programme having called for the six best varieties of apples and pears for home and market use, Mr. Woolverton recommended the following:

APPLES for home use—Astrachan, Duchess of Oldenburgh, Fall Pippin, King of Tompkins, Northern Spy and Golden Russet. For market—Astrachan, Duchess of Oldenburgh, Maiden's Blush, King of Tompkins, Roxbury Russet and Golden Russet.

PEARS for home use—Rostiezer, Bartlett, Clapp's Favorite, Sheldon, Angouleme and Anjou. For market—Rostiezer, Bartlett, Clapp's Favorite, Howell, Angouleme and Anjou.

Mr. Allan highly recommended Mr. Dempsey's seedling, and thought it should be called the Dempsey.

Canadian Fruits at the Colonial Exhibition.

Mr. A. McD. Allan, President of the Ontario Fruit Growers' Association, and Mr. P. C. Dempsey, who were appointed to take charge of our fruit exhibit at the Colonial and Indian Exhibition, presented a report to the Fruit Growers' Association, from which we take the following items;

The immense Conservatory of the Royal Horticultural Society was completely filled with our fruits, and there was a surplus of 500 plates of apples which were exhibited at the Edinburgh exhibition. Every Province of the Dominion was represented, and the locations in which the fruit grew were labeled, which dispelled the illusion that Canada was a land of eternal ice and snow, wild Indians, polar bears, etc. British Columbia furnished 180 plates of apples and 54 of pears. At the Guelph Provincial Exhibition, 356 plates of apples, 84 of peaches, 23 of pears, 24 of quinces, 19 of plums, 138 of grapes, being a total of 644 plates, were gathered for the Colonial. The Bay of Quinte Agricultural Society supplied 288 plates of apples, 68 of pears, 2 of quinces and 80 of grapes. The West Huron Agricultural Society furnished 234 plates of apples, 66 of pears, 4 of quinces, 51 of grapes and 13 of plums. Individual growers from Ontario furnished 49 plates of apples, 22 of pears, and 13 of plums and grapes; total number of plates from Ontario, 1,534. The Montreal Horticultural Society supplied 198 plates of apples, 4 of pears, and 1 of cranberries. Abbotsford Horticultural Society furnished 47 plates of apples, and 11 of pears. The Dominion Exhibition held at Sherbrooke, Que., supplied 76 plates of apples, 9 of pears, and 16 of grapes; total for the Province of Quebec, 362 plates. Nova Scotia supplied 334 plates of apples, and 3 of pears; and New Brunswick 144 of apples, and 5 of pears; total for the Dominion, 2,616 plates. Besides this display, there were laid on the table 14 plates of apples, 10 of pears, and 4 of plums from Quebec; 134 of apples, 37 of pears, and 11 of plums from Ontario; and 82 of apples, and 7 of plums from Nova Scotia: Also a display at Edinburgh from the Niagara and London districts (there being no room at the Colonial) of 419 plates of apples, and 9 of pears; 63 of apples from Quebec; 10 of apples from Nova Scotia, and 8 from New Brunswick. Grand total for the Dominion, 3,550 plates. At the close of the Colonial, 500 plates of apples were selected for the Glasgow Industrial Exhibition; a collection from Prince Edward Island arrived too late. Remaining specimens were distributed free in various quarters.

The following varieties of grapes carried perfectly well: Prentiss, Clinton, Telegraph, Rogers' 44 and Arnold's Hybrid. The following carried fairly well: Vergennes, Rogers' 36, 22, and 9, Burnet and Allen's Hybrid. Fairly good bunches were found in each of the following: Delaware, Iona, Diana, and the rest of the Rogers not mentioned. Lady Washington, Concord,

Hartford, Prolific, Champion, and Niagara were so shelled off that it was only possible to get enough to make a plate or two for the table. Prof. Saunders' new grapes, Kensington and Emerald, which were packed in a box with other fruits, carried perfectly. These losses were mostly due to rough handling of the packages in transit; they believed that all the varieties would have carried fairly well in baskets. There was no market for our grapes in England, English hothouse grapes being a better quality than ours, and those from France were sold cheap. Prices were too low for our grapes, but they would become popular for wine. A firm had already talked about starting a wine manufactory in a good grape district of Canada, providing our law did not interfere; the business would also include the manufacture of clarified cider from apples. One gentleman stated that the juice of our apples was so strong that it would bear 20 percent of water added, and then be as good as the juice of English apples. Our green corn attracted general attention, and a market in England could be obtained for our table sweet corn. Our tomatoes were wanted in large quantities, and other vegetables were looked upon with great favor on account of their superior quality. The report contained the following observations with reference to the quality of our fruits compared with those raised in Britain:

"It was interesting to observe the difference between the British fruits in the markets and the samples shown on the exhibition table, the former being wretchedly small and spotted, while the latter were simply magnificent in size, but fineness of form and color were wanting. The samples shown at the Crystal Palace Show, as well as those exhibited in the Conservatory at the annual exhibitions of the Royal Horticultural Society, were all well grown fruits, and besides many of the growers admitted that they required high cultivation and manuring in order to produce such specimens; indeed, it was most evident from the spreading eyes and knotted and ribbed forms of the apples especially, that such was the case. In point of flavor, from all the tests we could get, such fruit is very insipid compared with our naturally grown specimens, and there is a wonderful want of tenderness in flesh in all English apples and pears. An English Duchess D'Angouleme is scarcely better than a sweet turnip; indeed, they do not pretend to eat it at all, and many growers who tasted some of our specimens were astonished at their richness."

Fruits for Western Ontario.

While attending the meeting of the Ontario Fruit Growers' Association recently held in Chatham, Kent county, we endeavored to prepare a list of the fruits that succeeded best in that county in particular and the western peninsula of Ontario in general, this section being the banner fruit district of Ontario. In ordering varieties, farmers should select early, medium and late, so as to keep up the supply long in the season, and all the facts necessary will be found in the accompanying list. The scale of figures is graduated from 1 to 10 with reference to the merits stated, viz., color, size, quality, quantity, home and market use.

We are indebted to Mr. F. W. Wilson, proprietor and manager of "Wilson's Nurseries," Chatham, Ont., for the preparation of the subjoined list, and his experience does not vary materially from that of other leading nurserymen and fruit growers in the western peninsula:

VARIETIES OF FRUITS MOST SUCCESSFULLY CULTIVATED IN WESTERN ONTARIO.

NAME OF VARIETY.	Color.	Size.	Quality.	Quantity.	Season	Profit for Market.	Home Use.
Strawberries.							
Crescent	5	6	4	10	Early	10	7
Wilson	10	5	8	9	"	8	9
Bidwell	6	9	8	8	Medium	7	8
Manchester	6	9	8	8	Late	8	8
Raspberries.							
Marlboro (red)	9	10	9	9	Early	10	10
Caroline (white)	9	8	7	10	Medium	6	9
Cuthbert (red)	8	8	8	9	Late	10	10
Souhegan (black)	8	8	8	8	Early	9	8
Ohio (black)	10	9	9	10	Medium	10	10
Gregg (black)	5	10	6	9	Late	9	8
Blackberries.							
Kittatinny	9	9	9	8	Medium	8	8
Snyder	8	6	8	10	"	10	9
Gooseberries.							
Downing	7	9	9	10	Medium	10	9
Industry	10	9	9	9	"	9	9
Currants.							
Fay's (red)	10	9	9	10	Medium	10	10
Cherry (red)	10	8	9	8	"	8	8
White Grape	5	8	10	9	"	6	7
Black Naples	10	9	8	8	"	8	8
Lee's Prolific (black)	9	9	10	9	"	10	10
Dewberries.							
Lucretia	8	10	8	8	Medium	10	9
Grapes.							
Champion (black)	8	8	2	8	Earliest	9	2
Moore's Early (black)	8	8	8	4	Early	8	7
Worden (black)	8	9	8	8	Medium	9	9
Concord (black)	8	8	7	10	Late	9	9
Delaware (red)	9	2	10	3	Early	4	7
Lindley (red)	9	7	9	7	Medium	7	7
Salem (red)	9	9	9	7	"	8	9
Vergennes (red)	10	10	10	9	Late	9	9
Jessica (white)	9	4	9	5	Earliest	5	7
Lady (white)	9	7	10	8	Early	8	10
Niagara (white)	10	9	9	10	Late	10	10
Martha (white)	9	9	9	8	Medium	8	9
Pocklington (white)	10	10	9	5	"	5	6
Empire State (white)	10	9	10	9	Late	10	10
Cherries.							
Early Richmond (red)	9	10	10	10	Early	10	10
Black Tartarian	8	10	9	9	Medium	8	8
Governor Wood (white)	10	9	10	9	"	8	9
Common Kentish (red)	9	8	9	9	Late	8	8
Plums.							
Lombard	9	9	9	10	Medium	10	10
Apricots.							
Russian	10	8	10	10	Medium	10	10
Peaches.							
Early Canada	10	8	9	10	Earliest	10	10
Hale's Early	8	7	8	9	Early	9	9
Early Crawford	10	9	9	8	Medium	9	9
Old Mixon	9	9	9	9	"	9	9
Smock	8	8	8	9	Late	8	8
Nuts.							
American Sweet Chestnut	9	6	10	6	Medium	7	8
Japan Giant Chestnut	10	10	9	10	"	10	10
Dwarf English Walnut	10	10	10	10	"	10	10
Pecan Hickorynut	9	8	10	10	"	10	9
Shellbark Hickorynut	10	10	10	10	"	9	10
American Black Walnut	6	9	9	10	Late	9	10
American Butternut	5	8	9	8	"	8	9
English Filberts	7	5	7	4	Medium	4	5
Kentish Cob Filberts	8	10	9	10	"	10	10
Pears.							
Doyenne D'Ete	10	2	9	7	Earliest	9	9
Rostiezer	7	4	10	9	Early	9	9
Clapp's Favorite	9	9	9	10	"	10	10
Bartlett	9	9	9	10	Medium	10	10
Flemish Beauty	8	8	8	9	"	9	9
Seckel	9	5	10	8	"	8	10
Keifer	9	8	3	10	Late	10	6
Beurre de Anjou	10	9	9	9	Later	9	10
Josephine of Malines	9	7	10	8	Latest	10	10
Quinces.							
Orange	10	9	9	10	Early	10	10
Crab Apples.							
Transcendant	9	10	10	10	Early	10	10
Hyslop	10	10	10	9	Late	10	10
Apples—Summer and Fall.							
Yellow Transparent	9	8	8	8	Earliest	8	8
Early Harvest	9	8	8	8	"	8	9
Red Astrachan	10	7	7	8	"	8	6
Large Sweet Bough	8	9	10	8	Medium	8	9
Alexander	10	10	9	8	Fall	7	7
Cayuga Red Streak	7	10	7	8	Late fall	7	7
Duchesse of Oldenburg	10	8	10	10	"	9	8
Fall Pippin	8	10	10	9	"	8	8
Maiden's Blush	10	8	10	10	"	8	8
Chenango Strawberry	10	8	10	8	"	7	9
Stump	10	8	10	10	"	7	9
Fameuse or Snow	10	6	10	10	"	8	10
Apples—Winter.							
Baldwin	10	7	8	10	March	10	9
Ben Davis	10	7	6	10	May	10	8
Canada Red	10	6	10	9	Dec	9	10
Fallawater	8	10	9	9	Jan	9	9
King of Tompkins Co	10	10	10	4	Nov	7	8
Northern Spy	9	9	10	9	Dec	9	10
Peck's Pleasant	8	10	10	8	Jan	9	9
Phœnix	9	10	4	10		9	7
Rhode Island Greening	8	9	9	10	Nov	9	10
Golden Russett	10	8	10	9	May	10	9
Seek-no-Further, Westfield	9	7	10	9	Jan	8	10
Wealthy	10	8	9	9	Dec	9	9

The Best Varieties of Apples, Pears, and Plums.

The Colonial and Indian Exhibition recently held in London, England, having given a great stimulus to our fruit industry, orchards will henceforth be more extensively cultivated in all parts of the Dominion, and farmers, in selecting trees, should spare no pains in procuring the best and most profitable varieties. There are varieties which are specially suitable for certain districts, but there are also varieties which may be termed general purpose, being more or less suitable to all districts, and are also general purpose with reference to the various uses to which they are applicable. Farmers who plant extensive orchards should grow largely those varieties which find ready sales in foreign markets. It is impossible, for general purposes, to draw a sharp line, in some instances, between summer or fall and winter varieties, as the dates of ripening vary considerably in different localities. At meetings of the Fruit Growers' Association, the question is often asked, what are the best varieties? But the answers are often lacking in pointedness with respect to the purpose for which a specified variety is best adapted.

We are indebted to Mr. A. McD. Allan, of Goderich, Ont., President of the Ontario Fruit Growers' Association, for the accompanying list of apples, pears, and plums, which he recommends for general use amongst farmers, the figures being graduated on a scale ranging between 1 and 10, the latter number being the highest in point of merit. Mr. Allan's long experience both as a fruit grower and as the most extensive shipper in Canada, admirably qualifies him for this sort of work, and his judgment may safely be relied on. There are many other useful varieties, but he believes that the average farmer can make the most suitable selection from the subjoined list. The varieties are given, as near as possible, in the order of their ripening:

VARIETIES.	Home and British Market.	Cooking.	Productiveness	Dessert
Apples—Summer.				
Duchess of Oldenburg	10	10	10	5
Apples—Fall.				
St. Lawrence	8	8	7	7
Gravenstein	10	8	8	10
Wealthy	10	8	8	8
Apples—Winter.				
Twenty-ounce Pippin	10	9	7	5
Ribston Pippin	10	7	7	10
Blenheim Pippin	10	7	8	9
King of Tompkins	10	9	7	9
Baldwin	9	9	10	6
Northern Spy	9	10	7	9
Am. Golden Russet	10	8	10	9
R. I. Greening	8	10	9	8
Pears.	Home Market.			
Clapp's Favorite	10	8	9	8
Bartlett	10	10	9	10
Beurre Superfine	8	8	9	8
Boussock	9	10	8	6
Duchess D'Angouleme	9	8	7	6
Beurre D'Anjou	9	8	8	7
Josephine DeMalines	7	3	8	10
Plums.				
Lombard	8	9	10	5
Yellow Egg	10	10	9	3
Bradshaw	9	9	8	6
Pond's Seedling	10	9	8	7
Coe's Golden Drop	9	10	8	5

KERRY COWS' MILK.—The Farmer's Gazette publishes a list of tests containing the percentages of fat from the milk of this breed, which are respectively as follows: 4.53; 3.83; 5.04; 4.12; 4.14; 4.24; 4.37; 3.87; 4.91; 3.39; 5.05; 3.71 and 3.95. These are the results of 13 analyses, and it will be seen that the average percentage of fat is 4.25. We doubt if any other known breed surpasses this average—one or two being excepted.

Stock.

A Chatty Letter from the States.

[From our Chicago Correspondent.]

Some 18 months old 408-lb. hogs and some 9 months old 260-lb. hogs sold at the same price per hundred. There is a growing demand for light and medium weights, though the hogs out of which French fat-backs are made will probably always be wanted more or less.

During February cattle and sheep have sold the same, and hogs have sold $1.40 higher than one year ago. The year's supply of hogs at Chicago at the present rate of decrease will be 2,000,000 less than last year. Some of the deficiency is liable to be made up late in the year, especially if we have a good corn crop.

For the first time in the history of the range cattle business, Chicago received several trains of purely grass-fed cattle from Southern Texas during the coldest part of February. It seems that Texas has fared remarkably well this winter, while Montana and the Northwest generally has suffered almost unprecedented losses. The latest advices from Montana indicate a 50 percent loss in many parts of that State.

We have heard a good deal about the ranges of the West being seriously over-stocked. It is grimly intimated that some of the Montana ranges, after this winter's "freeze-out," will not be too heavily stocked. It is well that Southern rangemen are favored this year, as they were terribly punished last.

Mr. A. M. Pool, of Marcus Pool & Sons, London, was here a few weeks since, and gave not a very encouraging report of the outlook for cattle raisers. He says the British markets are heavily stocked with home-bred beef, and fairly flooded with Colonial mutton. Great Britain never before had so many cattle and never before had such large quantities of cheap feed. He also says that Canada will have a large surplus of cattle this year, and sees no reason for expecting better prices to producers in the next 12 months.

Unless we have a repetition of last year's strikes, which is not very likely, the outlook for better prices for cattle on this side of the Atlantic at least is fairly good.

Meal-fed cattle from Nebraska are coming to market regularly now. The Union and Standard Cattle Companies of Wyoming are preparing all of their range cattle for market in that way. Lately a good many meal-fed Wyoming-Texas steers averaging 950 @ 1000 lbs. have been marketed by the Standard Co'y at $4.12½ @ $4.25.

Sheep have been selling well at $3.50 @ $5, with lambs at $4.50 @ $6, and feeders of good mutton sheep have made very nice profits the past season.

Cattle have not sold very well thus far this year, at least not as well as had been hoped, simply for the reason that the supplies have been larger than during the corresponding time in 1886, and there has been not enough old world outlet to warrant any advance in prices. A few very fine 1,500 @ 1,900-lb. beeves have sold lately as high as $5.50, but the great bulk of the beef bullocks sold at $4 @ $4.50. Unusually large numbers of "native" cows, heifers and bulls have been marketed at $1.50 @ $4.25, mainly at $2.50 @ $3.25.

The loss of young hogs by cholera during the past two years has been very great; the stocks of hogs last summer and fall were allowed to run low owing to the discouragingly bad state of the markets, coupled with the heavy mortality from disease. The results are now being seen in the remarkable advance in prices, which are about $2 per cwt. higher than they were last fall. Farmers who were then discouraged have since taken heart, and are now saving and caring for all of the pigs as they should have done a year ago. Isn't it strange that when prices for anything are low people are careless and wasteful.

Moist Food for Stock.

A correspondent writes to us as follows:—

"I use a horse-power cutting box to cut up all fodder for my stock. I first run a quantity of corn stalks through; next I run out a quantity of straw—oat, barley or wheat—then a quantity of hay; sometimes I omit the hay. Then I throw on a sprinkle of salt; my cattle eat this stuff, thus mixed up, with a good appetite. A farmer told me the other day that it was a good plan to sprinkle some water over the mass before mixing the layers together. He says the feed ferments some, and is softened for the stock. I should like to hear through the ADVOCATE the experience of others on this point."

This is an important question, especially at this season of the year, when succulent foods are beginning to get scarce, and are most beneficial to the stock. Succulent food being the natural diet for stock, the nearer this condition is approached the better. Take two rations, both having the same nutritive value and the same nutritive ratio, the one, however, being succulent and the other dry, and it will be found that the succulent ration produces the best feeding results. Let any farmer try the following experiment:—Take two bunches of grass of equal weight; feed one fresh from the scythe, and allow the other to dry in the sun. The latter will lose little or no nutriment, the shrinkage being due to the escape of water, and yet it will be found that the succulent bunch will produce more milk or beef than the dry bunch. Now if the dry bunch be soaked in water, it will recover its succulence, but will not produce such good results in feeding as it would in its original succulent condition, although better than in its dry state.

The same principle applies to the grains, or other feeding stuffs. The soaking of foods is correct in science and in practice, and it is quite probable that the advantages claimed for cooking are attributable merely to the greater succulence of the food, although we know of no experiments being made in this direction. Cooking experiments can never be settled until this point is investigated. The only objection is the extra labor of soaking the foods, and to obtain the best results, the feeding stuffs should be soaked in hot water, and fed before the ration becomes cold. The correct principle is to allow the food to soak up all the moisture which it is capable of doing, leaving no waste water, and if the food is so dry that the water will get cold before the former is thoroughly saturated, it is advisable to soak first for several hours in warm or cold water, adding some hot water just before feeding, and bringing every part of the mess as near as possible to the same temperature. It would pay well to adopt this practice for cows before and after calving, and under all circumstances it would pay to soak the food in cold water before being fed, if there are no convenient appliances for heating the water. The food may soak over night, providing it does not sour; under no circumstances should sour foods be fed. There is a great expenditure of animal force in making the food succulent in the stomach before it can be assimilated, and it requires extra food to supply this force; hence the saving in soaking the rations. When no roots are fed, this practice is especially beneficial.

Fat and Fever.

The exhibition and fat stock show men are having a hard time, and we wonder if the intelligent agricultural writers of the day can make any impression on their minds. Some of them are beginning to acknowledge that they are yielding a little, but don't want to be hurt too much all at once. Following up the sweeping attacks of English authorities, American writers are beginning to hurl their darts, a specimen of which we take from Mr. F. D. Curtis in the N. Y. Tribune, as follows:

"Early maturity" has driven pork from thousands of tables, because the stomachs would not stand so much fat. Nor can people tolerate excessive fat in beef, for the sufficient reason that they don't like it, and it costs too much to buy two pounds of so-called beef, of which only one furnishes food. The number of persons who will eat fat is growing less every day. One third of the average ham is thrown away because no one except an old-timer will eat the fat, and probably one-fourth of the costly roasts and steaks are cut off and wasted, so far as food is concerned. The butcher is obliged to trim off a great deal and sell it for tallow, and of the remainder which reaches the table a considerable part goes back again to the kitchen and thence to the garbage-box. Why not furnish a class of meats more lean, which do not weigh so much nor cost so much? The end, profit, would be reached just as well and more meat would be demanded as more could be purchased and eaten.

A long-continued over-fatness will reduce the vigor of an animal, and if it ever has posterity they will be less strong than the offspring of the more muscular and more active. Such a race of any kind of animals are always sick or suffering from some form of injury. There is too much attempt to get big weight in a short time. My pigs often disappoint buyers because they are not fatter. One thing I am sure of—that with the average buyer they will not run down on their hands, which is always the case when stock are purchased from those breeders who "shove them" or cram them from birth. We must breed the body first, and then add the fat when the time comes to have it, and then only put on enough to fill out the animal and not make it unfit for food on account of excess of fat and fever. There is more science in this kind of feeding and breeding than in the cramming system, where fat makes beauty and symmetry. My standard of handsome relates to ultimate value.

In an address recently at the Edinburgh University, Professor Wallace referred to the advantages gained by keeping different kinds of stock, and said: Variety of live stock on a farm, quite as much as variety of cropping, is a source of wealth accumulation in the holding. With variety greater numbers can be kept, and the best use can be made of all food by giving the quality suitable to each description of animal. Further, different varieties of stock appropriate different proportions of ingredients from the soil, and in this way several varieties do not exhaust it of any one ingredient in particular. For example, the loss to the land sustained by selling milk from a large dairy is greater than that which would result from keeping a smaller number of cows, rearing their calves, and feeding them to maturity. It is taken for granted that the same quantity and quality of food is given in each case. There are great advantages in a farm being self-supporting, or, in other words, breeding its own stock, as in the latter example. There is then no risk of importing disease with purchased animals. A good farmer can always breed a better quality of beast than he can buy, as it is natural for farmers who sell a number, but not all, to keep the best for their own purposes; animals, from a variety of causes, thrive best, as a rule, on the ground on which they have been born and reared; and last (though I might further add to the list of advantages), the stock of a farm is not so much subjected to the effects of sudden market fluctuations, which, when the whole stock is changed every season, as in some grazing districts, may cause the loss of capital in place of the expected profit return.

Poultry.

Edited by J. W Bartlett,

The Standard of Excellence.

We have been frequently asked what is the Standard of Excellence, and although all fanciers and exhibitors know all about it, there are many who have never heard of such a thing. To such we address ourselves. The Standard of Excellence is a work published and copyrighted by the American Poultry Association, and accepted by the Ontario Poultry Association as the rule for judging the different varieties by each of which is fully described therein, and any breed not so described is not considered to be a recognized breed. For each breed there are certain disqualifications, as will be seen by score card appended:

PLYMOUTH ROCKS—COCKEREL.

DISQUALIFICATIONS.—Birds not matching in show-pen; feathered legs; color of legs other than yellow (this does not include clouded scales, or those spotted with black); enamelled white in ear-lobes; lopped combs; crooked backs; wry tails; crossed or twisted beaks; splashes of white or black in the plumage, except in wing primaries and tails; red or brassy feathers in any part of the plumage; twisted feathers in wings or tails.

STANDARD WEIGHTS.

Cock.....	9½ lbs.	Hen.....8	lbs.
Cockerel.....8	"	Pullet.....6½	"

Deducting two points per pound for any deficit from standard weights.

	Stand'rd	Out	Sc're
Symmetry	10	....	10
Weight	10	....	10
Condition	8	....	8
Head	7	....	7
Comb	8	1	7
Ear-lobes and Wattles	8	....	8
Neck	8	½	7½
Back	6	1	5
Breast and Body	10	1	9
Wings	6	1	5
Tail	6	....	6
Fluff	6	½	5½
Legs and Toes	7	....	7
	100	5	95

(Signed) L. G. JARVIS, Judge.

This is an exact copy of a score card by Mr. L. G. Jarvis, at the St. Thomas Poultry Show, one of the few recognized judges in Canada. It will be seen there are a certain number of points allowed for each part, as symmetry, 10; weight, 10, etc., etc. It will be noticed this cockerel is all right in symmetry, weight, condition and head, but in comb the judge has cut him one point because the comb is ⅛ lacking of perfection; ear lobes and wattles perfect, and so on, taking off what percentage each part lacks of perfection; and at the foot of the column we find a total of 5 points out; this, taken from the total 100 points (which represent a perfect bird), leaves 95, which is called the score, by which we understand the bird lacks 5 percent of perfection.

This is considered by almost all breeders to be the best and most accurate method of judging; and certainly it is more satisfactory to know where a bird is wrong and why he did not get the prize, as the breeder is thus in a position to avoid the same defects in his breeding stock in the future. Again, A sends to B to buy a bird. B says: "I will sell you for ten dollars a fine bird winning first prize last winter at Toronto." Now this is decidedly tempting to have the first prize bird dangled before his eyes, but when A learns that B had little or no competition and finds the first prize bird an inferior one, he is greatly annoyed. But suppose B is in a position to say: "I will send you a bird scoring 95 points by Mr. Jarvis or by Mr. Butterfield" (as the case may be). A knows at once that the bird is a choice one, whether he ever won a prize at all or not. Again, suppose we ignore the Standard of Excellence and do away with scoring. Each judge will have his own ideal or perfect bird, and what Mr. Jarvis says is the best bird, Mr. Butterfield may say is the worst, as there is no rule to go by, only as each may individually fancy, and no one will know what style of bird to breed.

Now, poultry is our forte, if we have one, but we feel disposed to think that the sooner stock breeders generally formulate a standard for judging their stock by, the better. Again, the standard has proved eminently successful as a guide in perfecting the various breeds of fowls, and pedigree has proved to be of use only to unprincipled persons in fleecing confiding patrons, and what intelligent breeder is not aware of it? We challenge contradiction. And is there not just a slight probability that had other stock been bred to a standard more, and less attention paid to pedigree, that our general stock would have been of a better class at the present time?

Egg Eating.

There is perhaps no vice that fowls are guilty of that is as provoking as egg eating, especially to breeders of thoroughbred stock. We have been waiting for eggs to fill an order, and found the hens in the very act of eating the much wished for eggs. There are various reasons assigned for this piece of vandalism, and many reputed cures, but prevention is best of all, and is not difficult; but when the habit is acquired it is too late for this. If the hens are kept busy scratching in deep straw for their living, and the nests not too light, there is little trouble in this direction; and when the birds have plenty of room and get gravel and lime in suitable quantities also, there is less. So the next best thing is to give them this afterward, and make a box with long winding passages to the nest, at least make them turn a square corner or two, if convenient; or if the flock be small, we have placed them in the morning before laying in a large box with a false bottom made of lath, far enough apart to allow the egg to drop through on straw placed beneath. Or a hopper-shaped box may be made and straw laced to the sides or tacked down with leather strips, leaving a hole in the bottom just large enough for the egg to drop through out of sight. This vice is highly contagious, and if the first offender can be caught in the act, she should suffer decapitation at once and save the flock, but if a valuable bird, she can be isolated from the rest, and if prevented from getting at her eggs for a month, will have forgotten it, especially if well supplied with lime and gravel.

Sitting Hens.

Perhaps there is no part of the season's work that tries the patience of the breeder so much as getting the chicks out. It is all right if the hen is quiet and faithful to her business, but, alas! this is the exception rather than the rule. To obtain the best results we find it advisable to keep Biddy on the nest, so she cannot come and go at her own sweet will. To accomplish this, take an old barrel and cut a hole in the side six or eight inches from the top; make it large enough to allow the hen ingress and egress. Invert the barrel on the ground, if convenient; if not, on a floor will answer. Fill up the bottom with short straw even with the bottom of the hole; form a hollow in the middle, and put in two or three nest eggs. Stone or china eggs are best, but any egg will answer. Now put the hen on and hang a cotton cloth over the hole (which now becomes a door), and leave Biddy to her reflections. If she be a quiet, well-behaved bird, she will at once settle to business, and can be given the eggs for hatching in a few hours; but do not give her valuable eggs until sure that she has decided to act rational. Once a day will be found often enough to feed and water. This should be done late in the evening, just allowing enough time to eat, drink and return to the nest before dark, and not early enough to tempt her to take a stroll. It is well to sprinkle a handful of sulphur in the nest at time of sitting, and again a week before hatching. But avoid doing this nearer than one week to the time of hatching, as there is danger of the sulphur getting into the eyes of the chicks. Insect powder may be used in place of sulphur, but if so, it should not be used nearer than two weeks to the time of hatching. Should the eggs become soiled either from the breaking of an egg or other causes, wash them with a sponge and tepid water, keeping them under water during the process, and returning them to the pen as soon as the operation is completed.

Chicks in Brooders.

The past season demonstrated that chicks raised in brooders grow faster, weigh more, and sell at a higher price, up to the age of three months, than do chicks raised with hens for the same period. At first, one would naturally be surprised at such a claim: but, when we compare the advantages and disadvantages of the two methods, the chick in the brooder has all the chances in his favor. In the first place, he is never allowed to feel the effect of dampness. He knows nothing about being dragged through wet grass, or seeking a dry place during a rain-storm. Lice are enemies to which he is unaccustomed, and if he feels cold or chilly his stove is within a few inches of his scratching ground, while he can enjoy the heat of the sun without being exposed to the sweeping winds that blow from every direction. The water he drinks is of the proper temperature, and not covered with ice, and the food he receives is not only varied but given in a careful manner and in a clean condition. He has nothing to do for a living, is under the watchful eye of his master, and grows fast because he receives plenty of food, drink, and *heat*, which are the prime factors to success.

But the chick with the hen, if in winter, comes at a season when his dam cannot properly provide for his wants. If he leaves the warm covering, he becomes chilled. If his stronger brethren persist in roaming off, the hen follows them, in her anxiety, and drags the unfortunate ones with her. She tires them out, does not nestle when they desire, and, if her brood is large, she cannot hover them properly, especially when they are larger, and the consequence is that, though the chicks with the hen may grow rapidly the first few weeks, the time comes when a portion of the number perishes, or becomes stunted in growth, for want of sufficient warmth. There may be exceptions; for, if a brood of chicks with a hen receive the proper care, they will thrive as well as those in brooders, but are more subject to lice, which never attack chicks unless they are in the neighborhood of adult fowls. But, where hundreds of chicks are raised, a much larger number can be made to attain a marketable size, in the shortest time, in brooders than under hens.—[Farm and Garden.

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.

Items from Our Northwest.—Although our fellow countrymen in the older Provinces have had to complain of unprecedented falls of snow, railway blockades and disorganization of things in general, we have not had as yet anything approaching disagreeable weather. From Xmas until about 15th Jan., I suppose the mean temperature would average about 15 below zero, which looks formidable, but we don't care for it if there is no wind: zero is worse with us with a moderate wind than 30 below without it. It is amusing to have a tenderfoot guess at the temperature, if on a fine still morning he puts it at above zero, while during the day, when a breeze gets up, he makes it the opposite; whereas the mornings are always coldest, and the temperature rises during the day. So far we have only got about eight inches of snow, which is enough to make good sleighing, and permits of driving where you please, trail or no trail. This is a great advantage we have over parts of Ontario and Quebec, where winter roads are often next to impassable. Again, in the summer a top buggy can be used with comfort in the newest settlement, as trails are formed in but a short time, and are easier on horse and vehicle than many of your expensively constructed roads. The future of this country, I believe, is only dawning Much bas been said for and against it, and a great deal of the latter can be traced back to the ridiculously exaggerated reports spread broadcast during the boom. People came here expecting to make a living without working much, and never thought of what the difficulties were they would naturally have to meet and overcome as pioneers; many are having these ideas dissipated, and have settled down to the fact that nothing but close attention and hard work will make farming pay here any more than it will elsewhere. Last summer our crops were good, with the exception of roots, and even they were above an average Ontario crop wherever they were thoroughly cultivated. A few lessons of this kind and people will not be so prone to abuse the country and attribute their want of success to the climate, etc. Our wheat averaged from 10 to 27 bush. per acre, and this difference I notice existed in one instance on contiguous sections, the quality of soil being similar; circumstances in both instances were alike, except that one field was well plowed and the other was not. I find that the more the land is worked and cultivated, the earlier crops mature, and where manure is applied I find it pushes them ahead fully ten days. There is an immense deal to learn in farming out here and in understanding how to take advantage of the seasons. This will only be obtained by close observance and practical results. Farmers' clubs would be a great incentive to farming, and I hope to see one organized in our settlement before long. They are more wanted than even in Ontario, for we have no precedents to go by, nor have we the benefit of the experience of a staff such as is attached to your paper. In one line it gives us a valuable leading string, and that is in dairy pursuits, and they, I am glad to say, are attracting more attention every day. I have it from reliable sources that even with the indifferent care that cows get, they give more and richer milk than in Ontario. We can winter our cows comfortably for $5 per head, and during the summer all they cost us is the bedding.—G. B. F., Kinbrae, N. W. T.

Insuring Stallions.—Can you give me some information about getting a stallion insured? Is there a company that insures? I want to get a stallion insured for one thousand dollars.—D. E. C., Chesterfield, Ont.

[There is no company for insuring stallions.]

Effects of Forests on Rainfall.—I see a piece in the ADVOCATE by J. B., living at Moose Creek, having received damages by a neighbor having trees growing along the line fence, and as I was about to send you one dollar for the ADVOCATE, I thought I would write a few lines of sympathy for the man. Having had quite an experience with trees along the side of cultivated fields, I consider it a great damage to farming. For two or three rods along the side next the trees there is not more than one-third of the crop that is on the rest of the land, and that is not near so good, and it is oftentimes almost lost before it is fit to go in. It often gets one or two rains before it goes in, as, being in the shade, it will not dry out as soon as on any other part of the field, it being of a soft, limpy nature. If I were summoned on a jury, I certainly would have to give a man damages under such circumstances. I think there are some very erroneous ideas concerning the power of forests on rainfalls. I saw a well written piece in the *Chronicle and News* about tree planting and the great benefit it is in bringing rain. I am now sixty-one years of age, and twenty-one years of that was in the old land; as a general thing they have too much rain there, and there are no trees for miles, excepting a few around the farm houses. The summer of 1885 was extremely wet, and last summer was somewhat dry, and yet the same woods are growing here now that were then. And now I have had forty years experience in this country, and I don't know that I have ever seen three years alike in all that time, and I think that there is no man living who can prove that woods or trees have any effect on rainfalls. I like nice trees around a place as well as any other man, but trees in the cultivated fields are too expensive for me. This is the first writing I have ever done for the press. I like your paper very much. It is truly named "THE FARMER'S ADVOCATE," for it is the only paper that gives any encouragement to the farmer in protecting his interests.—J. Q., Inverary, Ont.

Flax seed for Stock.—Please give me the value of flax-seed for stock—the best method of feeding, more particularly cows in calf and mares in foal.—J. B. F., Norwich, Ont.

[Flax-seed has a large percentage of oil, and should therefore be fed to all classes of stock in small quantities. It is fed sometimes boiled and sometimes ground; but those who best understand the feeding of stock, always feed it ground and raw. Cows in calf or mares in foal should not get it as that contain much oil or fat; concentrated nitrogenous rations are best for them. However, there will be no harm in mixing a small quantity of ground flax-seed with ground grain or bran, and thus feeding occasionally for a change—more as a medicine than a food. It is specially beneficial when the bowels require loosening. We will take up the subject more extensively in a future issue.]

Spreading Manure in Winter.—Will you please answer through the columns of the ADVOCATE if it is profitable to spread manure on the ground in winter. Would it do late sown wheat any benefit to put it on now?—G. T., St. Catharines.

[A top-dressing of manure in winter, spread on the snow or bare ground, would be of great value to your fall wheat, especially if there is much heaving in spring caused by alternate freezing and thawing. The best results would be on a clay or undrained soil, as the manure would also prevent baking later in the spring, and the fertilizing value of the manure would be great.]

Notes from Nova Scotia.—Our Province by the sea seems gradually waking up to the value of its resources and the importance of its position. The gold, iron, coal and manganese mines are being more extensively worked, its railroads extended and new lines projected. Orcharding is being largely extended throughout the apple growing districts. The crop this year was about three hundred thousand barrels, and was largely exported to foreign markets. The small fruit business is also coming to the front. A few years ago a crate of strawberries or a barrel of cranberries were a rarity; now car-loads of them are raised for the market. Judging from present indications, the fruit business, large and small, is yet in its infancy.—I. J. S., Kings Co., N. S.

More Swindlers.—Allow me to thank you for your valuable paper; by reading an article in it, it saved me over $21 cash. Last June an agent came to my place, wishing me to take a book, as he represented it, entitled "Picturesque Canada," the cost price of which was 60 cts. I gave him my order—I foolishly not reading it—for a copy of the above work. A few days after this I picked up your paper and read an article warning farmers against frauds. As soon as I read it, it struck me that perhaps this order I had signed might be a fraud. I at once went to town, found the agent, and asked him for my order. He hesitated for a while, went away, came back shortly, and willingly took my order out of his book and tore it to pieces. I afterwards picked up the pieces, put them together, read the order, and found that it had only been partially read to me, for instead of being simply a book or one copy, it read 36 copies at 60 cts. each. About three months after this the books or pamphlets were left at my house. Shortly after this a third agent came for the pay. He showed me an order with my name signed to it, which in reality was not signed by me, but had been forged by the first agent just before he tore out or gave up my order. I might here add that many an intelligent farmer in this county has been swindled by this fraud, and many who are in poor circumstances have to pay.—J. R., Chatham, Ont.

Notes from Manitoba.—There is not much worth reporting taking place in this part of the world just at present. The winter is passing away very rapidly, and while we read of roads being blocked up and rendered almost impassable by snow in other parts of the country, we have hardly enough here to make good sleighing. We have had some pretty rough cold days, when it was not pleasant to be out of doors, but on the whole I think we ought not to complain. On an average, the thermometer has not stood so low this winter as usual, but we have had more wind than usually falls to our share. All interest at present seems to be centered in the fight for supremacy between the two political parties. The farmers here of all shades of political opinion are unanimous in their opposition to the railway monopoly and disallowance policy of the present Government, and all the candidates have adopted that plank in their platform, for they know that without it they would not stand the least chance of being elected. Before this reaches you the battle will have been fought and the victory won. I hope the best may be successful.—R. C. B, Stodderville, Man., Feb. 21, 1887

Canadian Ashes.—I see in this month's ADVOCATE an enquiry as to whether unleached ashes could be procured in Ontario, in answer to which I would say that they can, but not altogether from the farmers. They are mostly gathered in towns and from factories, which in the main are supplied with wood, and are delivered on the cars at about $4 per ton. There is only one man here in the business. He has a number of teams gathering the ashes for him, and I have gathered a good deal of ashes myself for him during the past two seasons. The same man has an ashery or potash factory in Ontario, and I have been informed that he sometimes ships leached ashes, but I have not seen it and therefore will not vouch for it, although I know that all the ashes shipped from here and surrounding stations, with one exception, are unleached.—M., Berlin.

Hand Separators.—We should be very much obliged if you would kindly furnish us with the name or names of the manufacturers of the "hand cream separator," which you mention in your December issue; and also what the cost would be for one of the separators.—C. B., St. Francois Xavier, Man.

[We have received numerous inquiries on this subject, but cannot yet give a satisfactory answer. The arrangements for manufacturing and handling these separators have not yet been completed, but the results will be duly announced in our advertising and editorial columns as soon as possible, probably in our next issue.]

Trimming Sheep for Exhibitions.—Enclosed find subscription for 1887. I have taken the ADVOCATE for a large number of years; it is a welcome visitor still, and pays its own way with large interest. In the January number for 1886 I purchased through an advertisement a Jersey cow which I flatter myself has paid my subscription ever since I have taken it. Please answer in your next: Do any of the breeds of sheep naturally shed their wool yearly? Are show sheep shorn in the spring, or are they kept trimmed all the time? I have heard that the Downs are not sheared, but in the spring blocked out into as perfect a form as possible by leaving the wool longer or shorter to hide imperfections. Is this so? If so, is it fair for them to compete with ordinary farmers who are not up to the dodge?—W. M., Highland Creek.

[Any breed of sheep is apt to shed its wool if not shorn once a year. In trimming sheep for shows, various practices are observed. The sheep are usually shorn in midwinter, and kept closely confined in a warm place. The wool, by high feeding, thus grows to considerable length by exhibition time, and the shears are freely used from time to time to give the animal a smooth surface and to hide its natural imperfections. Oil and coloring matter are rubbed into the wool in order to give it a glossy, yolky appearance, which is supposed also to represent health. If any proposed judges are not in sympathy with this method of bulldozing the farmers, the manipulators see to it that judges are appointed who are. It is a gross imposition upon the farmers; but even this is not the worst feature of our agricultural exhibitions.]

TO OUR CORRESPONDENTS. Owing to the increased number of letters which we are receiving, asking for information, we must insist more strictly upon our rules published at the head of our correspondence department. Letters of no public importance will not be published, nor letters not strictly pertaining to matters which belong to some of our departments. Stamps must be sent for answers by mail.

Family Circle.

FROM OUT THE DEPTHS.

The brilliant gleam of the lights inside the quaint old Gothic church streamed through the dim stained glass, throwing variegated, rich tints upon the spotless snow without.

The chancel, aisles, and gallery had all been illuminated, in order to let our decorators see the effect wrought by their busy hands.

A touch here, a leaf, or bunch of holly-berries added there, and it was pronounced to be perfect.

Pleasant words of congratulation and the brightest of smiles were exchanged; and then the little group glanced to see how the young Rector viewed the result of their labors.

He stood near the principal door, away in the shadow, a cloud of sadness upon his handsome face. But seeing that he was noticed, he slowly advanced, and spoke a few words of praise, not in his usual warm, cordial tones, but in a constrained manner as if his thoughts were not quite under his control.

It would not have pleased him had he been informed that every young lady present knew as well as he did himself why he was so troubled. He was surprised, hurt, keenly dissapointed, because Beatrix Carwardyne had not come to-night, as she had faithfully promised to do.

The girls, assisted by lovers, friends, and brothers who had come to escort them home, began to wrap up—a work involving much expenditure of time and attention so the Rector could wander back unobserved to the vestry-door to loiter aimlessly there.

Some of the bell-ringers were in the porch, assembling early, to be in readiness for the mid-night Christmas chimes; and they had opened the door to look at the adornments within.

The moon had risen, and the scene without was so indescribably lovely, that Charles Etherege could not but gaze upon its wondrous beauty.

Suddenly he made a step forward, as if he had seen a spirit. For a moment he was foolish enough to believe he had.

A slender figure, closely enveloped in a dark mantle, had paused for a second exactly opposite the open door, and had looked into the church.

The face was that of Beatrix; but how changed. The roseate hues had given way to a death-like, waxy tint; the great brown eyes, so gay and laughing always, were now full of a horror unspeakable — as of one who had come face to face with the dead.

Charles Etherege dashed through the preoccupied admiring knot of bell-ringers, and out into the moonlight.

"Beatrix—Miss Carwardyne!" he exclaimed, following in the direction her figure had so swiftly taken.

Not a sound—not the slightest foot-fall told him that any living creature was nigh. He stopped, and inclined his ear towards the ground.

In a minute or so the crisp "scranching" of the snow upon the path leading towards the Rectory from the church betrayed the fugitive, and with a few strides he was on the faltering steps of Beatrix Carwardyne.

"What has happened, Miss Carwardyne?" he asked.

"Pray—pray do not stop me, Mr. Etherege!" she pleaded, making an effort to lower her veil.

He took her hand, and drew it within his arm quietly.

She shrunk from him.

"Beatrix," he said abruptly, "I must know the cause of your distress. I was much disappointed at not seeing you before. Why did you not come?"

"I could not—I had to go elsewhere," she murmured. "You had no reason to be disappointed, Mr. Etherege."

"No reason! Beatrix, you know—although I have never spoken of my feelings—you know that I love you, and I thought——"

The girl drew her hand from his clasp, and turned her head away with a perceptible shudder.

"Is it possible that I have deceived myself, and that you do not care for me?" he exclaimed. "Surely you have not been coquetting to amuse yourself, and now throw me aside? Beatrix, something has occurred to make you change thus suddenly towards me. I was longing for a chance of telling you what was in my heart—of confessing how much I love you—of asking if you would be my wife; and now——"

For an instant the vivid color flowed over the lovely face before him; but it receded, leaving a more ashy paleness.

"Spare me!" she exclaimed, stretching out her hands like one smitten with sudden blindness. "Leave me."

"Not alone, at this late hour," replied the young Rector, calmly, endeavoring to control his emotion. "One word: has the coming of the wealthy Earl of Allanleigh anything to do with your contemptuous rejection of the comparatively poor Charles Etherege?"

The young girl made an effort to reply, but her parched lips refused to make a sound. Her lover bent his jealous eyes upon her, and saw her agitation; then, in the unjust, ungenerous outburst of resentment against her that rose for a moment in his heart, concluded that his conjecture was right. Knowing her pure and unworldly nature as he did, he yet allowed himself to believe that ambition was prompting her to play the jilt—to sell herself for rank and wealth. "Why have you come here to-night?" he abruptly asked.

Beatrix shivered; but before she could speak in reply, rapid steps were heard, and one of the Rectory servants came in view, almost running. The man, seeing his master, hastily addressed him, with a respectful apology to the young lady, as it was a matter of life and death.

"I have been looking everywhere for you, sir," the man declared. "You are wanted at once, if you please."

"Will you send some one to attend Miss Carwardyne home?" said Mr. Etherege.

Then, in a low tone, he spoke again to Beatrix.

"You will no longer care to see me to-morrow. Pray make my excuses to your father, as he may wait dinner for me, and wonder why I fail to appear."

With cold formality, he lifted his hat—the sweet remembrances of the season, and his deep, fervent love for the fragile creature before him, alike driven away for the moment.

Beatrix watched the receding figures until they disappeared; and she was alone. Then she sank on her knees in the sparkling snow, and clasped her hands above her head in an agony of dispair.

"My love—my darling," she cried, "come back to me! Oh, heaven! help me. My burden is more than I can bear."

As if from sheer weakness and exhaustion, she sank lower and lower, until her face was kept from the snow only by resting upon the little grebe muff she carried. No one would have recognized the gay, brilliant Beatrix Carwardyne in this almost lifeless form,

Approaching steps roused her. She sprang up and, as if inspired by sudden terror, darted away.

With the speed of a fawn, she traversed the remainder of the way that led to her father's stately Hall. Arrived there, she would have sped up to her own room; but her father stood on the threshold of the dining-room door by accident. A cloudy look of annoyance was on his face.

"Come here, Beatrix love," said he, trying not to show his vexation; "I want to say a few words to you. While the servants were in the room at dinner, I could not find a chance, and when I expected to see you in the drawing-room, they told me you had gone out. What could have possessed you to leave the house on such a cold, wretched night, I cannot conceive; unless you went off with a lot of silly, pottering fools, to the church, with the view of flirting with young Etherege!"

Beatrix threw off her hat, veil, and mantle, and stood within the richly furnished, warm, and inviting room; but she did not speak a word.

Her father seemed too much agitated to notice her pallor or her silence.

For a few moments he strode to and fro; then stopped abruptly.

"Sit down," he said; "listen, and do not interrupt. What I have to say will startle you; but bear with me till you have heard me out. You have been trifling and flirting with this Etherege. Do not speak, I beg of you. This must be at an end. It has not come to anything serious; I trust? I have other views for you. As you know, the rich young Earl of Allenleigh comes to spend his Christmas week with us. Do you know why he comes? He asked me for your hand—nay, you *must not* refuse him! Etherege has only a few hundreds a year—the Earl has a magnificent fortune! He has sent me a telegram to say he will be here to-night."

Beatrix sank into a chair, no longer able to support herself.

"Come—come, my dear," said Mr. Carwardyne; "it will be all for the best—all for the best. If you have cared a little for this black-coated adorer of yours, why, my lady the Countess will forget the girlish fancies of Beatrix Carwardyne."

"What you ask, my father, is impossible," the young girl said, in a hollow voice.

"Beatrix," he replied, bending over her, and speaking in a hissing whisper, "only you can save me from ruin! The world deems me a rich man. Child, from mad speculations, I have lost all, and am in a fair way of being plunged into penury. Timely help would, however, redeem my fortunes. I said I have lost all; but in one year, if I am aided now, I may be far more wealthy than before I let myself drift into commercial gambling. Would you calmly see me a beggar? I am too old to face the world, to enlist as a soldier, or go to sea." His hollow laughter echoed dismally through the oak-panelled room. "In your hands rests my fate. Refuse, and you doom me to the death of a wretched pauper! For weeks past I have kept my pistols, and ——"

Beatrix rose to her feet.

"Father," she said, looking him steadily in the face, "you took it for granted I went this evening to the church. I was not there. One of the servants told me, as I left this room, that one of my poor pensioners was dying, and begged to see me. My conscience smote me; I had not been near her for a week. Hurriedly I went, thinking to give her half an hour, and another half-hour to help in decorating the church; but when I entered her cottage——"

Great sobs broke from the white lips of the young girl, and she covered her face with her hands.

"What is this all about?" angrily asked her father, confounded by this unexpected display of emotion.

Beatrix dashed aside her tears, and raised her slender form.

"She had a terrible secret to tell. She had not sent for me, but for you; and the messenger had made a mistake, catching just the name."

"For me?" vaguely said the Squire, a troubled look in his eyes—"a terrible secret."

"Her name was Peggy Wilmot."

Squire Carwardyne threw out his hands, as if to ward off a blow, and fell back against the great dining table.

"Impossible!" he muttered. "She died five-and twenty years ago, Oh, no! a mistake. What did she tell you?"

"All," replied Beatrix—"all; and never can this hand of mine be given to an honest man—never—never!"

"The story was false!" cried Mr. Carwardyne, his face blanched to a guilty pallor. "The woman is an impostor! Girl, did you listen to infamous fabrications about your own father?"

"It was all poured into my ears before I could stay the words, each one of which fell on my heart like molten lead," answered Beatrix, mournfully, her eyes fixed on the carpet. "Oh! my father, it is not too late, perhaps, to make restitution," she suddenly cried, falling on her knees before him, with clasped hands. "Give up all—let us face the world as beggars; nay, not as beggars; but let us be content to go into obscurity, and work for a daily crust!"

"What folly!" exclaimed Mr. Carwardyne, furiously. "So you are only too ready to believe ill of your father, whom you have professed to love. You have swallowed the delirious ravings of an old dying crone. What did this woman want with me?"

"To intercede with you to do justice—to make reparation," replied Beatrix, rising to her feet.

"To whom? Did she tell you that?"

"No."

"Pish! Is the woman dead?"

"They told me she could not live through the night; but they forbade me from staying with her or sending for you, as she wished. Any further excitement would kill her."

"Where is the cottage?"

"Will you see her?" cried Beatrix.

"No; why should I see an old hag, who may be past my anger by this time? Hark! I hear wheels coming up the drive. Forget this nonsense—this drivelling folly. Give me your promise to save me from ruin and disgrace!"

Beatrix drew back some steps, and looked at her father in horror and amazement. His cool bravado, his *sang froid*, confounded her.

The Squire ran to the great bay window, lifted the heavy green velvet curtain, and looked out.

"It is the Earl," he cried. "He has alighted, and is handing out his aunt, who comes with him. Beatrix, we should be there to welcome them. Go to your room, and arrange your toilette; you must look your best. I do not ask your promise: I rely upon your help. Were the story true that you have heard, it is all paramount that *you*, at least, be saved from ruin."

He strode from the room into the great square hall, going bareheaded into the portico to welcome his guests.

For one wild moment, thoughts of flying desperately from the anguish that had come to her this bright Christmas Eve rushed into Beatrix's fevered brain. She turned dispairingly from side to side. No one to aid or counsel her; no ray of hope; new fears and cares heaped upon her.

"And I am only nineteen!" she murmured. "The story is true; my father denied it without even asking what had been told. I thought to be so happy this merry Christmastide, and now I could pray for the Angel of Death to take me from this agony. I can never see Charles Etherege again. My hopes, my happiness, my life—all a wreck. I can only seek for courage to lead my father to repentance."

Laughing voices and footsteps close to the door, warned her to make her escape. Catching up her hat and mantle, she quickly passed through a door at the end of the room, and fled away to her own apartment.

Morel, her waiting-maid, a pretty, innocent looking country girl, was sitting by the dressing-table.

She started, as the young lady entered with such haste; but her sudden blush only betrayed a very simple secret: she had been planning a little Christmas gift for her mistress—a gay shell pincushion—and was taken by surprise.

"Gracious! miss, you aren't ill?" she exclaimed.

"No yes—no, Morel, I am not well," said Beatrix, passing her hands vaguely over her forehead. "The Earl and Lady Bel Vavasour have just come. Go down, and see that her ladyship is made comfortable, and say that I will be down presently. My head aches."

The girl looked at her with anxiety; but Beatrix made an imperative sign for her to go.

The Earl was a tall, exceedingly handsome young man, with figure noble as that of the sculptured Apollo, and a face of absolutely faultless beauty, judged by canons of art. Scarcely anyone would have suspected that beneath so fair an exterior lay a heart cold and cruel as ever slumbered in the breast of a ruined gamester or *roue* of the most advanced type.

Only certain beak nosed creditors, who were eating their way into the vast estates, that had passed unencumbered to him from an almost miserly old uncle, knew that he had squandered his splendid revenues. Only half a dozen people were conscious that he was trying to trade on his coronet and reputed wealth to entrap the heiress of the prodigiously wealthy Squire Carwardyne, of Tollard-Farnham.

But not one being, save himself and now his only child, was conscious of the fact that the great Squire was trembling on the edge of bankruptcy—that he looked to the young Earl as his savior, while in a measure his victim.

Only the guilty man himself, his daughter, the poor woman who lay dying, and now one more, knew that Squire Carwardyne had no more claim to dwell in his stately Hall than the first tramp that might sit down to rest by the stone pillars supporting the huge iron gates.

For nearly thirty years he had kept the dark secret locked within his breast. He would have carried it into the silence of the grave, unrepentant—nay, triumphant; and now, when he was least

prepared for such a stroke, his crime rose before him like some menacing phantom.

Beatrix, urged by repeated messages from her father, at length appeared in the drawing-room.

Almost the moment his guests had retired, Mr. Carwardyne took his overcoat, hat and great stick, and cautiously went out by a small private door, rarely used. Emerging into the grounds, he carefully skirted round by the shrubbery, until he reached a postern door. This was unfastened, and going out, he closed it with a cautious hand.

By an adroit inquiry with one of the grooms, he had ascertained where this woman. Peggy Wilmot, had taken up her abode. The situation of the cottage he knew perfectly well, and could have found his way there blindfold, though he had never entered its doors.

What his special intentions were, he could not have told. A wild whirl of thoughts disordered his brain. He felt as if one had risen from the dead to accuse him.

Yet this woman had not, seemingly, come to accuse him to the world: only, by some wretched mischance to his own, and only child, his girl—the one being whom, after himself, he dearly loved.

Ten minutes' rapid walking brought him to the poor little cottage where the fatal secret had been told.

The woman lay evidently dead on her miserable pallet. Beside her stood the Rector. The dim light fell on the dead woman's face, casting from the figure of the Rector a terrible towering shadow, that reared itself menacingly, it seemed, to the guilty eyes of Selwyn Carwardyne.

On the rickety table, amid phials, plates, basins, cups, and other litter of the invalid chamber, lay a written paper, with a clumsy ink-bottle, and a pen of the commonest quality. A small book, either a Bible or prayer-book, rested beside it.

"Her dying confession!"

The surmise ran like electric fire through Selwyn Carwardyne's brain. He would have given five hundred pounds, had he possessed it, to know if this suspicion were correct. The door was only a few steps from the bed by which the table stood; Charles Etherege seemed lost in thought; one swift movement, and the paper would be his. If the guttering candle were overturned, there would be only the feeble glimmer of the fire in the grate, and he could easily escape in the obscurity,

The temptation was too great to be resisted. With a step perfectly inaudible, he stole up to the table, and had stretched out his hand to snatch the paper and extinguish the candle, when Charles Etherege turned.

With singular presence of mind, Squire Carwardyne dropped his hand, straightened up his half-crouching figure, and said, as cooly as his quickly-beating pulse would admit:

"This poor creature, I understand, sent for me."

"It is too late," replied the young Rector, taking up the paper, folding it, and placing it in the breast-pocket of his coat.

Squire Carwardyne instantly knew, from the tone of his voice and the coldness of his manner, that the secret was in Charles Etherege's keeping. All, or how much? He gazed steadfastly at the calm, spiritual face, as if trying to read the very soul of the young man.

"Why do you stay here?" he asked.

"Dr. Arnold has gone to desire the nurse to return. When he comes back, I shall be released."

"That paper——"

"Contains the history of a great crime, with the names of those who were guilty."

"You intend to bring those criminals to justice?" demanded Squire Carwardyne, his face blanching.

"I do not know."

"What was the nature of the crime?"

"You know it already. Only the chief author of the crime is now living. He——"

"Go on."

Steps were heard outside.

Squire Carwardyne clutched the arm of the young man tightly.

"It is the Doctor," he said. Does he know?"

"He does not. Your secret rests with me for the present."

"My secret?"

But the medical man, followed by two momen, pushed open the door of the room. A few words passed between him and the Rector; then the latter took up his hat, as if about to depart. Squire Carwardyne had drawn back into the obscurity of the dim corner near the door, so that Dr. Arnold should not see him; then he slightly preceded Charles Etherege, dark and dreadful thoughts careering through his brain. He went down to the little wooden gate, and there lingered until the Rector came out. Then the two walked slowly, silently down the road leading towards the separte homes of both.

Suddenly the Squire said:

"Will you explain the mysterious words used by you just now? You seemed to hint that I had some interest in the paper which——"

His voice failed; his throat seemed full of hot sand.

Charles Etherege stopped abruptly.

"Mr. Carwardyne, I now understand what, earlier this night, was a deep, heart-rending mystery to me; the conduct of one whom I love and reverence beyond all on earth! My heart is pierced with grief. That poor, dying woman confessed to me that she had shared in a great crime. Nearly thirty years ago a man was with his dying cousin, who had drawn up a will, leaving large estates to his young wife and infant son. This man substituted a second will for the real one, stealthily exchanging the one for the other, the dying man being too weak and ill, and too trustful in his deceitful relative, to be able to detect the fraud,

"This Mrs. Wilmot, with her husband's servants in the house, participated in the fraud, being largely bribed by the chief criminal. The deceived man died; the traitor, who was a lawyer, and had drawn up both wills, provided a slender independence for the widow and infant son, but took the rest. I suppose the the world wondered at the disposition of property; but I know nothing of that."

"Did she tell you the name of the—the lawyer?" asked his hearer, in a frightful, hollow whisper.

"Thou art the man!"

A dead silence; then Squire Carwardyne said;

"Did she tell you the name of the widow of the man himself?"

"She was about to do so; but her strength failed her. It was only at the last she mentioned names at all."

"Is the paper signed?"

"It is, although not completed."

"What will you do with it?"

"I do not know,"—the tones showed the agony the speaker endured—"I dare not think till I am calmer, for it has been an awful shock to me. Mr. Carwardyne, I loved—I love your daughter, and I believe she loves me. Think, then, of the anguish with which I suffer this crushing blow!"

Squire Carwardyne did not reply; but continued to walk moodily along, crunching the fair, spotless snow beneath his tread,

"He does not know that his own is the name which he would have spoken. Had his mother not died in his boyhood, he would have heard something of the story years ago," ran the Squire's thought. "I must have that paper at all hazards."

"Good-night," abruptly said the Squire.

"Good-night."

No good wishes, no hearty, smiling interchange of pleasant congratulations on the holy, peaceful season, as there might have been three or four hours ago. Squire Carwardyne strode on, swinging his oaken cudgel. The young Rector paused near his own gates, as if to gain time to think

How long Charles Etherege thus stood meditating he never knew. He was aroused from his moody, conflicting reflections by a sudden blow, which was meant to slay him, and which would have done so, had not his thick felt hat partly warded it off; and he stooped with the celerity of lightning to turn and grapple with his assailant.

Charles Etherege could not tell with what object he had been attacked. He surmised, even in the turmoil of the moment, that his valuable gold watch and chain, and the one ring, set with large diamonds, which he wore, had aroused the cupidity of some wandering prowler. Young, vigorous, well-trained in athletic sports—which he had practised when at college—he over-mastered his enemy, after a brief and desperate struggle, and pinned him on the ground, placing one knee on the fellow's chest.

At that moment the moonlight shone out radiantly.

Charles Etherege looked into his assailant's face, and grew sick with horror. He uttered one cry of fear and despair, and then half rose.

"Squire Carwardyne!" he exclaimed.

The wretched man had swooned, and lay back, his face white almost as the snow upon which he lay.

Charles Etherege rose, and stood gazing upon him, struck with a sense of the deepest misery, and too much confounded to be able to render any aid towards restoring his cruel, treacherous foe.

Presently Squire Carwardyne opened his eyes; but he made no attempt to raise himself. He spoke feebly, and the young Rector bent down to catch his fluttering words.

"I am foiled—utterly baffled and ruined! I yield to a malevolent fate. The money for which I sinned has done me no good; and this night I had well-nigh stained may soul with murder! For pity's sake, silence those horrid, jangling bells; they drive me to frenzy. The name that woman could not speak was your own—Charles Etherege. I robbed you and your widowed mother. I have speculated madly, and lost all, or it will be lost unless a miracle happens."

The Rector thought his brain must be wandering.

"Why have you tried to do this dreadful deed?" he said.

"I thought to secure that fatal paper, and that it would never be discovered who had slain you. No one would suspect or dare to accuse Squire Carwardyne, of Ferndale Hall. I thought I should then be safe. All is lost. All is done with for me!"

Charles Etherege, moved to pity and forgiveness, lifted him, and drew him with difficulty to his feet.

"Can you walk? Will you come with me to my home? I will send a messenger to Miss Carwardyne to let her know that you are in safety."

"In safety!" echoed the unhappy Squire, with hollow laughter. "I suppose I shall be lodged in a criminal's cell to-morrow or the day after."

"Could you not seek those whom you have wronged?"

"Have I not told you that it is to yourself I owe justice?" impatiently exclaimed Squire Carwardyne. "I have the real will—unsigned it is true—in my iron safe at home. I give up all, though the now heavily-mortaged estates are little worth restoring."

"Is this true? You deceived my father thus, and impoverished my mother, embittering her days until her early death?" indignantly cried Charles Etherege.

"Even so," sullenly replied the culprit.

He was so exhausted that it was with difficulty he could manage to walk the short way on to the door of the Rectory.

Before the summons of the Rector could be answered, he cried:

"I must return to the Hall. I have guests there, and they will wonder at my absence. I shall be disgraced ruined! Yet what matters it? My child ——"

He broke down, and gave way to a passionate outburst of tears and sobs that shook his exhausted frame.

"You swear that I am the one to whom you must answer for your wicked misdeeds?" said Charles Etherege.

"On the sacred word of a man who may be standing near to death. I swear it If you will let me go to my own home, if you will come with me, I will deliver the real will into your hands."

The door was opened, and the master of the house supported his miserable charge into the sitting-room nearest at hand, The discreet servant looked amazed, but said nothing, and, as the Rector did not desire her attendance, she was about to withdraw, when he said:

"Tell Adams to get the trap ready at once as I wish to go to the Hall."

Then he closed the door of the room, and made Squire Carwardyne drink some wine.

Neither said much; each felt the situation acutely.

Presently a quiet tap was heard, and the servant came to say that the little pony-carriage was ready.

They went out, still in silence, and were soon rattling away to Ferndale Hall. Squire Carwardyne begged that they might go to the postern door, as he dreaded lest anyone should discover his absence and return; he sought to put off the evil hour of public detection as long as he could.

The gate was sufficiently wide to admit the pony, although not the vehicle; Charles Etherege, even at that moment of distraction, remembered the poor dumb creature who loved him, and, loosening it from the harness, led it through, and placed it under a sheltering out-house, throwing the horse-cloth over it. Then the two men entered the house. The Squire led the way to the library, closing the door fast when they were within.

He unlocked a handsome iron safe that stood in a corner, and, taking up a parchment deed, gave it in silence to the young Rector.

Charles Etherge examined it with a throbbing heart. It was indeed the will of his dead father. He felt like one in a dream. Rousing himself, he regarded the Squire.

The old man lay back in the great arm-chair like one in a stupor, his eyes closed, his face pale as death.

A mortal fear seized the heartof Charles Etherege. With a hand shaking as if from ague, he touched the old man's arm.

Not a sign showed that he was regarded, and he placed his fingers lightly on the pallid forehead.

Selwyn Carwardyne's spirit had flown to its last dread account.

Charles Etherege tried to rally all his forces to regain his lost self-possession. What was to be done? Alone at this ghostly hour, with the dead master of the house, dreading to alarm the beloved being whom he so deeply loved, yet feeling that she must ere long learn that her unhappy father breathed his last—aware that guests were in the house, while ignorant of their number, age, or sex—unable to tell where to find the most responsible of the servants, he felt utterly overwhelmed. Aid must, however, be obtained at all hazards, and at random he drew the spring of the bell by the fire-place.

No response came.

He entered the Squire's room, groped to the fire-place, and, finding lucifears, struck a light, and ignited the gas. Then he rang, feeling that the summons from the Squire's room would be more likely to be heard than one from the library. Almost immediately a light step, one teat made his heart beat with mingled love and affright, echoed along the corridor.

Beatrix, who had heard the first bell, but believed her ears deceived her, had also heard the second. She had not undressed, but was lying in helpless despair.

She recoiled when she saw her lover, and for an instant the awful thought that she had lost her senses flashed across her Then the almost equally dread thought that something had happened to her father smote her like a thunderbolt. Her already pale face became of a deadly whiteness, and she threw up her hands.

"Is—is—is he dead?" she whispered.

Despite his powerful effort at self-control, Charles Etherege's face betrayed the truth. To his amazement, the fragile girl drew herself together, and calmly demanded:

"Where is he?—where is my father?"

He hastily told her. There was no help for it. The house was aroused, the two guests alone being left in peaceful ignorance of what was going on.

They carried the dead Squire up to his own room, and sent off instantly for Dr. Arnold. But the guilty man had done with the things of this life only his evil deeds and his child remained.

The young man whom he had so infamously defrauded would have torn up the terrible paper signed by Peggy Wilmot, and the will which had never been signed by his father. But Beatrix quietly yet resolutely insisted that he must take what was rightfully his.

It was by a happy accident that he hindered her contemplated flight into poverty and obscurity.

The young man found that he could manage to take possession very quietly of the estates from which he had so long been shut out. But he represented to Beatrix that far less scandal would be created if she were to marry him—that there would be far less risk of her father's guilt being known and bruited abroad.

Some of the daring speculations into which the Squire had entered after all proved successful, and aided in clearing off the heavy mortgages.

Within two years of that fatal Christmas Eve Beatrix and the Rector were quietly married, but they never in after life forgot that night when Selwyn Carwardyne expatiated his guilt, though he left a stain of sin that could only be cleansed by the sweetness of love and devotion.

Minnie May's Dep't.

MY DEAR NIECES.—Winter is over and gone, and the "voice of singing birds" will soon be heard in the land. How many changes have taken place within your homes, since nature put on her winding sheet last autumn. A little cherub has been carried from the land of "Nowhere," and dropped down into the best and warmest spot on earth—a mother's bosom; some of my nieces have left the parent wing, and gone forth to build new nests. There has been pleasant bustle and joyous anticipation in the old homestead; and on the lips of some dear one the angel of death has laid his sword, silencing the loved voice forever; and so it is. Life comes to all of us with full hands, giving and taking; it is wisely ordered, "Our Father is at the helm." To each and all, in your joys and sorrows, your aunt Minnie offers her heartfelt sympathy—and spring is coming, every living thing feels its quickening influence. The little captive in his cage whistles and trills joyously, aware in some mysterious manner that the glad season of song and nest-building is at hand. Spring is coming; through rifts in the leaden clouds we catch far-off glimpses of intense blue, reminding us of summer and all its pleasant out-door occupations. When all around is bursting into new life, let us open our hearts to the blest influence; let us bestir ourselves and resolve to improve our minds, positions and circumstances by every honorable means, thereby adding to our independence and usefulness, not despising the "day of small things;" by turning our attention to something useful, and giving it our best care, a great deal may be accomplished. Most of my nieces are members of farmers' families; which of you will decide to have a good vegetable garden, and plant strawberries, or engage in raising fowls; if you once begin to take an interest, a real live interest, in such things, you will be sure to succeed. In her next letter your aunt Minnie intends telling you how to manage a garden with the least labor and most profit. MINNIE MAY.

Work Basket.

EMBROIDERY STITCHES—KNOT STITCH.—Is used in making ends of stamens, and the centre of flowers. The needle is brought through the material, and the floss wound around it once or twice, and it is again thrust through the material at the point where it was brought up. *Wound stitch*—is used for embroidering flowers having small petals, for small leaves and grains. The needle is first brought through the cloth, then wound with the silk many times, then the thumb of the left hand is placed firmly over it so as to hold it in place, until the needle is drawn through and the coil brought securely into place. In making each kernel, only two stitches are required the second one being one taken at the end of the kernel to give it the appearance of the barb of real grain.

KNITTED LACE EDGINGS.—Cast on 15 stitches. Knit across plain. 1st row, k 3, tto, n, k 3, tto, k 1, tto, k 6.——2d row, k 6, tto, k 3, tto, n, k 3, tto, n, k 1.——3d row, k 3, tto, n, n, tto, k 5, tto, k 6.——4th row, cast off 4, k 1, tto, n, k 3, n, tto, n, k 1, tto, n, k 1.——5th row, k 3, tto, n, k 1, tto, n, k 1, n, tto, k 3.——6th row, k 3, tto, k 1, tto, s 2, k 1, pass the two slipped stitches over the knitted one, tto, k 4, tto, n, k 11, Repeat.

CROCHET TABLE MATS.—Knitting-cotton No. 6 or 8. Make a chain of 25 stitches, dc, all around to the beginning and turn the work. There is one stitch upon the hook; put the hook back through the last loop through which the cotton was drawn, put the cotton over the hook, and draw it through that loop alone; then put the cotton over the hook and draw it through the two loops upon the hook, dc the row of loops on the back side of the mat to end. Crochet twice in each of three adjoining loops at the end, dc to the other end, Crochet twice in two adjoining loops at that end, bringing the ends of the first row around the mat together. Bring the cotton in front of the hook, which has upon it one loop, put the hook through a loop at the end of this row, where it commenced, and draw the cotton through the two loops upon the hook joining the row. Turn the work over, put the hook back, through the last loop that the cotton was drawn through, put the cotton over the hook, draw through that loop alone, put the cotton over the hook, and draw through the two loops. Crochet twice in the first loop of each of the two loops that had two stitches put in them. Proceed down the side to the other end. Crochet twice in the first of each of the three loops that had two stitches put in them, then go on to the beginning of the row, join, and turn over the mat as before. Continue until the mat is of sufficient size. For the border, pass one loop, and in the second make 5 tc stitches. Pass one loop, and fasten by one dc in the next, and so on round the mat. The length of chain in the middle of course determines the size of the mat. For coffee and tea pots, make a chain of six, and fasten together. Crochet twice in every stitch to start the six points for widening. The stitches to be crocheted at the time, are on the back of the mat.

PRIZE ESSAY.

Gratitude.

BY MABEL HARDY, CORNELL, ONT.

Perhaps at few periods in our lives do we feel so much in sympathy with mankind as when some needy person looks up to us with an expression of pained pleasure depicted on every feature, at the receipt of some small favor. We leave them with our hearts softened and enlarged, realizing that our slightest efforts are not in vain. If, after a hard day's work in the heat of summer, some one gives the laborer a cooling drink or some fresh, nutritious food, a hearty "thank you" is all the reward we could desire; "for words, like Nature, half reveal and half conceal the soul within," showing the pleasure we cannot express. Your heart is lightened, and you are happy in the thought that you have at least offered a cup of cold water. Gratitude may justly be termed the fountain head from which most other virtues arise, such as reverence for parents or benefactors, love for our country, and obedience to God. If a man be grateful for little acts of kindness conferred upon him, we are led to look for refinement in him; but look upon a man without that refinement, and we are almost instantly repelled, our hearts hardened, and the idea of coming in contact with him is distasteful. The ungrateful are everywhere shunned and despised as men working only evil and addicted to every vice; while, on the contrary, grateful persons are in the estimation of all men. They derive pleasure from all benefits bestowed, which is rendered more exquisite by the thought that some one cares for them, and made happier by the knowledge of a friend.

The worthy recipient feels deeply the obligation under which he is placed, and never forgetting the gift, is always on the lookout for the means by which he may repay his benefactor; no time can blot it from his memory, and no term of years bars the payment. To feel that you have a friend is to feel that you are never alone. The question has oft been asked, "What's in a word?" We have for answer, "Friendship." How lovingly and softly it strikes the ear, made doubly sweet, if we are alone in the world, with no relatives to sympathize with or comfort us—no one to love; how we appreciate a friend then! We look upon it as one of the choicest gifts heaven can bestow. Nothing tenders the heart and opens the gushing fountain of love more than the exercise of gratitude. Like warmth and moisture applied to a seed, causing it to germinate and bloom, so tears of gratitude awaken pleasurable sensations, unknown to those who have never been forced from the sunshine and prosperity of life to the cold chill of adversity, where no warmth is felt but that of benevolence, and nothing to shed light round their rugged path but charity.

Ingratitude is an offence so humiliating and degrading, that no man has yet been found who would acknowledge himself guilty of it. When we have so many instances of gratitude shown by dumb animals, how shameful, then, for one who terms himself a *man* to be otherwise. No wonder everybody hates and shuns him. Take away a man's virtues and what is he? No longer a man living in the image of God, surely, but little above a brute. But let him go abroad with just principles, and what a different picture he presents. Not a brute, but an ever-flowing spring in a barren waste. Love animates the heart, and he is able and ever ready to sympathize with the suffering; tears of pity gather in his eyes, and flow impetuously down his cheeks. His heart is pure, so that only pure actions could come from so good a source. Gratitude is never absent from his heart, and he is noble, pure and good, availing himself of every opportunity to return all favors tendered.

Recipes.

FRIED BEEF'S LIVER.—Cut rather thin, and pour boiling water over it; drain perfectly. Roll the liver in fine bread-crumbs, season with salt and pepper, and fry quickly in hot fat to a crisp brown.

MINCED VEAL.—Take three pounds of uncooked veal; chop fine; add three beaten eggs, butter the size of an egg, four rolled crackers and enough pepper and salt to season well; one-half grated nutmeg, mix. Press it into a crock or earthen dish, and bake half an hour. When ready to serve, turn it out and slice down on a platter. Beef is good prepared in the same manner.

POT ROAST OF BEEF.—Get four or five pounds from the rump, without bone. Cut gashes lengthwise and lay in strips of salt pork. Put in a broad pot and pour in a cup of boiling water. Cover tightly and let cook about two hours, turning once. During the last half hour baste several times. Then put the meat when done in a covered dish to keep warm, while you cool the gravy by setting it in cold water. When the fat rises, skim off every particle, return the gravy to the fire in a saucepan, thicken with brown flour, boil up and

serve. Even the coarser pieces of meat may be made palatable by this mode of cooking.

POTATOES FOR BREAKFAST.—A simple and delicate method of preparing potatoes for breakfast is a great favorite in the West Indies. Two pounds of peeled potatoes are washed and grated; four ounces each are added of sugar and butter melted, one teaspoonful each of salt and pepper, well mixed; place in a baking dish and put into a brisk oven until done; it shows a delicate brown color.

ONE-EGG PUDDING, WITH SAUCE.—One pint of flour, one cup sweet milk, one egg, one cup of sugar, two teaspoonfuls of baking soda. The sauce for this very simple yet excellent pudding is of value, because it is so plain and yet not thin, nor as watery as so many of home-made sauces are. Equal amounts of butter and sugar are well rubbed together, and then boiling, not hot, water is added drop by drop, beating vigorously all the time until the same becomes of the consistency of rich cream. Serve hot, but do not boil it. Add the flavoring last.

POVERTY PUDDING.—Put a layer of apple sauce in a buttered pudding dish, then a layer of cracker or bread crumbs, sprinkled with bits of butter and seasoned with spice to taste, then a layer of sauce, and so on, the upper layer being of crumbs; lay bits of butter on the top and bake; eat with cream.

SALLY LUNN.—Rub into a quart of flour two teaspoonfuls of baking powder; beat together nearly half a cup of butter and two tablespoonfuls of sugar; put into the flour and mix with a pint of milk; then add two eggs, beaten light.

Cow's Milk for Infants.

There was an article in yonr November number about Cow's Milk for Infants, but it missed a point far more valuable than any it brought forward. The kind of milk for an infant who must thus be artificially fed, is not slop milk from distillery-fed cows, nor milk doctored up with sugar and water, nor mixed with corn starch, nor somebody's patent "food for infants," but the "first drawing" from the udder of some good honest cow, fed on good honest fragrant grass or hay (according to the season).

Experience is a grand teacher; and as our youngest child had to have artificial food in some way, and had got into a very miserable way with her stomach and bowels, we asked advice of our doctor. He gave us a medical work on the subject of nursing, expressing his entire confidence in the author's theories. We put them in practice, and found it a brilliant success. We have induced others to do the same, with like success. Now, I will give you, in a few lines, this medical work "boiled down."

1. Use only the first milk drawn from the cow, which is comparatively thin and watery. Set aside a pint of this for the baby. Never "doctor" it, or add anything whatever to it. It is the most "perfect" artificial food you can find for the little one.

2. If the child is very young or very weak, give it the bottle two hours apart, or two-and-a-half; every month increasing the interval half an hour, till you get to four hours apart, then stay at that.

3. Give the baby absolutely nothing "between meals." He will soon get into the right habit, though he may cry a little *the first day*. Sometimes a nurse is better than the mother to have command that first day.

4. Throw away all "tubes." Use the long oval "nursing bottle," with the cork in the middle, or any common phial, with lips not too broad. Have the India rubber nipples you find in the drug stores. Dark ones are better and purer than the white ones. Soak them a while before using.

5. Have two bottles and two nipples in use, so that one set may be in a vessel of clear water when not in use.

6. If the child's meals are too near together, there will be curdy undigested streaks in its discharges. If it gets too much at once, it will throw off a portion of it. These will be guides in these particulars.

7. I know of nothing so inexpensive and handy for warming the milk at night, as a little coal oil hand lamp, with a moderately short *tin* chimney, scolloped at the top, and a bit of mica the size of a penny soldered in the side of it, so as to give a little light.

Let anxious mothers, who have to resort to "the bottle," *try this*; but be sure you don't swindle the baby by drugs, or by stuffing it with anything whatever *between meals*.

ONE WHO IS INTERESTED.

Character in the Hair.

If the color is not to be taken as an index, the habitual appearance is as a safe guide to at least a few points of character. Our faces carry with them the story of our lives, though it be written in hieroglyphics unread; to some extent we ourselves have made them what they are; not the features, but the expression, is our making, formed unconsciously all our life. In just the same way, it is not the hair itself, but, so to say, the expression we have given it that tells the tale. White, black, gray or brown, ruddy, yellow, ashen or flaxen—what matters it?—our hearts and our ways are not colored to match. Curly or straight—how could we help it? But our care and our carefulness, our work and our troubles have given it an appearance of its own, which is a part of our individuality; and therein are the secrets of character.—[Cassel.

Health Hints.

No person should bathe when the body is fatigued by either mental or physical labor, or immediately after a meal. For bathing purposes, in summer, the water should be about 70 degrees, in winter, 80 degrees.

In case of being bitten by a snake or dog, suck the wound (spitting it out), bathe it with warm wather to make it bleed freely. Tie a handkerchief around the limb above the wound. Give spirit and water to drink.

A good liniment to remove pain and swelling from any part of the human body, is made by rubbing up one ounce of camphor in four ounces of olive oil. Rub briskly on the aching part and relief will soon be manifest.

An emetic that often proves valuable in threatened cases of croup, is composed as follows: Powder of ipecacuanha and powdered alum, each one-half teaspoonful. Mix with water, and repeat dose if it does not act in ten minutes.

Sore throat is common at this time. An excellent gargle can be easily made by dissolving one teaspoonful of chlorate of potash and two teaspoonfuls of glycerine in a tumbler of water. As a gargle this is very soothing to the throat.—[Hearth and Home.

How to Save Boys.

Women who have sons to rear, and dread the demoralizing influences of bad associates, ought to understand the nature of young manhood. It is excessively restless. It is disturbed by vain ambitions, by thirst for action, by longings for excitements, by irrepressible desires to touch life in manifold ways. If you, mothers, rear your sons so that your homes are associated with the repression of natural instincts, you will be sure to throw them in the society that in any measure can supply the need of their hearts. They will not go to the public house, at first, for love of liquor; they go for the animated and hilarious companionship they find there, which they find does so much to repress the disturbing restlessness in their breasts. See to it, then, that their homes compete with public places in their attractiveness. Open your blinds by day, and light bright fires by night. Illuminate your rooms. Hang pictures upon the walls. Put books and newspapers upon your tables. Have music and entertaining games. Banish demons of dullness and apathy that have so long ruled in your household, and bring in mirth and good cheer. Invent occupations for your sons. Stimulate their ambitions in worthy directions. While you make home their delight, fill them with higher purposes than mere pleasure. Whether they shall pass happy boyhood, and enter upon manhood with refined tastes and noble ambitions, depends on you. Do not blame miserable barkeepers if your sons miscarry. Believe it possible that with exertion and right means, a mother may have more control of the destiny of her boys than any other influence whatever.—[Exchange.

Courtesy in Society.

"If any one is a bore," a charming girl once said to me, "I don't need to ask him to go away, I simply *look at his boots*." Is it not true that in the way we look at people, as much as in what we say, lies our social failure or success? Every one is familiar with that scrutiny, under which the Sphinx herself would grow uncomfortable, and feel as if her coronet were unbecoming. The one obstinate glove-button which there was not time to sew on; the cuff that was put on upside down; a shred, a bit of dust and a worn velvet button are taken in with the one inventorial glance that makes it a more trying ordeal to walk the length of an exquisite parlor, than to run a gauntlet of the most merciless Apaches. As a result of such a gaze one starts the afternoon or evening with a feeling of self-depreciation, quite another thing from the humility in which self is forgotten, and is sure to appear at a disadvantage. In contrast to this is the kindly appreciative meeting of eyes, that finds in us what is worth finding, and immediately appeals to that.

It was once said to a friend of mine—and she told me it was far more gratifying than if she had been pronounced æsthetic or brilliantly intellectual—"You are a *comfortable* kind of person to have round."

Any one of us can readily win such a reputation by just setting himself aside, absolutely determined to meet those with whom he is thrown in contact, with a quick sympathy and tact, that shall reassure timidity and shine through worldliness and reserve to the true heart which lies beneath.

A word to the gentle old lady in the corner; an inquiry of that shy, bright boy, as to the "rushes" and "knock-downs" of his last foot-bal

game ; a kindly manœuvred introduction of those young girls, less known than the rest, into the gay whirl of pretty dress and happy voice ;—very little things like these will make one a welcome guest in a palace or a tenement. Most unattractive is the dread some cherish of being treated with less deference than is due. It was once said of a charming woman : "She is too much of a lady to mount guard upon her own dignity."

In the general admiration for those who converse delightfully,—and Bishop Huntington tells us that conversation is a fine art—we are apt to forget that there is need of good listeners. This is a comfort.

Simply avoiding listlessness on the one hand, and on the other, a too great readiness to press forward our own opinions, if we listen with real interest to whatever is said, any one of us may excel in this *next finest* art.

Yet perhaps we are in less danger of rudeness among strangers than with those to whom we owe even greater consideration. Suppose in the "Hearth," we speak of "Courtesy among Friends."—[Cottage Hearth.

Fashion Notes.

The Kangaroo Mantelet will be worn in early spring by young ladies. It is fitted to the waist at the back, with the sleeve rounded off over the shoulder and doubled up to take in the arm. These are made largely of plush, either seal-brown, or of a lighter tint matching the toilet. The lining is either of the same color, or crimson, old-gold or heliotrope.

The latest style of jacket is double-breasted and has a deep collar of plush or velvet continued in one reverse tapering from the shoulder to the waist. These jackets are made of fine plain cloth. Dress

bodices are seen with yokes which are of a different material from that of the bodice. This yoke is cut with a deep peak, or is rounded, scalloped, notched, or cut in small points. The bodice may be put on plain, in gathered or small pleats.

Pearl-edged ribbons are still used in great profusion for trimming dresses and mantles, as well as hats and bonnets.

A pretty style of out-door jacket is tight fitting in the back with loose fronts, fastened with one button at the neck and lined with some bright, pretty color.

Velvet is as much employed as ever for trimming.

Frocks for girls under thirteen are made without overskirts.

Beaded woolen fabrics are much used this season.

Veils are mere masks, and should be put on before the bonnet is donned.

Young ladies are again wearing turn down collars of lace and embroidery.

Costumes composed of combinations of plain and striped goods bid fair to be very popular.

New light woolens come in black or white, blue, scarlet, green, olive, primrose and heliotrope.

Pale pink veils are taking the place of the red ones so long in favor. They are more generally

becoming, and are worn with bonnets of all descriptions.

Cardinal and navy blue are combined as much as when first introduced.

The present style of hair-dressing is without a parting ; all the hair is turned up and slightly puffed out, or rolled over a light puff, as in the Marie Antoinette style.

In making a basque, one may choose between a plain front, a vest front or a full-pleated front.

Ladies need not hesitate to wear tan-colored gloves upon any occasion, as their popularity is likely to continue indefinitely.

The fashionable linen cuffs are wider than heretofore, and round at one end and square at the other. Striped and figured percales are used for morning wear, but plain white linen has the preference for general use.

Round yokes and long sleeves are the arbitrary rule for babies' frocks on all occasions, and the frock should measure forty-two inches from the neck to the hem.

Foundation skirts should be two yards and a quarter in width, and should have a foot pleating even though covered by the draperies.

To clean decanters, rinse the bottles and put a piece of lighted brown paper into each ; stop close, and when the smoke disappears, wash the bottle clean. This will remove all stains, but if any spot should remain, the process should be repeated.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES.—Another month has rolled away, and again Uncle Tom greets his boys and girls. I hope you who have the privilege of attending school, have put in a month of solid work, improving and developing those faculties given to you by a generous Hand. As I look upon boys and girls now, I think what a pity it is that we who are older did not realize in the earlier years of life how much we lost by idle habits. One of the painful remembrances of the past is thought of many misspent hours, and thus it is that I would speak to you in all earnestness on this subject. As most of you are in all probability school-boys and school-girls—in your "teens," at least—let me give you what authors call "a leaf from my Journal."

'Tis many years now, since I, a freckle-faced farmer-boy with wilful hair which never allowed people to know that I had a forehead, went to the dear old-country-school. Though I liked books well enough and can not remember of going a day unwillingly to school, I liked mischief a great deal better and "Thomas" in tones of reproof was a well-known sound. "Thomas, stand here in the corner," was not unfamiliar, while "Thomas, hold out your hand, sir," was by no means a dream of the imagination in which silvery cadences chorded with the soft music of lute or harp. One day I had been unusally perverse—I had stood in the corner and held out my hand too—I know now I was just the most provoking of "towzie"-haired boys, but at that time I thought I was shamefully used, and unjustly concluded, as all pupils of that stamp will do, that the teacher had a "spite" at me. I harbored this thought all afternoon, at least all the time I was not busied in devising how I could in some way torment and annoy him. It was near Valentine Day; could I not send him a great ugly picture of a cross teacher "lickin'" a poor little innocent boy, or could I not make up a sham parcel on the first of April and have the pleasure of knowing his great and utter humiliation when he would open it. Of course I could, and how *mean* he would feel over it. Thus reasoned the sage Thomas, too blind to see that he, and he alone, was in fault. When school was dismissed the teacher said he wished me to remain for a few minutes, as he would like to speak to me. With a very ill grace I obeyed—I didn't want him to speak to me alone. I well remember, however, how kindly, yet firmly, he spoke to me—showing me that I was not only wasting my own time, but influencing others in the same direction. Here was a new phase of the question to me—I had never thought that I was the means of leading others to waste their time. I had not then learned the great truth that no one can live unto himself—that a most potent influence is unconscious influence. I had not then read "Tom Brown's School-days" to learn that "in no place in the world has individual character more weight than at a public school. Perhaps some of my nieces and nephews have not thought of this before either. May I ask has it ever occurred to you that your influence may be made to tell in a public school, and that most forcibly. Diligence on your part may be an incentive to diligence on the part of another—prompt obedience on your part may more than you ever dream of tend to the maintenance of good order in the school. If I could only speak to you as earnestly and kindly as did my teacher on that evening—if I could only convince you, as he convinced me, that idleness injures not only yourselves, but others, I should rest satisfied that one grand lesson had been learned in the month of March. I have spoken

of "Tom Brown's School-days." I wish you could all read it; you can get it, in paper binding, at any bookstore for the price you would pay for a few candies or nuts, and how infinitely more satisfactory would be the return for your money. I shall just close my letter with the full quotation, as I remember it, and next month we may perhaps see what opportunities there are at home and school to apply the words: "In no place in the world has individual character more weight than at a public school; then quit yourselves like men; speak up, and strike out for whatever is manly and true and honest, and lovely and of good report." UNCLE TOM.

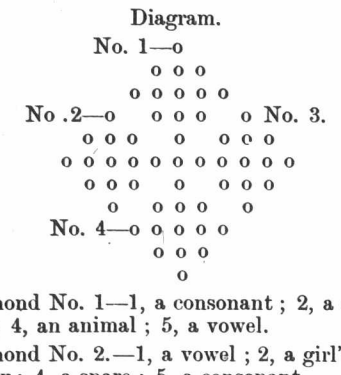
Puzzles.

1—LOGOGRAPH.

My whole is a small animal; beheaded, I am a kind of frame; transposed, I mean letting for hire; curtailed and transposed, I am an amphibian; transposed, I am an auction; beheaded, I am a beverage; curtailed and beheaded, and I am half a hundred. AMOS HAWKINS.

2—CONNECTED DIAMONDS.

Diagram.



Diamond No. 1—1, a consonant; 2, a deed; 3 scarce; 4, an animal; 5, a vowel.

Diamond No. 2.—1, a vowel; 2, a girl's name; 3, below; 4, a snare; 5, a consonant.

Diamond No. 3.—1, a consonant; 2, part of foot; 3, circular; 4, final; 5, a consonant.

Diamond No. 4.—1, a consonant; 2, an animal; 3, contests in running; 4, a number; 5, a consonant.

Centrals downwards are knaves. Centrals across means below the ground.

HENRY REEVE.

3—SQUARE.

1, cement; 2, once more; 3, a holy person; 4, stain; 5, to go in. ARTHUR T. REEVE.

4—CHARADE.

A puzzle of old "flung himself down
In a lonely mood to think;"
He dreamed FIRST honor and renown,
While from duty he would not shrink.

"An editor I will be," quote he,
"And I'll have a sanctum gay;
My army shall be LAST thousand strong,
And all shall have fair play.

I will work all day, and half the night,
Both money and time I'll spend;
And long letters I'll TOTAL write,
If supported by you, my friend."

FAIR BROTHER.

5—DOUBLE ACROSTIC (words of equal length.)

1, obstinate; 2, eight lines to a sheet; 3, to calculate; 4, a bold act; 5, dross; 6, to carol; 7, severe trial; 8, a rogue; 9, a vegetable; 10, to consecrate. My primals and finals read down will name two celebrated authors.

FAIR BROTHER.

6—ANAGRAM.

The opposition party may try to crush me down,
But their basest fabrications cannot lessen its renown;
For honesty is the policy I ever did engraft,
Then always loyally support, *made over as the craft.*

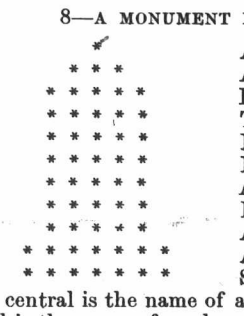
ADA ARMAND.

7—TRANSPOSITION.

Sthare htta rea garle ear yalsaw onel,
Eyth evenr sfintewa erith sbet,
Ierth strteaeg tgsenasre si nkonuwn,
Thare sownk a lttile—Gdo eht sert.

ADA ARMAND.

8—A MONUMENT PUZZLE.



A consonant.
A kind of fish.
Dark.
To discourage.
Not well mixed.
Near.
A Spanish horse.
Expense.
A pretty flower.
A part of the leg.
Support.

My central is the name of a township, and my primal is the name of a cake.

LOUISA F. REDMOND.

9—A HIDDEN GRAIN PUZZLE.

1.—He is going to leave for Toronto at six o'clock to-morrow p. m.

2.—I cannot see how he attends to so much work.

3.—Which of my cousins did you see, Mac or Nora.

4.—They met Barbar Ley on their way to the city.

5.—The old bear yearned to the motherless cub.

6.—Do not be an idle girl, better be industrious.

7.—He climbed the rope as easily as a squirrel would a tree. LOUISA F. REDMOND.

10—NUMERICAL ENIGMA.

If you set aright my 1, 2, 3,
You'll have a point or extremity.

Now, if you would a plaything fix,
Place in order letters 4, 5, 6.

And you will find, if you ponder it o'er,
That a deep vessel is my 6, 5, 4.

A hollow place or abyss is shown,
By setting in rank my 3, 2, 1.

My whole is the highest or utmost degree,
If read aright, this you will plainly see.

FAIR BROTHER.

11—ILLUSTRATED REBUS.

Answers to February Puzzles.

1—Misled.

2—
D R E S S
R E A C H
E A G E R
S C E N E
S H R E D

3—
E L F
S O W
D R Y
S T E A D F A S T
S L E N D E R L Y
D I S S U N D E R
O F T
O F F
P E R
C R Y
T I N
G N U

4—Money is the root of all evil.

5—Fortune.

6—The human mind is like a fertile soil, capable of producing all kinds of fruits; so be neither offended nor surprised with the opinions of others. Narrow minds think nothing right which is above their capacity.

7—Happy is the man whose good intentions have borne fruit in deeds, and whose evil thoughts have perished in the blossom.

8—Come little birdies, come and be fed,
I've brought you a lapful of nice crumbled bread.

Then fly away, birdies, and perch on the tree,
While you sing a sweet song for dear Alice and me.

9—A penny saved is two pence clear;
A pin a day is a groat a year.

10—
P
A H A
R E I G N
A B O L I S H
M I C R O L I T E
O B S T I P A T I O N
U N A P P R E H E N D E D
M A N D U
T O B A C C O

Names of Those who Sent Correct Answers to February Puzzles

Louisa F. Redmond, Ada Armand, Helen Connell, Emma Dennee, Emma Hodgson, Henry Reeve, John Terry, Wm. Faris, Tillie Herrett, Edna S. Stiles, Eulalia Farlinger, Amos Hawkins, Maggie L Canfield, Robt. Wilson, J. M. Bartlett, Annie M. Lackie, Herbert Wright, David Carstairs, Drusilla A. Fairbrother, A. C. Whitteker, J. Collins, Emily Butts, Wm. H. Whittaker, Hugh Barrett, Emma Waddell, Gertrude Pomeroy, W. B. Anderson, Arthur T. Reeve, E. Manning, Wm. L. Hodgson, Mary Morrison, Annie C. Rothwell, Wm. Webster, A. Russell Boss.

Absent Minded.

Many persons are familiar with the story of the absent-minded lady who chanced to meet in society a young widow who had lately lost her husband, and condoled with her on her bereavement.

Then, after a pause, during which she lapsed into her accustomed forgetfulness, she inquired, to the stupefaction of the mourner, "Was he the only one you had?"

Their Poetry.

Any one who has attempted to write poetry "on time" instead of inspiration will appreciate the difficulties of the member of a certain class in English composition. On Monday morning the writer's teacher announced that on the ensuing Friday each pupil would be expected to bring a verse of original poetry. The result is appended:

I once did have a little boat,
But ah, I hav'nt got it now!
The thing it could not keep afloat,
But kept my brothers in a *Row.*

The second was on a favorite topic with poets,—

"Love," sings the jay-bird to his mate,
"Is what all folks should cultivate!"

After a long pause, evidently, there was added to this,—

I'd druther be a cow or Hen,
Than earn a livin' by my Pen!
There!

The next was excellent, and to the point,—

Some folks likes lots of poitree;
A little is enuff for me.

The next is suggestive of experience,—

School—school—school—
I like, I like my school,
But do not like—not like
No rule but the golden rule.

The grammar suffered in the next, but it was original:

They is some people in this world
What is orful Ass:
They'd hustle out the Sun and Mune,
To light the sky with Gass!

Poor Richard and his Almanac.

"Poor Richard's Almanac" was, one hundred years ago, the foremost book in the literature of America. It was the work almost wholly of Benjamin Franklin, and in it he spoke in the character of Richard Saunders, whose name, quite fictitious, was put forth on the title-page as the author. "Observing," said Franklin himself, in giving an account of the work, "that it was generally read, I filled all the little spaces that occurred between the remarkable days of the calendar with proverbial sentences." These were not his own, but contained the wisdom of many ages and nations. The book became so widely known, however, that even in England these proverbs are now attributed to "Poor Richard."

The proverbs that the American country boy hears to-day are largely from among those which Franklin put into the mouth of his Poor Richard, such as—

"Early to bed, and early to rise,
Makes a man wealthy, healthy, and wise."

and

"He that by the plough would thrive,
Himself must either hold or drive."

The almanac found its way to the hearts of the people the more readily, no doubt, from the fact that the eclipses and other sidereal facts were announced with a joke. In 1734 Poor Richard announced his eclipses in this fashion:

"There will be but two, the first, April 22, the second, October 15– both of the sun, and both, like Mrs. M——'s modesty and old Neighbor Scrape-all's generosity, invisible."

He then proceeds to make up for such a scanty lot of eclipses, which he regards as a shame to the year, with a mathematic problem which is impossible of solution.

Franklin did not hesitate to insert in his calendar predictions of the weather, but they were of a sportive sort. Challenged with the inaccuracy of his predictions, he apologized thus:

"However, *no* one but will allow that we always hit the day of the month. As for weather. I consider it will be of no service to anybody to know what weather is to be one thousand miles off; therefore, I always set down exactly the weather my reader will have wheresoever he may be *at the time*. We only ask an allowance of a few days in time, and if there still be a mistake, set it down to the printer."

The almanac for 1738 has a scolding preface, which appears to be the work of Mistress Saunders. She says her husband had set out to visit an old star-gazer of his acquaintance on the Potomac, and left her the almanac, sealed, to send to the printer. She suspects some jests directed against her, bursts the seal, and plays havoc generally with the almanac. She says:

"Looking over the months, I find he has put in abundance of foul weather this year; and therefore I have scattered here and there, where I could find room, 'fair,' 'pleasant,' 'sunshiny,' etc., for the poor women to dry their clothes in."

Franklin really did good by turning to ridicule all the pretensions of the astrologists, who were at that time much believed in, to predict the weather for a year at a time. His ridicule did not, however, drive out the practice, for to this day the almanacs commonly used by the farmers contain detailed and confident predictions of the weather for the entire year which are only too often trusted.

Clothes and company do oftentimes tell tales in a mute but significant language.

Don't.

Don't tell your child the happiest days he will ever know are his days of childhood. Don't say with maturity come cares and work and troubles and fears that make life a burden.

If your child comes to you with a trial that is great to him, but to you, in the light of your years and experience, is the merest trifle, don't say, "You are very foolish to be troubled by so small a thing," but remember he has but little reason to use, and no experience to guide him, and that for the time his grief "clothes him as a garment," and it is for you with your love and sympathy to rend it and bring him sunlight again.

It is a great wrong to believe the wild fears, grotesque fancies, and nameless doubts which haunt the minds of children are passing whims. So vivid are these, they often come to us in middle life or old age and cause us an involuntary shudder.

If a child's troubles are usually small, the understanding is smaller. The pitiful gravity with which they attempt to settle weighty questions which their elders often give up as hopeless, demands our most delicate sympathy.

Every stage of life has its peculiar trials, and just as surely its own joys. Let us not then so recklessly risk our reputation for wisdom as to point to children and say, "Now, my dear child, is your hey-day. Enjoy it to the full, for the years that are pressing on you are full to the brim of care and trial." Say rather, "If the future has great work and responsibilities, so has it proportionate reward." The truest, greatest happiness of life should come with the full developement of mind and heart.

R. M. P. D.

Notices.

SEEDS AND PLANTS.—Our subscribers should procure their seeds and plants from the reliable seedsmen and nurserymen whose advertisements appear in the ADVOCATE. Do not be led astray by any traveller who asks you fabulous prices for some re-named old variety, or some useless, discarded plant or seed. Send for their catalogues.

"Medical Common Sense," by J. B. Wolfe, M. D., Cincinnati, a clear, concise little work on diseases of the nose, throat and lungs and analogous complaints. Dr. Wolfe is a strong champion of the system of treatment by inhalation, etc., in its various forms, and supports the doctrine with good, common-sense reasoning.

PERNICIOUS WEEDS.—Farmers are constantly and anxiously asking how to subdue such persistent weeds as sorrel, Canada thistles, etc., etc. There is but one way, which is to prevent them from getting air. This soon causes them to perish. Air is as necessary to plants as it is to animals. Such cultivation as will effect this will quickly destroy the worst weeds. There are no more effective weed killers than the "ACME" Pulverizing Harrow, Clod Crusher and Leveler, or the Revolving Disk Harrow.

R. Rivers & Son, of Springhill Farm, Walkerton, have replaced their old stock bull, Duke of Hamilton 778, by the well-bred Shorthorn yearling bull "Victory," recently purchased from Mr. Hugh Thomson, St. Marys. The Duke of Hamilton was bred by Mr. James Russell, Richmond Hill, and is own brother to the sire of the Bow Park sweepstakes bull of the Dominion. This animal has left them a very fine lot of young stock, who have been very successful as prize winners. Their first prize cow, [illegible], has a fine heifer calf by the old Duke. "Victory," now at the head of the Springhill herd of twenty-five Shorthorns, is a bull of [illegible] style. They have not had any trouble in disposing of their young stock bulls at fair prices, and have [illegible] good red yearling left for sale.

Having received numerous kind invitations from our subscribers in different Provinces to pay personal visits to them, and also to attend at public meetings, most of which we have been obliged to decline. The present season we hope, as far as time and opportunity will permit, to have a personal interview with as many as we can conveniently see. Most probably we may travel from the Atlantic to the Pacific coast this year. We shall be at the Rossin House, Toronto, on Tuesday afternoon, the 15th of this month.

WM. WELD, Editor.

Mr. John Hope, manager of Bow Park Herd Brantford, Ont., writes: We have just sold at a high price, to Mr. Jas. McArthur, Princeton, Ont., Waterloo Duke 18th. This young bull is a roan son of 4th Duke of Clarence, from Waterloo 42, by 38th Duke of Oxford, and is one of the best bulls ever bred at Bow Park. The demand for well-bred bulls was never better than at present. Cantab, the white two-year-old heifer that was first at Toronto and Guelph, has given us a fine roan cow calf.

It is always pleasing for us to mention the success of Canadians in the States. A representative of this journal recently called at the large stock farm of Geo. E. Brown & Co., Aurora, Ill., and was rather pleased to learn that the manager of that large concern was a Canadian, Mr. G. T. Van Norman. He is from St. Thomas, and he spoke pleasantly of his friends and acquaintances at St. Thomas and London. When it is known that the stock of this farm comprises 100 imported Cleveland Bays, 150 English Shires, and 300 Holstein cattle, it will be seen that Mr. Van Norman holds a very responsible position.

Those who wish to improve their stock and secure the best, will, by consulting our advertising columns, find such a choice to be procured by auction sale as has seldom or ever been offered in Canada. Secure animals from the best herds and from the most honorable breeders. The Hon. M. H. Cochrane's sale for Shorthorns and Aberdeen Angus; J. C. Snell's, for Shorthorns; J. Cowan & Sons and T. C. Patteson's joint sale, for Shorthorns; J. D. Pettit's sale, for Shorthorns; and Scatchard Bros.' for Holsteins, besides those offered by private sale. These sales offer grand opportunities to purchasers.

Mr. Jas. Picken, jr., of Boreland, Kirkcudbright, Scotland, called at our office on his return from a tour in the Western States and Territories. He is one of the noted Clydesdale breeders, and his surplus stock has been shipped for years past to some of our best Canadian importers; he also ships some to the States. He expressed himself as much better pleased with the western part of Ontario, as a place of settlement, than with any part of this continent he had seen.

We have just received from Messrs. Cassell & Co., of New York, an excellent work on Horses, entitled, "The Practical Horse-keeper," by George Fleming, L.L.D., F.R.C.V.S., Practical Veterinary Surgeon of the British Army. It is certainly a very valuable work to all engaged in Horses, as it treats upon all subjects of great importance.

An English writer, discussing the low condition of English agriculture, says "the great difficulty is to get men to work on a scale suited to their means. At present the custom is universal for a man who has the means to do justice to 100 acres of land to try to work 300, and so starve himself and the farm too." This is sound sense and a great economical truth, for waste of labor is waste of money and material, and where there is waste there is want and loss, which must be paid for without any return. The above remark is applicable to our own circumstances, for, on the average, it is a positive fact that thousands of American farmers would be better off were they to cultivate well one-fourth as much land as they now work in a poor and profitless manner, and so produce as much from 10 acres as is now made from 40 and at one-third of the cost.—N. Y. Times.

NEW ADVERTISEMENTS.

ADVERTISING RATES.

The regular rate for ordinary advertisements is 25c. per line, nonpariel, 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.*

SHORTHORNS BY AUCTION

MESSRS. JAMES COWAN & SONS and T. C. PATTESON will hold a joint sale of

SHORTHORN

COWS, HEIFERS and BULLS

at GALT, on

THURSDAY, MARCH 24th

Catalogues on application to Jas. Cowan & Sons, Galt, or T. C. Patteson, Postmaster, Toronto.

Stock all guaranteed to register in Dominion Herd Book.

TERMS—Six per cent. per annum discount for cash, or six months credit on approved security.

254-b

Important Auction Sale

DISPERSION

—OF THE—

HILLHURST HERD OF SHORTHORNS

The undersigned, whose lease of extensive pasturage is about expiring, will sell by public auction, without reserve,

AT HILLHURST FARM, HILLHURST, P.Q.,

On Thursday, April 28, 1887,

his entire herd of high-class Shorthorn Cattle, consisting of about forty-five (45) head of Scotch and Booth-topped families, including FOUR IMPORTED Cows, bred by S. Campbell, Kinellar, Aberdeenshire, with produce by the prize bull, **"Lord Aberdeen" 70552,** bred at Kinellar, and **"Heir Apparent" (51380,)** bought of W. Duthie, Collynie, Aberdeenshire, which are among the five bulls to be offered. The cows and heifers old enough will be in calf to the above named bulls, or with calves at foot.

Sale to begin at 1 p.m.

Terms - Seven months credit on approved notes.

Catalogues ready 15th March, and will be sent on application to

M. H. COCHRANE,

255-b Hillhurst, P. Q.

ATTRACTIVE PUBLIC SALE

—OF —

HIGH CLASS SHORTHORNS

on Thursday, April 7, 1887.

I will sell at public auction at my farm, Willow Lodge, two miles from Edmonton, C. P. R., four miles from Brampton, G.T.R. and C.P.R. (twenty miles west of Toronto). **40 head of first-class Shorthorns,** of the popular Scotch families, including **seven imported cows** and their produce by imported Cruickshank and Kinellar bulls. There will be 12 cows with calves at foot, which will go with their dams, and about 20 cows and heifers will be in calf to the imported Cruickshank bull **Count of the Empire** (51037). This magnificent young bull will also be sold, together with a fine selection of young bulls from 12 to 24 months old.

I will also sell at same time and place, 10 head of high grade Jerseys, Cows in milk, Heifers in calf, and Heifer Calves, bred from extra milking stock.

TERMS—Seven months' credit on approved joint notes, or a liberal discount for cash. Catalogues ready by 1st March, and sent on application.

J. C. SNELL, Edmonton, Ont.

JOHN SMITH, Auctioneer, Brampton, Ont. 255-a

IMPORTANT AUCTION SALE

—OF—

SHORTHORN CATTLE

HAVING leased my farm for a term of years, I will sell on

Wednesday, March 16th, 1887,

35 head of cows, heifers and bulls. Certificates of registration in the Dominion Herd Book will be given on day of sale. Terms—10 (ten) months' credit on approved notes. Lunch at 12 o'clock. Sale promptly at one. Catalogues after 1st Feb'y, 1887. Further particulars address

251-d JOHN D. PETTIT, Paris, Ont.

HOLSTEINS

—BY—

AUCTION.

The Wyton Stock-breeders' Association

WILL SELL AT AUCTION ON

THURSDAY, MAR. 31, '87

AT THE

WESTERN HOTEL,

463 RICHMOND STREET,

London, Ont.

12 BULLS

ranging from 10 months to 3 years, all of which have been bred by us, and from very choice milking strains.

—ALSO, TWO OR THREE—

COWS AND HEIFERS

These animals are all registered—registry guaranteed—and will be sold without reserve, the animal going to the highest bidder.

For further particulars and catalogues, address

The Wyton Stock-breeders' Association,

255-a. WYTON, ONT.

255-a

SUCCESS IN GARDENING

Depends on the Quality of the Seed Sown.

IF YOU SOW **WILLIAM EVANS' SEEDS**

You will insure an abundant yield. Don't buy Commissioned Seeds. Send for my Illustrated Catalogue, and if my Seeds are not kept in your town, send your order direct and get your Seeds by return mail.

Choice Samples of Timothy and Clover Seed, Manitoba Red and White Fife Seed Wheat, Barley, Oats, Peas, Tares, etc.,

ALWAYS ON HAND.

WM. EVANS,

Established 1855. 255-c MONTREAL.

—:1887:—

BUY NOW

FOR IMMEDIATE SHIPMENT.

The Oshawa Mowers.

They surpass all other mowers in workmanship, quality of material, excellence of construction, and performance of work.

New Model Threshers.

The best threshing machines in America. They do the largest amount of work, and thresh cleaner than any other machines can do the work. In excellence of construction they are unequalled. They are the best made in Canada, and are only equalled by their namesakes in the United States.

Portable Engines.

No better agricultural engines are made.

Hall Threshing Machines.

The best in the market for horse-powers.

Champion Reapers

of well-established repute. Only a few remaining.

WOODBURY, OR DINGLE, IMPROVED HORSE-POWERS,

now the easiest running and best in the world, also the

CALIFORNIA, PLANET, AND PITT'S HORSE-POWERS,

of established repute.

REPAIRS ON HAND FOR EVERY MACHINE MADE.

JOHN LIVINGSTONE, *Trustee*,

JOSEPH HALL MACHINE WORKS.

255-c

THRESHING MACHINES & HORSE-POWERS

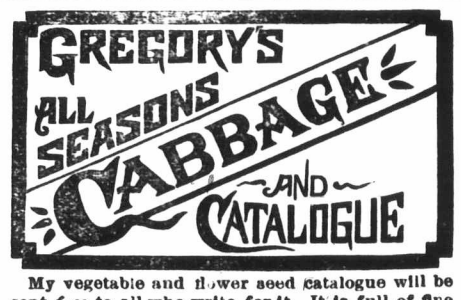
(ONE, TWO, AND THREE-HORSE.)

OLDS'  PATENT.

Guaranteed to be "the best" Tread Horse-power Threshing Machines made, and takes the lead wherever introduced. Agents wanted.

JOHN LARMONTH & CO., Manufacturers, Point St. Charles, Montreal, Que.

TIPPET, BURDETT & CO., Agents, St. John, N. B.; E. G. PRIOX, Agent, Victoria, B. C. 255-f



253-c

My vegetable and flower seed catalogue will be sent *free* to all who write for it. It is full of fine engravings, with over forty of the best of all the new vegetables. It contains among its vast variety a larger number of home grown seeds, I have reason to believe, than can be found in any other catalogue published in this country. Farmers who make money from valuable new vegetables are those who, being the first to raise them, get a monopoly of their markets. Such will plant largely of this king of all the early drumheads, the All-Seasons Cabbage; for, my friends, *it has come to stay!* JAMES J. H. GREGORY, Marblehead, Mass.

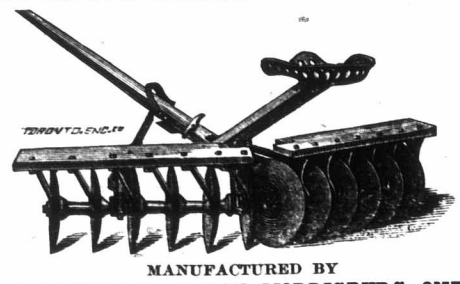
SUPERPHOSPHATE OF LIME.

Peter R. Lamb & Co.

MANUFACTURERS,
TORONTO, CANADA.

Send for Circular. 255-c

THE "NEW MODEL" ROTARY DISC JOINTED PULVERIZING HARROW.



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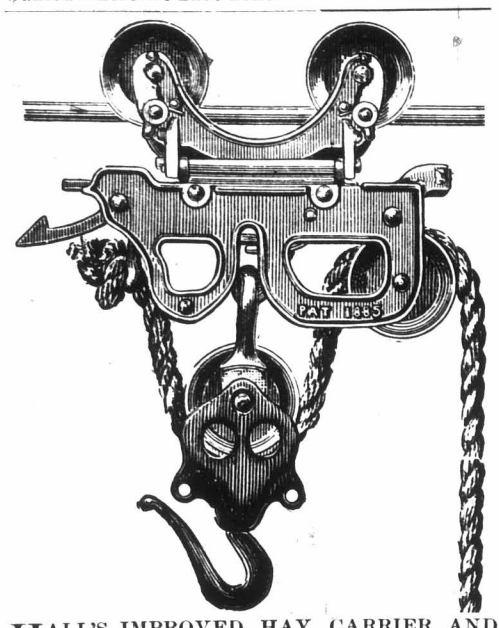

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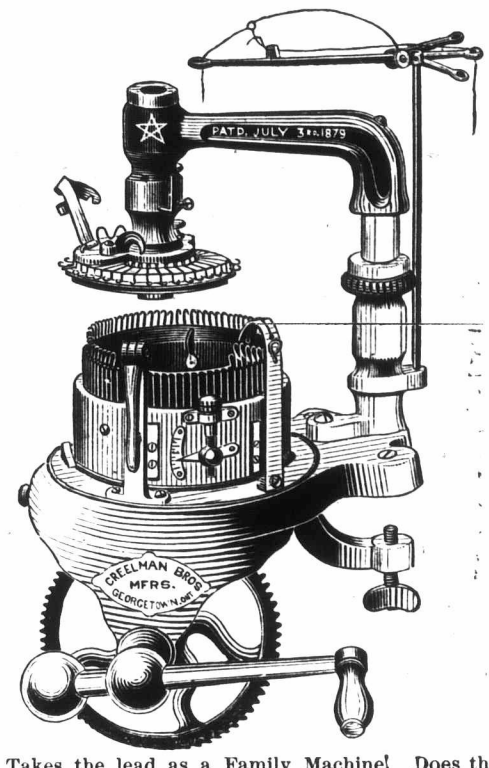

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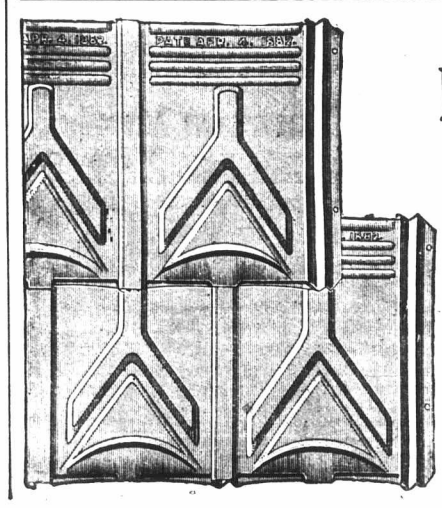

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