

FARMER'S ADVOCATE

AND HOME MAGAZINE

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THE FARMER'S ADVOCATE

—AND—

HOME MAGAZINE.

WILLIAM WELD, EDITOR AND PROPRIETOR.

The Leading Agricultural Journal Published in the Dominion.

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

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CONDITIONS OF COMPETITION.

- 1.—No award will be made unless one essay at least comes up to the standard for publication.
- 2.—It is not necessary for essayists to agree with our policy, so long as they give sound reasons for differing from us.
- 3.—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.
- 4.—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, the sum being decided by ourselves in each case, and the essay will appear in the same or in a succeeding issue.

Our prize of \$5.00 for the best original essay on *Clovers and Grasses* has been awarded to Mr. Thomas Elmes, Princeton, Ont. The essay appears in this issue.

A prize of \$5 will be given for the best original *Criticisms on the General Purpose Barn*—see page 76. Essays to be handed in not later than March 25th.

A prize of \$5 will be given for the best original essay on *How should the Farmer Treat his Hired Men, and how can he Employ them most Profitably*. Essays to be handed in not later than April 15th.

Editorial.

On the Wing.

MARKHAM FARMER'S CLUB.

At 5 p.m., Feb. 4, we entered the Wellington Hotel, at Markham. The annual meeting was being held. The subject under discussion was whether it would be advisable to abandon the Club and join the Farmers' Institute. The President stated that they were the oldest Farmer's Club in Canada, and had at one time abandoned the Club for the Grange; the Grange had not proved a success or a benefit to the Club and was abandoned. He considered the Club had done much good, and believed it would be injudicious to break it up again. In these remarks all the members agreed. The election of officers took place, and the appointment of the time for holding the 'spring show of grain was arranged.

At 6 o'clock the bell rang for dinner,—a sumptuous repast of oysters, chickens, geese, beef, ham, tongue, cake, pies, jellies, puddings and other delicacies too numerous to mention; tea, coffee, fruits and spirits were all abundantly supplied, and all this for a cost of 50c. It was fortunate that the great curling match and Burns' Anniversary had kept many away, as the hotel was completely packed. Despite this, everything passed off most harmoniously. Mr. Frankland asked the blessing; after dinner addresses were given by the President, members and others—Mr. Frankland on the export trade; Mr. Beattie on the imports. The usual loyal toasts were proposed, Captain Ralph responding to "The Army and Navy."

Between 10 and 11 o'clock the meeting adjourned to an adjoining room, leaving the dining-hall to be cleared for dancing, in which nearly all joined, some taking part in the discussions in the adjoining room.

Mr. G. F. Frankland, now one of the aldermen of Toronto, gave a very interesting and important address in regard to our export meat trade. He stated that he was the first person that ever shipped a cargo of cattle from America to Europe, and gave an account of the difficulties he had to contend with. He was sneered at by bankers and capitalists; he had great difficulty to get the vessels properly fitted up, and when his stock was on board, the insurance company would not insure the cattle for less than ten per cent. To avoid this high rate, he insured his own life instead of that of the cattle. When in Liverpool he had great difficulty to procure accommodation for his stock. He personally expended large sums of money to induce the authorities to secure accommodation for

cattle when landed there. Mr. Frankland's enterprising energy has been of immense advantage to Canada and America, as he was undoubtedly the pioneer of this great and important trade; all other exporters are mere copyists of his energy, and no one has expended so much from their private funds to induce even the British people to supply accommodation and facilities for conducting this great and important trade. It is very doubtful if either the Canadian or American Governments have in all their expenditures done so much good to the stockmen of America as Mr. Frankland has done. Not only has his enterprise been checked and discouraged by parties in Canada, but even the greatest obstructions and inconveniences in England were overcome by him. He deserves a recognition and even more than thanks from all. What was considered an impossibility has been a grand success. This man has been termed a crank, a fool, &c., &c. The live stock export trade of this continent to Europe may be laid at the foot of Mr. Frankland's pedestal. Mr. Frankland is from the borders of England and Scotland; full of humor and fun. He is considered one of the best judges of cattle in Canada, and knows the requirements of the British market. He strongly deprecates the pampering and over-feeding of animals.

Mr. Simon Beattie addressed the meeting in regard to the import trade. He has been one of Canada's largest importers. He imported largely for Mr. G. Miller Mr. Cochran and numerous other breeders, and very largely for himself. Shorthorns, Ayrshires, Jerseys, Cotswolds, Leicesters, Shropshires, Oxforda, Southdowns and Clydesdale horses have been his specialties, although he has imported many others. He mentioned the highly remunerative part of agriculture that the farmers in that vicinity were now paying their attention to, namely, the breeding of Clydesdale horses, which were now in great demand at from \$150 to \$300 per head for draft purposes. This he considered quite as remunerative as any branch of agriculture. At the present time his attention was being turned somewhat to the Dorset sheep as being more profitable than any other for the shambles. The advantage that this class of sheep has over all others is that they are the most prolific. For instance, they seldom have less than twins and often three lambs at a dropping, and they breed twice each year. Their progeny is in great demand to supply the tables of the epicures and of the leading hotels and saloons with lamb, for which they pay almost fabulous prices.

Mr. Thos. Guy spoke of the merits of the

Ayrshire cattle. He considered that the merits of this breed are being overlooked by the great booms that were being made to foist on the public the exaggerated merits of other breeds. He considered that many of the published reports were incorrect, and were intended to mislead the public. He knew that the Ayrshires were, for many parts of this country and for dairy purposes, being underrated.

Mr. Simeon Rennie, in response to a suggestion from Mr. Frankland to plant trees, said he did not believe in planting trees as many suggested, through the farm and along the road side; he wanted his farm open, not shaded; the grain was never as good near the trees—besides, the trees would send their roots into the drains and stop them. He wanted the fields to be well drained, and believed in growing the trees in a place on some part of the farm, and to keep them there.

Mr. Robinson, the Reeve of Markham, addressed the meeting relative to municipal affairs, and wished the Club success.

Mr. J. Sanford stated that he had, within the past six years, imported nearly 100 head of the Sussex cattle; that these cattle were very highly thought of by many Americans, and that Mr. Burley, of Maine, says that in five years there will be a greater demand for them than for any other class of horned cattle on this continent. Mr. S. stated that he had partaken of many dinners in England that cost 10s. sterling, or \$2.50, that did not surpass this.

Mr. W. Cherry, aged 84, Mr. Pike and Mr. Train, all coincided with the remark of Mr. H. Gillins, aged 74, who stated that there was

not a single member that ever joined the Markham Farmer's Club and stuck to it, but who succeeded, and were now well off and independent. It was also stated that they knew of many who had left the club, some having gone away, and expecting to do better; nine out of every ten who had left had regretted it, and would gladly return if they could. Those who did return were in a sorry position in comparison to what they formerly were. Should not this stimulate the tardy to join or establish such clubs?

Mr. Blue, of Toronto, expressed his astonishment at such a gathering of such large sized men, such as he thought he had not before seen. It was really remarkable that there were none

at this dinner of small stature, either ladies or gentlemen, many being between 6 ft. and 6 ft. 3 in. in height, and proportionately stout.

The following morning we met two American stock buyers who had been at the dinner, namely, Mr. John Slaven, of Reedsburgh, Sauk Co., Wis., and Mr. D. Campbell, of Elington, Tuscola Co., Mich., when we heard the following remarks, "I never saw such a meeting." Why, we asked, do you get up rougher meetings in your State? "Rough," said he, "we could not get up such a useful social gathering in our state, neither do I think such a meeting could be got up in any State in the Union; it was so beneficial and harmonious."

with milk from animals so diseased. Why is this milk not as dangerous in the form of cheese or butter? We do not profess to be able to foresee, but we may pretty safely infer that it is not the best American cheese that is now shipped into Canada and re-shipped from here to foreign markets. Cheese so shipped must detract from the reputation of Canadian products, and should be prevented by our legislators without delay. A 2c. per lb. difference in the price our product should maintain, would be of immense benefit to Canadian dairymen.

BLACK WALNUT.

(Continued from page 34.)

When clearing heavily timbered land from the original forest, great difficulty is experienced by any settler who tries to save a single tree. If one attempts to save one of the fullgrown trees, it is sure to die as soon as its companions are taken from it. The hot sun and dry winds affect the long trunks of the trees, from which its companions sheltered it, and it very soon dies, if not blown over by the wind or struck by lightning. To attempt to save a young one is almost as difficult, as in felling the larger ones they will break down the small one. If they should escape this, the burning of the brush causes such a heat all over the fallow that not one in ten thousand attempts would be successful. Then, the chopping up and logging and burning of the larger timber is another ordeal almost as bad as the brush burning. Thousands of the old settlers have tried (as we often have done) to save some of the original trees, but it has been almost an impossibility. The old settlers are too often blamed by the ignorant for not having saved



THE BLACK WALNUT TREE.

(The most valuable timber grown in Canada.)

It is our opinion that no institute, Club, or organization of any kind in Canada has done or is doing more good to the farmers in any locality than the Markham Club is doing.

We have learned from what we believe to be reliable authority, that American cheese is being shipped into Canada and exported to England from this Dominion, and is sold as Canadian products. Canada has gained a higher reputation for the quality of her cheese than the United States now has, and it deserves to be advanced much higher, because Canada has not so many deadly diseases as exist in the United States and in other countries, such as tuberculosis, which will cause death to infants if fed

some of the trees.

On light land and where timber has not grown densely, it has been an easy matter to save trees. This is an excellent indication of the value of the soil. Where the timber could not be saved, large barns, brick houses and fine stock are found; where there is any amount of small berry bushes, scrub oak, willow, poplar, and birch, there is not apt to be found so much wealth as on richer land.

In our last issue we gave a scene of the destruction of the forest when clearing our land. We made many futile attempts to save some of the young timber. We give you the accompanying illustration of a black walnut tree that was fortunately spared on our homestead, in

the township of Delaware. It stands near a ravine and side hill—this having given a better opportunity to throw the larger trees away from it in clearing the land. When saved it was about the size of one's wrist. A few other trees were saved near it, which have marred its growth a little on one side. We give the accompanying illustration of it, and consider it a most enchanting tree. Forty-one years ago it was only a small scrub bush; it has grown now to be 65 feet high. The length of the longest limb, measured at right angles from the trunk, is 36 feet; the trunk now girths from 8 ft. 8 in. to 10 ft. 4 in.; the trunk is forked or crotched, but it is only 7 ft. 3 in. to the limbs. To our eyes it is the most beautiful walnut tree we have seen. What makes it still more enhancing to us is that it is in this the children have played. Here the swing was attached to its branches, and under its shade we often rested, talked and played. There may be many more handsome walnut trees in Canada, but we never have seen one as yet to equal it, and should be pleased to insert an illustration of one if furnished us. "Westwell" is the name of the homestead. We call this the Emporium Walnut. It was near where this tree grows that the largest and finest walnut trees have been grown. Now we have planted walnuts from this tree in the hope of raising some that may add wealth and beauty and happiness to our country. We hope to awaken such a spirit in planting this most valuable variety of tree, the beauty and shade of which has given us great pleasure and comfort, and the nuts of this tree have pleased many other gray-headed old men and young children; what is more, the nuts from this tree will be exhibited at the great Colonial Exhibition in England this year, and most probably some will be planted in England and in many of our sister colonies.

Have you any recollection of seeing a walnut tree growing on any of our parks?

We have passed through the parks of Montreal, Kingston, Toronto, Hamilton, Brantford, London, etc., but no walnut tree do we remember seeing.

We have traveled thousands of miles in our country, but where do you find the walnut trees? Are they not too scarce? Would not some of our money have been better expended in planting them than in the very precarious ventures that your cash may now, perhaps, be delusively sunk in? Just try and put a little money where you can see it growing. You may depend on it that a lot of your unseen and expectant investments will not bring in one-tenth part as much for you or your descendants as if in a good plantation of timber.

The Western Fair.

This Exhibition was at one time considered to have been the best Agricultural Exhibition ever held on this continent. The grounds are now cut up, and nearly half are disposed of. We did what we could to prevent it, and regret the steps that have been taken and the means employed to accomplish the end. At the last meeting of the Board a motion was passed deputing a Committee to wait on the Ontario Legislature, and ask that the Provincial grant to the Agricultural and Arts' Association be

abandoned. Col. Leys said all but those immediately interested knew that the Provincial Exhibition was a perfect fraud, and had been so for years. The people were taxed for the grant and should be taxed no longer. It is a great pity this once useful institution should have descended so low in the estimation of the public as it now is. We used every influence and means to try and prevent this, but of no avail. We would be pleased to aid the restoration of the utility and popularity of the Provincial Exhibition, should any one of its members or officers devise any practical plans for so doing.

The Colonial.

The Colonial Exhibition to be held in England we look on as a grand and noble undertaking—one that should tend to advantage to the world, especially to the British nation, of which Canada forms no insignificant part. We hope and believe that she will be well represented. We know that many of our friends will be there, and believe they will be amply rewarded for their pains. We expect that the products of all our most important branches of industry will be on exhibit, and believe a great deal of good from an educational standpoint will be effected. If all is well, we hope to be there, and trust that we may be able to furnish you with some accounts that will be interesting and important to you. It will tend to strengthen our bond of union, and smoothen any asperities that may exist.

Farmers' Clubs.

Middlesex Agricultural Council.

(This Council meets on the third Saturday of every month at 2 o'clock p.m. in the office of the FARMER'S ADVOCATE, 360 Richmond street. All communications should be addressed the Secretary, Mr. Henry Anderson, Willow Grove, Middlesex Co., Ont.)

The regular monthly meeting of this Council was held on the 20th ult., the Vice-President, Mr. W. A. Macdonald, in the chair.

After routine, the programme for the day not having been gone through, it was moved and carried that the Council adjourn for the purpose of attending another farmers' meeting which was being held in the city.

The programme for the following two meetings of the Council was decided upon. At the March meeting Mr. John Kennedy will read a paper on "The most Profitable Class of Horses for the Canadian Farmer to Breed." Mr. Kennedy is an expert horseman, and a number of the best horse authorities in the neighborhood will take part in the discussion.

At the April meeting, it is expected that the President, Mr. D. Leitch, will read a paper on "How to Improve the Relation between Farmers and the Managers of Cheese Factories."

Mr. Leitch being one of the most extensive cheese manufacturers in the west, something authoritative and spicy is expected from him. A number of other cheesemen and farmers will take part in the discussion.

Friends of the Council in all parts of the Dominion are respectfully invited to send in their views on the subjects to the Secretary. Their communications will be read and discussed at the Council meetings.

The motto of the Royal Agricultural Society is "Practice with Science."

The Farm.

Agricultural Depression in Britain—The Recent Riots—Redistribution of the Land—Strikes—Foreign Competition and Fair Trade—Digging Machines—Trade and Prices—Colonial and other Exhibitions, etc.

[FROM OUR LIVERPOOL CORRESPONDENT.]

The confession is a melancholy one, but it must be made—the state of trade in Britain and the sister country, Ireland, is no better, but much worse than when I last addressed you. Prices continue to fall, and the foreign trade is still on the decrease. Indeed, matters are in a most deplorable condition, and statesmen, who are responsible for good government, are having a most anxious time. Farms are profitless, laborers are unemployed, and men, anxious to work, rush to the towns and cities in the hope of finding employment, only to intensify the condition of the artisans, who are in as sad a plight as the tillers of the soil. It is many years since England had to fight down serious riots or great upheavals of the masses, but the strain of poverty is now so intense and widespread that would-be industrious workingmen are losing patience, and much trouble may ensue unless there is a speedy improvement. As I write, a great meeting of the unemployed is being held in Trafalgar Square, London. Thousands are present, some of them bearing banners inscribed with the words, "Work, that we may live." Several of the speeches smack of Socialistic doctrines, whilst others advocate a redistribution of the land, that the laborers may thrive on their own soil, and thus give the operatives in the towns a better chance of procuring more regular employment. Two days ago a number of similar meetings were held in different parts of London. Agitation is kept up in the metropolises, but in the provincial cities committees are busily employed in collecting subscriptions for the purpose of mitigating the distress. In the north the situation is aggravated by strikes amongst the shipwrights and the cotton operatives. There the men have failed to recognize that the inevitable results of low prices are less profits and reduced wages, and instead of making the best of the bad business, they are simply exhausting their trades union funds, and, by driving orders out of the country, are playing into the hands of their foreign competitors.

Members of both political parties have expressed their willingness to legislate in the direction of an extensive subdivision of the land, in the hope of satisfying the demands of farm laborers, but men of observation fail to comprehend how a poor man can make a farm pay, in the face of foreign competition, when great capitalists have failed to do so. It must be borne in mind that, apart from the rents, which have been considerably reduced during the past five years, the Imperial and local taxes amount to about one hundred and fifty million pounds sterling per annum. This sum is almost triple the amount of the taxation in existence when Mr. Cobden brought about the repeal of the Corn Laws. Since then prices have gone down, and the competition of Canada, the United States, Russia and India, have enormously increased. To expect that farm laborers can

meet the heavy charges against the land, provide for the sustenance of themselves and their families, and grow wheat at 29s. the quarter, is simply preposterous. The remedy suggested by Socialistic agitators, if applied, would be as bad as jumping out of the frying pan into the fire.

Men who have been ruined, and others who are doing their best to avoid financial collapse, are giving in their adhesion to the Fair Traders' policy, who demand that import duties shall be imposed on foreign produce equal to that which is placed upon home produce in the shape of the taxes already referred to, care being taken to give an advantage to the colonists over countries which, by high tariffs, all but exclude British manufactures from its markets. As an indication of the progress which the Fair Trade movement is making, attention may be drawn to the meeting of the Central Chamber of Agriculture, just held in London, at which the following resolution was carried by a large majority:—"That this meeting, looking at the continued and increasing severity of the depression of agricultural and other national industries, expresses its opinion that no adequate relief can be obtained except by the wise reform and readjustment of our fiscal system, and respectfully urges upon Her Majesty's Government and the Legislature the pressing necessity for the immediate introduction into Parliament of measures to enable our industries to withstand the severity of foreign competition in our home markets." This action on the part of the Central Chamber has created a great noise amongst the political economists, and pamphleteering against "protection" once more promises to become rampant.

Sir Walter Scott once described necessity as the "best of peace-makers" as well as the "surest prompter of invention." The necessities of the poor in Great Britain do not afford indications of a peaceful character. The last named of Sir Walter's observations would appear to be the most correct one of the two. The prospects of a rise in the price of corn are very slight indeed. The improvement in the tone of the English wheat markets at the beginning of the year was not maintained many days. Though the quantities on passage to England are comparatively small, the stocks at home are large, and the favorable accounts of the American winter crop will help to keep markets in a depressed condition. Invention is therefore coming to the rescue of the British farmer. If it succeeds as well as is prophesied of it, the consumers as well as the growers of corn will benefit, but for a time there will still be a bad lookout for the laborers, whose work on the soil will be supplanted by machinery. In Essex several great digging machines have been working for some time, and they are said to move across the fields like "steam elephants," each machine digging ten acres per day, equal to 170 men. The reader will best realize the value of the invention by the following description given of it by Mr. Octavius Deacon, of Loughton, Essex:—"A few weeks since I drove over several of the farms in the hands of the proprietors of this great digging machine; I passed through perfect villages of corn stacks and straw stacks, the result of last year's operations, and on my expressing my astonishment that the farmers should attempt to compete with American wheat in such a depressed mar-

ket, I was laughingly told, 'Oh, we are not afraid of foreign competition; we shall grow twice as much corn next year if all goes well.' From what I have seen of this great digger and the newly and deeply-dug fields, with their beautiful crumbled surfaces, the magnificent crops produced with hardly any manure, and the satisfactory financial results, I feel that it requires but to be introduced to landowners and capitalists, and the regeneration of British agriculture will surely follow. I ascertained that at the Royal Society's Show a special prize was awarded to the inventor; since then the steam digger has been perfected, and its work is a source of amazement to all who see it."

The cattle trade in England shows no improvement. Since writing my last letter several of the Australian frozen meat companies have been wound up, and apparently there will be no great expansion of the frozen mutton trade from Australasia during the next twelve months. Here comes in the old advice over again—what Canadian farmers have to do is to study quality. If they produce a first-class article there is no doubt but that it will still pay the raisers of mutton in the Dominion to send such produce to the British markets. Anything "scrubby," however, not only of mutton, but of cattle, it appears must, in the future, mean a dead loss to the Canadian producer. Under these circumstances it may be safely predicted that while the enterprising farmer who produces a really first-class article will be well remunerated, the enterprising yeomen in Canada, who have kept pedigree and first-class stock, must find their business vastly increased by the demand for superior breeding stock.

It appears that the exhibition of Canadian live stock, at the forthcoming Intercolonial Exhibition in London, has been abandoned, and quite right, too. The experience of the Royal Society, and the Bath, and the West of England Societies, show that Londoners are not very specially interested in agricultural subjects, and consequently, in the summer months when farmers were very busy, an exhibition of Canadian live stock, however good, would not be properly appreciated. Another objection is that it would be necessary to have such stock in a separate building. The extra cost of advertising would be enormous, and the exhibition of the stock would in no way compensate for the increased outlay. Let the Canadian farmers take advantage of a suggestion which has already been thrown out—prepare a score of first-class and well-matured animals and send them to the Smithfield Show next year. There is no objection to them being entered for competition and afterwards exhibited together in a group. Thus the various breeds of cattle and sheep would come under the notice of breeders, feeders and consumers, and would be sure to win the attention of the agricultural press of the world.

It may interest some of your old country readers to know that the old established newspaper, *Mark Lane Express*, has again changed hands. It is now the property of Mr. Walter Darwin, who is also the proprietor of *Bell's Weekly Messenger*. It will be remembered that Mr. Darwin paid several visits to your Province, and he has once been over the Canadian Pacific Railway as far as Calgary. He is consequently conversant with the resources of the Dominion.

There is no doubt, under these changed circumstances, that the spiteful and senescent paragraphs which, for many years, appeared in the *Mark Lane Express* against the Dominion, will now receive a check, to say the least of it.

The Liverpool "Shipperies" Exhibition is going ahead, but of course Canada, having to spend so much money over the Intercolonial Exhibition in London, cannot well be represented at it. Still, several importers will send, through the Canadian agent here, specimens of grain and other agricultural produce to assist this monster show in the north-west of England, and to illustrate the extent and nature of the imports of this, one of the most celebrated entrepôts of the world's commerce.

Newcastle-upon-Tyne has been chosen as the place for holding the Royal Society's Exhibition for the year 1887. The schedule of prizes for competition at the Society's Show, to be held at Norwich, on July 12th in the present year, and the four following days, have just been published. The total amount of the money offered is about £5,600. Nearly all this large sum will go to live stock, as implements will only take £80 and ten silver medals; cheese, £150; butter, £37, and hives and honey, £20 15s.

The council of the Smithfield Club have just appointed a Committee to report upon "the practicability of instituting a class or classes for animals entered for slaughter, the prizes being awarded to the best carcasses."

The Board of Trade returns for January show a remarkable decline in the imports of wheat, flour, cattle, fresh beef, bacon, hams and butter. The cause is attributed to the decline in the purchasing power of the people through bad trade. There has been a slight increase in the imports of sheep, fresh mutton and cheese, and also in butterine, the latter having arrived in much larger quantity than in the corresponding period of last year.

With regard to prices, cattle of all kinds, though showing no improvement in value for several months, are still no lower than they were last autumn. Sheep are about as low as one can almost fancy them, and are likely to have passed the minimum. It may be remarked that over a large breadth of Scotland the death-rate of black-faced hogs is heavier than usual.

Farmers' Organizations and Agricultural Education in the Maritime Provinces.

(FROM OUR NEW BRUNSWICK CORRESPONDENT.)

The New Brunswick Farmers' Association has just held its annual session in Sackville, Westmoreland county. This Association was formed some ten years since. The object of the Association was to bring the leading farmers of the Province together, to talk over and discuss practical questions relative to their business, hoping that by this course a more general interest might be awakened in the agriculture of the Province, and a better system adopted. The meetings usually have been well attended, but not so representative as it was hoped they would be. This year but two counties were represented—Kings and Westmoreland—and there was not near so much enthusiasm as on some former occasions.

The question which occupied the most time was the second on the list:—"How can the farmers of the Province best improve the practice of their profession so as to compete more

successfully with the agriculture of other countries?" Mr. P. Black, of Windsor, N.S., who had been invited to attend the meeting, read a paper, taking strong ground in favor of an Agricultural College for the Maritime Provinces. Mr. Black was a Guelph student, and stood up for the institution, although he thought the curriculum covered too much ground. It would be better, in his opinion, if less was undertaken. The work then could be thorough. It came out in discussion that in the last year ten students had attended the Ontario Agricultural School from Nova Scotia, and six from New Brunswick, and it was argued from this that there was a decided feeling there in favor of a better training for farmers' sons, and for those who wished to become farmers. After the question had been discussed at some length the following resolution was passed nearly unanimously:—

"Whereas, the keen competition existing in the markets of the world in agricultural productions makes it a matter of great importance to farmers that these shall be produced at a minimum cost; and whereas, almost every civilized country has recognized the importance of agriculture to the State by establishing Agricultural Schools and Colleges and Experimental Stations, where farmers' sons, or those wishing to become farmers, can be better instructed in the principles and practice of agriculture, be it therefore resolved, that this Association meeting ask the Government of New Brunswick to communicate with the Governments of Nova Scotia and Prince Edward Island, with the view of taking united action in establishing an Agricultural School or College in some central location in the Maritime Provinces."

I am afraid, however, that those who were most anxious that the above resolution should pass the meeting have not very strong faith that it will accomplish much. The New Brunswick Government is composed of men whose knowledge of agriculture, either theoretical or practical, is very limited. The Secretary of Agriculture for the Province (quite recently appointed) is a lawyer and an ex-editor, and, it is reasonable to suppose, will not be in a position to enlighten them much.

Nova Scotia has just made a new departure in agricultural matters, having abolished the old Board of Agriculture and appointed a Secretary of Agriculture, who is under the direct control of the Government. It is also proposed to have the science of agriculture taught in the common schools, and a Professor of Agriculture has been placed in the Normal School at Truro, where those who are turned out as teachers are to be especially instructed to teach this branch.

The winter here continues pleasant, and the sleighing excellent, and in many parts of Nova Scotia there has not been snow enough to bring runners into use this winter.

[Farmers should be warned against being led by ex-students of the Ontario Agricultural College, who are now scattered all over the Dominion. They are pledged to support the Model Farm, and although their intentions in the cause of agricultural education may be good, yet they understand little about the political corruption which is the ruling power. There is no reason why a Government Agricultural College cannot be kept as free from politics as any other educational institution. That farmers and their sons ought to have an agricultural education nobody can dispute, but the work must progress little by little. Nova Scotia

having appointed a Professor of Agriculture in the Normal School, is in advance of the other Provinces in her ideas of agricultural education. —ED.]

Permanent Pastures.

In the existing depressed times, when a number of our most substantial agricultural industries are threatened with destruction by foreign competition, farmers are compelled to turn their attention to other branches of agriculture, in the study of which the question of permanent pastures occupies an important place. And yet this is not the right way to consider the issue; the broad question is intensive versus extensive farming. Farmers must produce more per acre per annum; they must learn, for example, how to calculate the quantity of milk, fruit or beef they can produce from an acre; and if the result is not a paying one, they must produce more. Many questions are involved in the accomplishment of this end, embracing the study, drainage, manuring, tillage, rotation of crops, classes and varieties of agricultural plants, etc., and the question arises, Which one or more of these means can most effectually and economically attain the desired end? No reliable opinion can be expressed with reference to any of them without taking all the local conditions and circumstances into consideration.

Regarding the recuperation of the soil, the cry has been, "More stock," "More stock, more manure, more manure, more grass," being dinned into our ears. One of the most difficult of all these subjects to comprehend is the preparation and use of manures, especially commercial fertilizers; and we almost invariably find the greatest profits can be secured from an intelligent application of those principles which are least perfectly understood. This is the reason why such large dividends are made by the proper use of commercial fertilizers. With all respect to the opinions of those who contend that fertility can be maintained for a considerable length of time by an extensive use of grass mixtures, yet the farmer who attempts to restore fertility by this system will find his task a slow and laborious one. Unquestionably, the farming of the future will embrace the use of all the barn-yard manure obtainable, with the addition of greater or less quantities of the commercial article. Feeding the soil is just like feeding animals; if you cannot get the proper ration in the manure heap, you should make it proper by the addition of suitable material. There is another important point of similarity; by feeding stock a mere maintenance ration no increase can be obtained—so it is with the soil; and we are convinced that the heaviest losses which farmers suffer arise from feeding their soil mere maintenance rations. In a rotation it may take twelve or fifteen loads of manure per acre to get back in the crop the cost of production. All the profit is in the manure applied over and above this quantity.

The Government have started out on another boom at the farmers' expense. The "per acre per annum" principle which they have adopted is perfectly sound, and if they succeed in inducing a considerable number of farmers to lay down permanent pastures, they will accomplish a great deal of good. They are, however, several years behind our leading seedsmen in their methods of procedure. The recent

attempts made by the friends of the Model Farm to petition the Commissioner of Agriculture "to advise with the principal seedsmen" for the purpose of securing reliable seeds is not very flattering to the latter. The resolution stamps our "principal seedsmen" as frauds, and compels the Government not only to interfere in this branch of private enterprise, but also to favor one seedsman at the expense of another. Our leading seed merchants are strictly honorable men, and exercise greater vigilance in the selection of pure seeds than the Government will ever do, judging by their past career. Every farmer worthy of the name is already acquainted with these seedsmen, and if other powers cannot wake up farmers of the "old-fogy" type, the Government's prospects for doing so are very slim indeed.

Many of our seedsmen have experiment stations of their own, where they test not only the suitability of varieties to our climate, but also the purity of the seeds—their germinating power and their trueness to name. Not only so, but they are interested in getting reports from their customers, often by letter and often by visiting the pasture fields, thereby strengthening or weakening the seedsman's confidence in their own experiments. In this manner they have facilities for acquiring reliable information which the Government can never possess.

An agent of the Government has been stumping the country and burdening the press with a formula for permanent pastures, which he borrowed from a leading seedsman, making slight alterations from time to time to suit his whims. The Government's mixture is so complete that it will suit any soil or location in the Province, while the leading seedsmen, in their catalogues, invite farmers, when sending in their orders, to describe the soil and aspect of the field on which the mixture is to be sown. Either the Government or the seedsmen must be wrong. Our opinion is that the farmers should follow the advice of the seedsmen. However, if they wish to master the subject for themselves, they should study the feeding and growing habits of the different clovers and grasses, and then they will know how to order their own mixtures. The only secret is to select for the mixture the largest percentage of those seeds which are best adapted to the soil and aspect of the field to be seeded down. The necessary information will be found in another column.

A year ago, in a series of three articles, we published exhaustive details on permanent pastures, based chiefly on our own experience and on our observations while travelling amongst the farmers; this year we leave the subject to other experienced men, and we find that the ground is well covered by our prize essayist.

At the New York Experiment Station Mr. Ladd, the chemist, has been making some tests as to the relative value of raw and cooked food, employing an artificial digestive fluid. In every case there was a loss of albuminoid in the cooked ration. The cooking seemed disadvantageous, both in the loss of actual albuminoid, and in the depreciation of the digestive value of the albuminoid that remained. Chemical analysis of the two kinds of food and actual feeding tests had already indicated that cooking food for stock lessens its nutritive value.

Experiments With Potatoes—Potato Rot—Profits and Losses on Fertilizers.

(A Lecture delivered by W. A. Macdonald before the Middlesex Agricultural Council.)

No. II.

Now if I can explain the causes of these enormous profits and losses, we have at once the key to success; if not, investigation may as well cease, and the use of commercial fertilizers must remain a precarious business.

Before I begin to explain, I desire you to look through this magnifying glass, or even with the naked eye, at the coarser particles of soil from which the clay has been separated. This is ordinarily supposed to be sand, but if you look closely you will see fragments of alkaline rocks, such as granite and limestone, from which we must infer that the soil has an abundance of potash and lime. A great excess of any active alkaline application, without an acid fertilizer to neutralize it, would prove injurious to the growth of the potatoes. This is the reason why the sulphate of potash has produced a smaller yield than where no fertilizer was applied. It is true that unleached ashes are also alkaline, containing both potash and lime, but they also contain an appreciable quantity of phosphoric acid, to which I mainly attribute my gain, viz., 13 percent in the yield. This also proves that the soil is lacking in phosphoric acid, and this is further proved in the success of the superphosphate, from which, as the table shows, I gained 13 percent in the yield and 350 percent on my investment.

Permit me here to deviate a moment while I draw your attention to fertilizers which bear chemical names, such as "superphosphate" and "sulphate of potash" in the above table. The chemical name embraces the analysis—and even more, for it not only indicates the percentages of the elements and compounds contained in the fertilizer, but also sometimes the percentage of soluble or available constituents. For example, when the chemist says "monocalcic phosphate," he understands that the fertilizer is soluble in water; when he says "dicalcic phosphate," he understands that it is partially soluble, and when he says "tricalcic phosphate," he means that none of it is soluble in water. It is not only important to know the chemical composition of a fertilizer, but also its degree of availability. These and other formulas must also be understood before we can comprehend the nature and composition of soils, farmyard manures, and other fertilizers. To know these things is to understand the first principles of agriculture; not to know them is to be swindled by every scoundrel who chooses to perpetrate the most rascally frauds that have ever invaded the farming community, and I desire you to bear these facts in mind in connection with agricultural education, which bids fair to become the leading agricultural question of the day.

When the chemical name of a fertilizer is not and cannot be given, its analysis must be known before its composition and availability can be ascertained. The fertilizer is then usually denominated "brand." Stand shy of those brands which are manufactured and advertised to benefit the crop instead of the soil. For instance, the so-called "potato fertilizers" are made rich in potash because the potato feeds largely on potash salts, and yet the soil which you have just examined is actually too rich in

potash even for potatoes. A formula made for the crop is only right under the condition that the soil is equally deficient in all the constituents required for the crop.

Having now eliminated the potash from our consideration, the next question is, Is the soil the more deficient in nitrogen or phosphoric acid? We have already seen that phosphoric acid (superphosphate) has produced splendid results without the aid of nitrogen or potash, and that nitrogen (dried blood) has produced a loss of 6 percent in the yield and a loss of 125 percent on the money invested, proving conclusively that it is phosphoric acid that the soil requires. Take up a handful of that soil and you will not see a particle of organic matter in it, and its light color proves the absence of any appreciable quantity of organic or vegetable substance. Dried blood is merely organic matter, and you may think of it as a decomposed crop of clover, but its nitrogen is very active. You all know that organic matter supplies the nitrogen to the crop.

I have now spoken of the special fertilizers; let me next compare their results with the general fertilizers and manures. I have given an analysis of the fertilizer which has produced the best results, and you see that it may be termed general or complete, for it contains nitrogen (organic matter), phosphoric acid and potash, the acid greatly preponderating—just what the soil required. The other constituents named in the analysis may also have assisted to some extent, all being found in the plant except the alumina. Another general fertilizer, named "mixture" in the table, producing 23 percent gain in the yield and 600 percent gain in the money invested, was composed of one part of dried blood, two parts of superphosphate, and one part of sulphate of potash, and you will observe that, although the first and last mentioned produced injurious results when applied alone, they produced beneficial results in the mixture, for the superphosphate by itself only produced 13 percent gain in the yield, and 350 in the money invested. Beyond doubt, I have now ascertained the fact that the cheapest and most effectual means of restoring the fertility of this soil is to add 500 or 600 pounds of superphosphate per acre to a good dressing of barnyard manure.

A member—Why didn't you test plaster and salt? That's the kind of fertilizers we use around here.

Don't you see that the fertilizer, the analysis of which I have given, contains 25.33 percent of sulphate of lime or plaster, and for which you have not to pay a cent? Don't you know that superphosphate contains a large percentage of plaster? If you use salt and plaster understandingly, you must have a rented farm which you want to exhaust before your lease expires.

Barnyard manure is also a general fertilizer, but you see that it can be misapplied as well as any other fertilizer. I shall not take time here to discuss whether the loss sustained by the farmyard manure was caused by the large quantity applied, 50 tons per acre (about half the quantity applied by some market gardeners), by the want of drainage, by the wet season, by its ill balanced composition, or by other causes. It was pure cow dung, fresh from the stable, no straw or other litter having been used for bedding, and it contained a small percentage of the urine. I applied it as a top dressing. Judg-

ing from the food given to the cows, I valued it at nearly \$2.00 per ton, according to the then market prices of nitrogen, phosphoric acid and potash; but all I paid was 20 cents per ton. Hen manure is also a general fertilizer. You will see that it was applied at the rate of 3,300 lbs. per acre, and the results in the yield were just equal to those of the best commercial fertilizer, although the gain on my investment was nearly six times greater. It took 33 lbs. of hen manure to produce the same results as 1 lbs. of the analyzed fertilizer, and I am satisfied that I could have doubled the yield by adding a small quantity of superphosphate to the hen manure.

Let me give an analysis of these fertilizers, showing the quantity of nitrogen, phosphoric acid and potash which a ton of each contains, and the commercial value per ton:

Name.	Nitrogen, lbs.	Phosphoric acid, lbs.	Potash, lbs.	Value per ton.
Cow excrement (solid).....	5.8	3.4	2.0	\$1.60
Cow excrement (liquid).....	11.6	9.8	2.80
Hen manure.....	32.6	30.8	17.0	10.45
Hard wood ashes (unleached).....	70.0	160.0	15.00
Dried blood.....	240.	80.	561.0

The remainder of the rows were devoted to the testing of the different varieties of potatoes and different methods of cultivation, but before I proceed to these tests, I wish to say a word with reference to judging by the appearance of the crop while growing. All the nitrogenous fertilizers—except the dried blood, which was too strong in nitrogen—produced large, bushy tops, some being three feet high. The row which received the cow manure appeared to be about as good as any, and promised a splendid crop. In the dried blood row some of the tops grew quite strong, while others were killed more or less outright. The row without manure had a fair average appearance. In the sulphate of potash row, the tops grew slender and sickly, and soon appeared as if struck with blight. Where the superphosphate was applied, the tops grew regularly and fairly strong, but withered away nearly two weeks before those on the rows containing the nitrogenous fertilizers. The ash row also appeared rather sickly. Where the unanalyzed brands were applied the growth was very irregular, as a rule. I mention these facts to show that no dependence whatever can be placed upon the appearance of the crop while growing. I may also here add that No. 1 fertilizer was used on two rows; in one the application was the same as on the other rows, and on the other the fertilizer was spread in the trench about an inch below the potatoes, and the results in the yield were identical. This experiment was a test of the retentive character of the soil.

A distinction must be drawn between an excessive application of a special fertilizer, which is only a waste, and a more excessive application which proves injurious to the crop. If the excess of phosphoric acid or potash is inert or unavailable, it will remain in a retentive soil for succeeding crops, but this method produces slow returns on the money invested. For this reason a heavy dressing of ashes is not apt to injure the crop, for the potash exists in a somewhat inert form, and will last for years. Nitrogenous fertilizers,

however, are very deceptive; a moderate excess produces a rank growth the first season, after which the surplus is apt to be washed out of the soil.

(TO BE CONTINUED.)

Reflections of a Retired Farmer.

BY JAMES ANDERSON, GUELPH, ONT.

After all that has been said and written on farming, I think it will be almost impossible to offer any new suggestions. But as I have been engaged in farming now in Canada for over a quarter of a century, and have endeavored as far as lay in my power to elevate myself and family, socially and morally, I will give you, as shortly as possible, a sketch of how I tried to do it, and whether I succeeded or not I will leave you to judge.

In the first place it is supposed that every farmer is a married man, as I found, through two years' sweet experience, that a man on a farm without a wife is like a pump without a handle—very little use. The next thing I would suggest is, after getting the farm into first-class order by liberal manuring, which can only be done by consuming the coarse grains on the farm, growing plenty of green crop, and stall-feeding cattle (which, by the way, should be of the best breed to be got), as feeding scrubs, of which we have heard so much about of late, is only waste of time and money; also by keeping the best breed of sheep adapted to your soil. I prefer the South-downs or Shropshires myself. I have tried all of them and find the short-wools the easiest kept and most profitable sheep—come into money sooner, and bring a poor farm into good condition sooner than anything else, sheep manure being very valuable as a fertilizer, and the constant nibbling of the sheep keeps down many weeds and other pests of the farmer.

The next thing I would suggest is, after getting your farm into good order by any of the numerous ways of stock raising, make the homestead attractive. I find that one of the first things that will do that is to plant a first-class orchard of the best varieties of fruit, if you have not one suitable to the locality in which you live. If I had known as much about the hardiness of the different varieties of apples when I planted my orchard as I do now, it would have saved me a great deal of trouble and expense. I have found from experience that the hardiest varieties are: for summer, the Tetofsky and Duchess of Oldenburg; for autumn and fall, the St. Lawrence and Fameuse, or Snow Apple; for winter, the American Golden Russet, the Northern Spy and the Rhode Island Greening, or the Baldwin. After trying six or eight other varieties I find them too tender for general use; and instead of planting on the lowest and most sheltered spot, plant on good, rich, well-drained soil, on the highest land you have. I find they do best there. Cultivate your orchard, and manure well for the first eight or ten years, before you attempt to seed to grass, and you will have a good, healthy, thriving lot of trees. Wash well every spring with soft soap or a weak solution of lye to kill the aphid or bark louse.

The next thing to make the home comfortable is a good kitchen garden. We farmers, as a rule, do not grow or use half enough of vegetables. What can be more conducive to

the health of the farmer and his family than a fine bed of asparagus and rhubarb, things which require no trouble in cultivation? I have a bed of the former planted thirty years, which, by a liberal top dressing of well-rotted manure in the fall, and plenty of salt in the spring, is as good as ever. Dig a trench two feet deep and put plenty of good rich soil well mixed with decomposed manure, plant two-year-old plants, and you will never be sorry for it. After having tried several of the finest varieties of gooseberries of the English variety, I find that none in this climate is free from mildew except the Houghton and Downing's seedling. Any one can grow red, white and black currants, and what is more healthy than a plentiful supply of the above named fruits in hot weather? To elevate the family there is nothing more conducive than the cultivation of flowers, both in the house and in the garden. Give each of the children a small plot to look after, and let them emulate each other who will have the best.

Another thing I think will elevate the female portion of the farmer's family is, instead of boarding all the hired men in the house, have a cottage, and hire a man by the year, if possible, and let him board the extra help in summer. I had a man living with me this way for 14 years, and now he has a farm of his own. "A rolling stone gathers no moss" is an old proverb and a true one. My next neighbor has a man who has been with him about 20 years, and offered \$6,000 cash for a farm the other day, all the results of his savings. In the old country we were wont to give prizes to the servant who lived longest with the same master. I think we ought to try it in this country. The next, and I have found it the most profitable part of farming (although some of my neighbors thought I was foolish sometimes in paying \$10 for a first-class turkey cock, which I did some ten years ago, and which was the most profitable investment I ever made, as I sold 24 of his stock next year at \$5 and \$6 a pair), is having first-class poultry and a comfortable place for them. After having tried six or eight varieties of fowls, including Games, Black Spanish, Brown and White Leghorns, Dark Brahmans, etc., etc., I find that for hardiness, early maturity, good layers, etc., the Plymouth Rock and the Light Brahma are the best for a farmer's use. I have also found the Toulouse geese and the Rouen ducks the hardiest and most profitable, after having tried all the other varieties. Above all, if you have any first-class stock of the above varieties for sale, advertise in the FARMER'S ADVOCATE, and you will never regret it, as it has been worth hundreds of dollars to me during the last twenty years.

If you have not a farmers' club in your neighborhood, get one established this spring. It is some fourteen years since I was connected with the one in our township, and I am sure that nothing conduced more to the elevation of our profession. We discussed and read essays on all the different subjects which tended to improve and profit the farmer. To give an increasing interest in it we met at the school houses in the different sections and had a grand annual gathering, in which, of course, the ladies took part. We had a regular tea meeting and concert, and dancing afterwards for those who liked that amusement, as all work and no play

makes Jack a dull boy, and his sister a dull girl.

Provide also the very best reading material for your family, especially the best agricultural journals, and other first-class works of agriculture; and, notwithstanding my esteemed friend Mr. Weld's opinion to the contrary, I think the O. A. College is now doing a good work. I sent my son there for two sessions, and he certainly learned a great deal on subjects which I could not possibly teach him, such as agricultural chemistry, veterinary science, entomology, mineralogy, botany, &c., &c. If we could only get an annual grant, and get it clear of political influence, I am confident it would do a good work amongst our farmers' sons.

I consider the profession of agriculture one of the noblest of sciences. The learned professions are generally supposed to be medicine, law, and divinity, but I cannot see why agriculture cannot be classed among the learned professions, as the scope for study in that line is unlimited, and the more you study nature in her works the more elevated you become socially, morally and mentally, until you are lifted from nature up to nature's God. Make your home attractive to the children by cultivating a taste for music. I think nothing elevates a family more. Buy them an organ or a piano, if you can afford it. Get them taught to read music at sight, and you will find that instead of your sons growing up bar-room loafers, or wandering off at nights in search of questionable amusements, they will spend their evenings at home, and grow up respectable members of society. Of course in these hard times, and low prices for our produce, we farmers cannot be so lavish in our expenditures as in former years, when we got \$1.45 to \$1.50 for our barley. Those were the days when we could improve our homes, and felt elevated all over. I recollect getting \$112 in the Guelph market for one load of barley. We will live in hopes that these halcyon days of peace and prosperity will soon return again. Another great, and, I should say, the greatest of all in the elevation of the farmer and his family, is the religious training. By all means attend some place of worship regularly. If you have no Sunday school in the vicinity, establish one in your own family and get some of the neighbors to join you. I find the International lessons in the Montreal Witness very good assistance in explaining the Bible lessons. I also use Barnes' notes. If the farmer does not educate his family in religious knowledge, they get so little at the public schools in our day that they will grow up very ignorant of what their Bibles contain.

[Mr. Anderson's article has the right ring, and should make a profound impression upon our farmers. He forgot to mention that the soil about Guelph is mostly clay or loam with a limestone substratum, this being necessary to know in studying varieties. Other varieties may succeed better in other soils and locations. Mr. Anderson cannot have been a close student of the ADVOCATE, else he could not have inferred that we are against the Agricultural College; it is the management of the farm against which we take up our pen, and we agree with him that the institution should be kept out of politics. We also agree that no farmer should keep "scrub stock," but if he can define what "scrub" is he will do more for the elevation of our live-stock industry than all the live-stock authorities combined. We are pleased to see that Mr. Anderson has lofty views on agricultural education.—E.D.]

Outfit for Stacking Hay.

Mr. Frederick Axon, of Conboyville, Brant County, kindly sends us a sketch, from which we make the accompanying illustration. With regard to it he says:

"I send you a sketch of a cheap stacking outfit, as I never saw a similar arrangement. I gave it a trial last summer. Our hay being cut before the grain, we stacked it at the end of the barn, and after we threshed we horse-forked it back into the barn again. We unload from the centre of the barn, and as the hay falls in the centre of the stack it packs it solid, settling at the sides so that no rain can enter into the stack. As quite a number of my neighbors are putting up a similar outfit, I thought I would send you a description."

Ensilage.

Prof. Roberts, of the Cornell University, gives the following as his experience with ensilage:—In 1881 we built a pair of small twin silos, and for four years afterwards we filled them with fodder corn, field corn with mature ears, green rye and clover mixed with timothy. Sometimes we used heavy pressure, sometimes light; some of the material was put in when the growth was well advanced, some when very young; some was ensilaged rapidly, some slowly; sometimes it was put in quite dry, sometimes so wet that the water ran out of it; but none of it was "sweet." In fact, I have never seen any sweet silage. Often the odor of the product could be noticed in the milk, and many times the customers imagined they could smell and taste it—a fact which we were compelled to treat as seriously as if the genuine flavor and odor had been present. The clothes of the hired men and the barn always had an unpleasant odor when the ensilage was about. All things considered, we felt that we could not afford to use it.

Scratches, grease heel and all similar complications come directly from not taking proper care of the horses' feet and limbs. Farm horses, most especially, are allowed to stand too long after usage with the mud adhering to them, says the National Stockman and Farmer. This, though, is no more prevalent than allowing horses to stand in unclean stables, where the manure is, perhaps, not thrown out more than once a week. The ammonia arising from the fermenting manure is not only injurious to the general health of the animals, but is one of the most prolific causes of grease heel, cracked quarters, etc. The stable should be cleaned at least night and morning, and the horses should not be allowed to stand in their dirt after being used any longer than necessary for the mud and sweat to dry.

A correspondent of the *Mass. Ploughman*, in reporting the proceedings of a farmers' institute, suggestively says that a discussion of the subject of fertilizers ended with the reflection that after all "the field of actual knowledge is before us." To which the *Maine Farmer* adds: "This may not be complimentary, but, if true, it ought to spur us on to still further investigation."

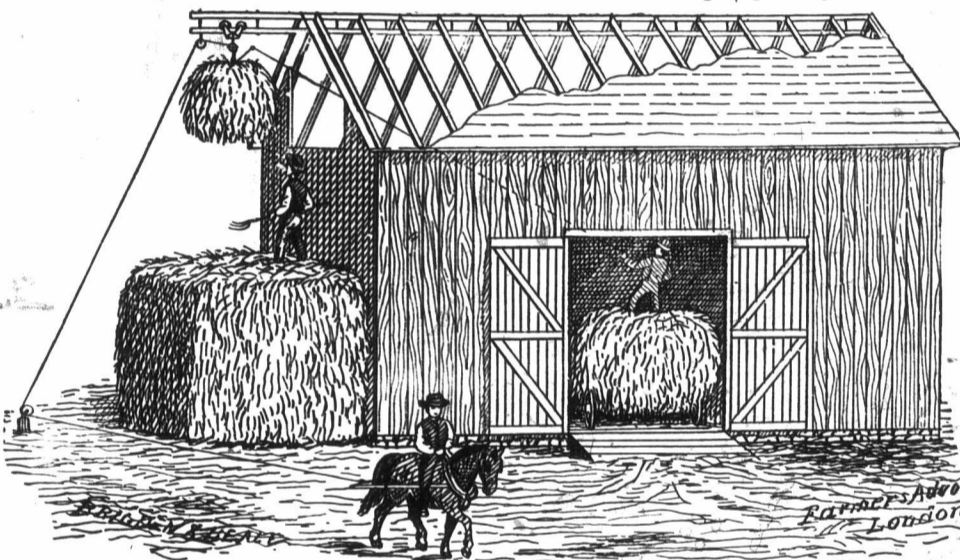
Farm Drainage.

No VII.

Distances between Drains and Size of Tiles.—

We have already spoken of the most practical and the accurate method of ascertaining the distances apart of the drains, viz., by means of observation for several seasons and by digging test holes; but a general standard may be laid down, which may be varied according to circumstances. In a stiff soil, they should not usually be more than 50 to 75 feet apart, and about 100 feet in a porous soil, it being understood, as we previously pointed out, that in a stiff soil the drains must necessarily be shallow, especially when the greatest stiffness is near the surface. In general, the depth may range from 3 to 4 feet, but some clays are so stiff that the water will not permeate more than 2½ feet sufficiently rapid to insure good drainage.

The most difficult question in drainage is to ascertain the size of the tile, so many variable conditions being required in the calculation. Here also standards have been adopted, but no farmer should follow them blindly; he should study all the conditions. It is a fact worthy of a note, that a very large percentage



STACKING OUTFIT.

of the tiles used is too large, not only incurring unnecessary cost, but depreciating the stability of the drain. It is necessary to the durability of a drain that it should at times be exercised to its full capacity for the purpose of effectually washing out the silt deposits, and this advantage cannot be attained if the tile is too large. The other extreme, viz., too small a tile, has also serious disadvantages, notably the tardiness with which the water is removed from the soil, caused by the lack of carrying capacity, and the greater friction in small tiles, compared with large ones, thereby retarding the velocity of the flow. On the whole, drains whose tiles are too small are, if carelessly made, more apt to fail than drains whose tiles are too large, and the general use of the large tiles may be attributed to the lack of sufficient knowledge in the construction of drains.

The size of the tiles is affected by the following considerations: (1) The rate of inclination or fall; (2) The area to be drained; (3) The greatest rainfall in 24 hours; (4) The quantity of water other than the rainfall, if any, due to overflowing or underlying springs; (5) The soil, if any, indirectly acted upon, owing to peculiar slopes in the neighborhood land; (6) The length of the drain; (7) The straightness

of the drain; (8) The smoothness of the bore; (9) The character of the soil; (10) The depth of the drain, and the distances apart.

With reference to the rainfall, it is not only desirable to know the quantity that falls per year, but also whether the rain falls in heavy or light showers. The average rainfall, expressed in inches, for the provinces of the Dominion, for the past twelve years, is as follows: Ontario, 23.78; Quebec, 24.76; New Brunswick, 33.10; Nova Scotia, 37.17; Prince Edward Island, 29.90; Manitoba, 17.22; British Columbia, 25.26; Newfoundland, 35.99; Average for the whole Dominion, 28.39 inches.

It is necessary to know these figures because the following table for the size of the tiles takes 30 inches of rain fall per year as the standard, and it will thus be seen that the table will, for all practical purposes, apply near enough for the average for the Dominion, although in some of the Provinces, notably Manitoba, smaller tiles may be used, than those expressed in the table.

These figures are also modified by the quantity of rain which falls in 24 hours.

Observation has proved that if the drain makes provision for maximum fall of one inch in 24 hours the practical results will be excellent; but these figures are again modified by other circumstances. In the first place the drain will never carry off all this inch of rainfall, for a portion of it will always be absorbed by the particles of soil, the balance finding its way into the drain. The usual calculation is the removal of one half this amount, or one half inch of rainfall in 24 hours; but the character of the soil affects those figures considerably. For instance, a heavy clay, when dry, will absorb 60 to 70 percent of its weight of water; a dry clay loam, 50 percent; a dry loam 40 percent, so that the heavier the soil the less the water to be removed by the drain. Occasionally, perhaps once in two or three years, two or three inches of rain may fall in 24 hours; but it does not pay to make provisions against this excess; for if the surplus is not removed for say 36 hours, only some of the growing crops would be affected. If these heavy showers fall during dry weather, little damage need be expected; for the soil will absorb a much larger quantity of water. As a rule, however, it is considered that thorough drainage demands the removal of the surplus water within 24 hours. With regard to the quantity of water to be removed from other sources than rainfall, each farmer must use his own judgment as to the extra size of the tile required.

The friction is governed by the length of the drain, the size of the tile, and the character of the flow. Long, crooked, roughly laid drains, with tiles of rough bore, should be made of larger tile than where the reverse is the case, even under conditions otherwise identical, for when

the flow of water is checked, the drainage cannot be so efficient. Where the fall is great, these obstacles are more easily overcome. Where the friction is not great, a very slight inclination is sufficient; but the general standard has been laid down that the fall should usually not be less than one inch per rod, and the length should not usually be over 200 yards. Within certain limits, a deep drain will carry off a larger percentage of rainfall than a shallow one, the other conditions being identical, but this is not of sufficient practical importance for discussion here.

Subject to all these considerations, the following table will prove an invaluable guide: It is called the Latham Standard and is extensively used by drainage engineers; but it has been revised by Prof. Carpenter of the Michigan Agricultural College. It takes average conditions, and provided for the removal of half an inch of rainfall in twenty four hours. The table should not be used except for thorough drainage. The time will soon come when drainage must be thorough; and no greater mistake can be made than half doing the work, as the future cost of repairing present errors will be very great. Where the figures are replaced by dashes, the meaning is that no tile should be laid to such grades:

RATE OF INCLINATION. Feet to one of rise. (Exact)	ACRES DRAINED.				
	2-in. Tile.	3-in. Tile.	4-in. Tile.	6-in. Tile.	8-in. Tile.
1 foot in 10 feet	6.6	18.9	29.8	66.2	100.5
1 foot in 20 feet	4.7	13.0	24.0	54.0	81.0
1 foot in 30 feet	3.3	9.5	17.0	39.0	57.0
1 foot in 40 feet	2.7	7.4	13.5	30.0	45.0
1 foot in 50 feet	2.2	5.9	10.5	23.0	35.0
1 foot in 60 feet	1.8	4.7	8.5	18.0	27.0
1 foot in 70 feet	1.5	3.8	7.0	15.0	22.0
1 foot in 80 feet	1.3	3.2	6.0	13.0	19.0
1 foot in 90 feet	1.1	2.8	5.2	11.0	16.0
1 foot in 100 feet	1.0	2.5	4.5	10.0	15.0
1 foot in 150 feet	0.7	1.8	3.2	7.0	10.0
1 foot in 200 feet	0.5	1.3	2.3	5.0	7.0
1 foot in 250 feet	0.4	1.0	1.8	4.0	5.0
1 foot in 300 feet	0.3	0.8	1.4	3.0	4.0
1 foot in 400 feet	0.2	0.6	1.0	2.0	3.0
1 foot in 500 feet	0.2	0.5	0.8	1.5	2.0
1 foot in 600 feet	0.2	0.4	0.7	1.2	1.5
1 foot in 800 feet	0.1	0.3	0.5	0.8	1.0
1 foot in 1,000 feet	0.1	0.2	0.4	0.6	0.8
1 foot in 1,500 feet	0.1	0.1	0.3	0.4	0.6
1 foot in 2,000 feet	0.1	0.1	0.2	0.3	0.4

Whilst the average yield of wheat in the United Kingdom is 28 bushels per acre, that of the United States is only 12 bushels. France, Bavaria, Austria, and Egypt about 16 bushels; Spain, Belgium, Norway, Denmark &c., varying from 22 to 25 bushels per acre. Also for barley and oats as well as forage crops the productions of the British farmer are in the foremost rank. All this shows that although this country stands first in the scale, her position is by no means due to superiority of soil or climate, but rather to good and clean cultivation, to the application of manures—both artificial and produced by highly fed stock—and from greater attention being paid to the change of seed and by the selection of improved varieties of plants.

Garden and Orchard.

The Best Varieties of Garden Vegetables.

Now is the time to select your garden seeds. If you are not acquainted with our leading seedsmen, it is time you were. Don't purchase from the local storekeepers unless their seeds come from your favorite seed merchant. Your success in the garden depends largely upon getting the purest seeds and the best varieties. The following are the names of the leading varieties:—

- BEANS.—Golden Wax Dwarf; Mammoth Red German Wax; Black Wax or Butter; and (of the pole, or running sorts), Dreer's Improved Lima
- BEETS.—Eclipse Turnip; Long Black Red Improved; Egyptian Dark Red Turnip; Half-Long, very deep Blood Red.
- CABBAGE.—Henderson's Early Summer; Dark-Red Pointed; Early Jersey Wakefield; Filderkraut; Pottler's Drumhead; Early Winningstadt; Premium Late Flat Dutch.
- CAULIFLOWER.—Henderson's Early Snowball; Earliest Dwarf Erfurt.
- CARROTS.—Early Scarlet Horn (English and French); Scarlet Intermediate; Early Gem; Half-Long Scarlet.
- CELERY.—Golden-Hearted Dwarf.
- CORN.—Early Minnesota; Early Marblehead; Stowell's Evergreen.
- CUCUMBERS.—Long Green; Green Prolific; Stockwood's Long Ridge.
- LETTUCE.—Standwell; Early Curled Silesia; Drumhead.
- MUSK MELON.—Montreal Market; Montreal Improved Green Nutmeg; Early Green Nutmeg.
- WATER MELON.—Black Spanish; Cuban Queen; Peerless; the Boss.
- ONIONS.—Large Red Wethersfield; Yellow Globe Danvers.
- PEAS.—Bliss' Everbearing; Blue Peter; McLean's Little Gem; American Wonder; Stratagem.
- RADISH.—Early Long Scarlet Short Top; Early Scarlet Turnip; French Breakfast; Long Black Spanish Winter; Scarlet China.
- PUMPKINS.—Etampes Mammoth Bright Red; Potiron.
- SQUASH.—Boston Marrow; Hubbard; Essex Hybrid.
- TOMATO.—Livingstone's Perfection; Acme; Canada Victor.
- TURNIP.—Extra Early Purple Top Milan; Early White Stone or Snowball.
- SPINACH.—Long Standing.
- POTATOES.—White Star; Morning Star; Beauty of Hebron; Bliss' Triumph; Clarke's No. 1; Pearl of Savoy; Early Sunrise; Mammoth Pearl; Early Rose.

Strawberries.

BY W. W. HILBORN.

The past season has been one of the best for strawberries within my knowledge, and has added considerably to the experience of the past. Some varieties that did scarcely anything when the seasons were unfavorable, have produced a very large crop the past year. There is no doubt many people will be led to plant by last season's experience, which is not at all safe to follow; hence will not succeed so well as they would by taking the experience of an unfavorable year as their guide.

Many varieties are very tender in the blossom, and a very light frost will materially injure the crop. Others bloom very early, and some send their fruit stalks up above the foliage, hence are easily injured by frost.

Take, for instance, the Sharpless: it produced a large crop of the largest-sized fruit last year. I have grown it for six years and never before

succeeded in getting a full crop from it, owing to its habit of sending the fruit stalks above the foliage and exposing the blossoms to the spring frosts, which we nearly always have when strawberries are in bloom. It will not stand as many degrees of cold without injury as many other varieties that expose their blossoms to the same extent.

We should therefore make observations in an unfavorable season, and select varieties that will then succeed best, and by watching those same varieties when the season is favorable, we can soon find what will pay us best to plant in our own locality.

It is true that varieties will deteriorate, but it quite often happens that it is caused by using plants from old, worn-out plantations. If we use plants from such beds, it is on the same principle as using scrub stock to breed from. On the other hand, they can be overfed just as easily as we can over-feed stock (although it is not often done).

I fruited about eighty varieties last season, and sold about five hundred bushels of strawberries, and find none better among those well tested than *Crescent Seedling*, *Manchester*, *Daniel Boone*, *Cap Jack*, *Wilson and Cumberland Triumph*. *James Vick* sets too many berries to bring all to perfection in a favorable season, but when we get a late spring frost that catches most sorts (as quite often happens), and kills about one-half of the blossoms, it is one of the best.

Among newer varieties, the *Atlantic* is by far the most promising late market berry. It is very productive, not quite so dark in color as *Wilson*, more firm, very hardy, fruit of good size and quality. *Prince of Berries* is the best in quality of any I have ever tasted; although not quite as productive as some varieties, it will give a good crop of large, bell-shaped, dark red berries, quite firm; plant, hardy and a good grower, and it should be in every collection for home use, especially if the grower wishes to eat some of the best strawberries that are known at the present time. Talk about the wild strawberry flavor! I have never tasted a wild strawberry that would anywhere near come up to it in quality.

Cornelia, a new variety that was sent out at a very high price as the best late market berry, has disappointed me. It is late, quite productive, fruit of good form and color, not very firm, but such a poor grower that it will be of little use in Canada. The plant is the most tender of any in my collection.

I have fruited quite a number of new varieties; many of them have no special merit; will give the names of some of them, as it may save some of the readers of the *ADVOCATE* from being induced to buy them, at a high figure from some of the travelling agents, who know nothing about them only what they learn from reading the disseminator's description.

First, those that are promising and worthy of trial are *Atlantic*, *Prince of Berries*, *Lacon*, *Woodruff*, *Parry* and *Amateur*.

Of the following varieties some have good points, but not enough good points combined in any one to give them any special merit:—

Cornelia, *Primo*, *Legal Tender*, *Big Bob*, *Grand Duke*, *Finche's Prolific*, *Gipsy*, *Hart's*, *Minnesota*, *Jersey Queen*, *Nigh's Superb*, *Piper's Seedling*, *Ray's Prolific*, *Sterling*, *Vine-land Seedling*, *Ct. Queen*, *Mrs. Garfield*, *Oliver Goldsmith*, and *Sucker State*.

Papers for Amateur Fruit Growers.BY L. WOLVERTON, GRIMSEY, ONT.
No. VI.

THE APPLE—(CONTINUED)—VARIETIES FOR MIDDLE ONTARIO.

As we advance southward the number of varieties which succeed will rapidly increase. A large part of middle Ontario, using the latitude of Peterborough as a centre, is adapted to apple culture.

But even where a large number of varieties may be successfully grown, there is no advantage in growing many of them, either for home use or for market. Indeed a few of the very best for each season are all that should be planted, unless by the connoisseur who wishes to make a study of kinds.

Mr. Thos. Beal, who represents Agricultural Division No. 5, or the counties of Victoria, Peterborough, Durham and Northumberland in the Fruit Growers' Association of Ontario, speaking perhaps more particularly of the vicinity of Lindsay, recommends the following list of kinds for that section for succession, viz.:—*Duchess, Red Astracan, St. Lawrence, Wealthy, Grimes Golden, Northern Spy, Golden Russet and Tolman Sweet.*

Of these the *Duchess* and the *Red Astracan* are competing for the first place among summer apples, and the former seems to have the preference, being as early as the latter in the section above referred to, and a better market apple.

The *Grimes Golden* is so named from its rich yellow color when ripe. Its season is December to April, and its quality is the best. It is a very promising apple for exportation.

The *St. Lawrence* is a red-striped apple, a little larger than the *Fameuse*, of which it is probably a seedling. It ripens in September, and the tree is very hardy. The apple is highly prized by growers about Montreal, but a writer from Vermont says it is unprofitable there owing to cracks and spots.

The *Fameuse* has been left out of the list because of spotting. Reports from Huron, Simcoe and parts of Bruce speak of it as often worthless for this reason; but Mr. Francis Peck, of Hastings, stated at one of the meetings of the Fruit Growers' Association that he had an orchard of five hundred trees of this variety, and that he considered it the most profitable apple he could grow. It is also most favorably reported by growers in Dundas and Stormont, and is most popular among the orchardists about Montreal.

The *Baldwin, Greening, Rox Russet, King*, and even the *Spy*, need to be planted very sparingly in the middle portions of Ontario, as they are all too tender for most localities, unless under very favorable conditions.

The *Ribston Pippin* succeeds fairly well in the region under consideration. It is one of the most valuable early winter apples grown, and is highly prized in the English market. Mr. Donald's Seedling, the *Ontario*, is also highly spoken of in Huron County, as an apple for export.

The *Yellow Transparent* should not be omitted for very early, to take the place of the old *Early Harvest*, which is now a failure in so many places; and the *Wealthy* for one of the winter varieties, especially in exposed sections, where hardiness is required. The quality of

the *Tetofsky* is too poor, and the size too small, to make it desirable in middle or Southern Ontario.

VARIETIES FOR SOUTHERN ONTARIO.

We now come to Southern Ontario, or that part of the Province which is partially surrounded by Lakes Ontario, Erie, and the Southern part of Lake Huron. This is the natural home of the apple. Here almost every variety may be grown, and the planter has only to consider the beauty and excellence of each in setting out an orchard. As a consequence, apple orchards here abound on almost every farm, and in some instances horticulture forms a more important branch of husbandry than agriculture.

The apples grown in this part of Canada are justly famous, the world over, for their fine size, beautiful rich colors, and superior excellence of flavor.

From his own experience as a fruit grower in the Niagara Peninsula, the writer would recommend a selection from the list of varieties enumerated below.

Among summer apples, the *Early Harvest* must be discarded, if it persists in spotting; but last season it was comparatively clear again, and may be sparingly planted. No apple is more desirable for dessert at home, and, when clear, no apple of its season is more profitable for market. It may be used for cooking in July, while still green, and it is excellent for eating early in August, when it becomes a bright straw colored; but it is then too soft for shipping, unless in baskets. The tree is rather small, and yields only about three or four barrels every other year, but the price for good clean fruit is usually sufficient to more than make up the quantity.

The *Red Astracan* pretty closely succeeds the *Early Harvest*, but it ripens so unevenly that its season of harvesting may be much prolonged. I shipped them last season, almost daily, from the first of August until the first of September, gathering them just as fast as they reached their full color. This apple attains its greatest perfection in Southern Ontario, growing to a fine large size, and acquiring a deep crimson color, overspread with an exquisite bloom, like that of the plum. In quality, it is a cooking apple, but its beauty makes it a most showy table apple.

The *Duchess of Oldenburg*, a showy, red-streaked apple, ripens early in September, and therefore keeps up the supply of fancy fruit during that month. No apple of its season can compare with it in beauty, and being firmer than the *Red Astracan*, it will bear shipping to a much more distant market.

Of fall apples, one of the most desirable is the *Gravenstein*, a large German apple, beautifully dashed and marbled with red and orange, which ripens in October.

The *Ribston Pippin*, which, in the northern sections, may be classed as an early winter apple, is here a fall apple, unless in exceptional seasons. Shipped to the English market very early, even before it has attained its full color, it is very profitable, notwithstanding the small size of the tree.

The *Calveot* grows here to a remarkably fine size, and becomes well shaded with dull red on the sunny side. It is a fine cooking apple, and very desirable for home use or market.

The *Maiden's Blush* is the most beautiful fall apple we have, rivalling in appearance even

the famous *Lady* apple. Here in the Niagara Peninsula it reaches its highest perfection, and when shipped to foreign markets it brings the very best prices.

The *Fall Pippin* is perhaps the best fall apple for home use in existence, but of late years it has been quite worthless in the Niagara district as a market apple, on account of ugly spots which completely ruin its appearance.

(Concluded in the next number.)

Ontario Fruit Growers' Association.

The winter meeting of this Association was held in Stratford on the 10th and 11th ult. Stratford is the newest city in the Province, and possesses some interesting features as a fruit centre. It is near one of the highest elevations in the Province; the soil is mainly stiff clay, and many of the old pioneers of the city are passionately devoted to fruit growing, although the surrounding farmers, with a few exceptions, are deplorably behind the times in this important branch of our agricultural industry. Stratford has a large and flourishing Horticultural Society, and is noted for its enthusiastic Arbor Day.

The Association is becoming very conservative and its meetings are very monotonous. The discussions are not as profitable as they should be. The local fruit authorities go to learn, not to impart knowledge, and their statements are void of accuracy. As a rule, they know very little about the names of the varieties of fruits and vegetables which they grow, and we often hear of names which are unknown to the best authorities. Many of them appear to have secrets about cultivation, bug destruction, etc., which they do not wish to impart for fear of their neighbors stealing a march on them at the exhibitions. Others only know what their wives and daughters tell them, and by the time their information gets into the report, it is a jumbled mass of inaccuracy and obscurity. Some of the higher dignitaries assert that they would be able to impart valuable information providing their books or their foremen were at their elbow while they are haranguing the meeting. This system would not be so wicked if the reports of the meetings were not published at the public expense, and broadcasted all over the Province for the confusion of fruit-growers, farmers and gardeners who are unable to attend the meetings.

The Association is aggressive. This is exemplified by their discussion on fences. They would unceremoniously eradicate the fence "abomination" without consulting the farmers in the matter. They go on the presumption that fences are of no use except to keep out one's neighbor's stock. A fruit man who has no stock himself would be glad to have all fences abolished; but the farmer, who wants to fence in his own stock as well as fence out his neighbor's, would not vote for converting his rails and posts into bon fires. Figures, named a "self-imposed tax," have been paraded to show the enormous cost of keeping up fences, but the credit side of the account was not even mentioned. If no fences existed the arguments would have been sound, but it is cheaper to let a fence alone than to engage a herd boy to look after the stock. The abolition of fences must take place slowly, commencing with the older localities, and the matter should be left entirely to the option of the respective municipalities. Mr. J. A. Morton (Wingham) expounded the fence law, saying

that a by-law must be passed expressly permitting cattle to run at large; otherwise they could be impounded whether the municipality passed a pound law or not.

Planting trees for wind breaks and hedges was discussed. A. M. Smith advocated hedges of Norway spruce or even of currant bushes to break the wind and gather the snow around the roots of the vines for their protection. The vines, he said, were much injured where the snow had full sweep. He also used white cedar for wind breaks or hedges. Thos. Beall regarded hedges as useless for the farmer, as they gathered mountain ranges of snow on one side. He advocated the planting of large trees, to be placed at right angles with the prevailing winds, in which case the trees acted as a screen. Hedges were only suitable for towns. He also favored the planting of clusters of trees in the fields to protect the stock. He spoke highly of the spruces, but his favorite tree was the walnut, both for utility and ornament, which, he said, would flourish in any part of Canada. W. W. Hilborn recommended the Scotch pine, as it grew twice as fast as the Norway spruce. Mr. Denton objected to the locust on account of its being attacked by the borer. J. P. Wood spoke highly of the butternut. He thought nut bearing trees should be planted in the towns as well as in the country; the threshing of the trees by boys when getting the nuts was more beneficial than injurious to the trees, not to mention a word about the effects upon the boys. The elm, the wild cherry, the white ash, the hard and soft maples, and the basswood, were also flattered. Mr. Scott, of Ann Arbor, Mich., thought the elm surpassed all other trees as an ornament.

A sharp discussion took place on the planting of trees by the road sides, the proper distance apart, and the effects of such trees on the condition of the roads. It was held that 25 to 30 feet apart was the proper distance, and 12 or 15 feet, as is the usual custom, but no objection was taken to the plan of planting 12 or 15 feet apart in the first place, then cutting out every alternate tree when it grew large enough to make axe-handles, etc., and replanting; then in 30 to 50 years cutting down the large trees for timber or lumber, and replanting with small trees—thus alternating the process for all time to come. There was a difference of opinion as to the effects of road side trees upon the condition of the roads, some holding that the trees kept the roads wet until late in the spring, others taking the contrary view on the ground that moisture was given off by means of evaporation through the leaves. Somebody should have been there who was capable of settling the question. This is a specimen of the many unsatisfactory discussions which are found in the reports of the Association. Somebody should have said that road side trees planted on a stiff soil would help to drain the road, both by the action of the roots and by the vast amount of evaporation through the leaves, while on a light soil, no artificial drainage being required, the shadow of the trees and the prevention of the full sweep of the winds would have a tendency to keep the road moist longer than where no trees were planted. Would the open sweep of the winds have a greater tendency to reduce moisture on the roads than the action

of the leaves and roots of the trees planted on the roadsides? It didn't strike anybody that a little surface moisture was preferable to dust. It was thought to be a contradictory proceeding to plant trees to keep the roads dry and the whole country moist, it having been overlooked that mere road side planting would not materially affect the rainfall.

P. R. Jarvis (Stratford) said he tried to grow peaches for 30 years without success. Here the Secretary of the Association gave some valuable hints on peach growing. He advised the citizens of Stratford to plant the stones of the hardiest trees, and when the seedlings bore fruit, select again, and so keep on and on until a sufficiently hardy tree was assured. They should select the healthiest as well as the hardiest parent, and if the land was properly drained, the wood would grow all right, but there still was danger of the buds being nipped by the late frosts. This could be prevented by selecting a cool exposure, not the south side of the house, as was usually done, thereby preventing the buds from commencing to grow too early. A northern or western exposure was best, and the roots should be kept cool in spring in order to prevent too early a growth. Herein hangs a tale. Has not the present system of cultivating all fruits a tendency to weakness instead of strength? In this respect it resembles our system of breeding live-stock. Hothouse culture, mulching, wind-breaks, etc., must tend to produce more tender and less nutritious fruit, the appearance being the only advantage gained. Every new boomed-up variety is coddled to death until the boom prices have passed away, and a newer and tender variety takes its place. It is a wonder that our fruit growers do not establish a pedigree register, and give aristocratic names to their pet varieties. In some respects they are destroying instead of building up our fruit industry.

Of the new and promising varieties of small fruits, the following varieties were mentioned:—**STRAWBERRIES:**—*Woodruff* (medium earliness); *Atlantic* (late); *Prince of Berries* (late); *Early Cayuga* (very early). **RASPBERRIES:**—*Red-Marlboro* (early), and *Reliance* (medium); yellow—*Caroline* (late); black—*Tyler* (early), and *Hilborn* (medium to late); purple—*Shaffers' Colossal* (medium to late). *Beber's Golden* was ruled out as being of no value. **CURRENTS:**—*Fay's Prolific* (large red); *Ruby Castle* (medium red), and *Moore's Ruby* (large red). **GOOSEBERRIES:**—*White Smith*; *Industry* (red); *Smith's Improved* (light green); *Downing*, (light green). *Crown Bob* was mentioned as being subject to mildew. **GRAPES:**—*Empire State* (white); *Ulster Prolific* (red); *Niagara* (whitish green); *Woodruff* (red); *Poukepsie* (red). All the above-named varieties of small fruits are very promising, having been fairly well tested, and are worthy of special attention. Specially worthy of mention is the Hilborn raspberry. It has now been tested in different sections for the past seven years, and no condemnatory remarks have been heard concerning it. It is a black cap and is pronounced to be first-class quality, exceedingly hardy, firm, and a good shipper.

The President expected, none of the members of the Association understand the use of commercial fertilizers, but all were anxious to know how to make them pay. The

question was discussed. Mr. Frame, a prominent farmer and Reeve of Downie, was staggered when the price of \$30 per ton was mentioned. He was convinced that the fertility of farms could be restored and maintained without the use of commercial fertilizers. If Mr. Frame speaks from experience, his assertions imply two things: (1) He feeds all his crops to his stock; (2) he eats all the stock. However, the inexorable Reeve of Downie is quite as consistent as any of us; for we are all suspicious of things which we know nothing about, and are prone to condemn them. Judging from the tenor of his remarks, he would not pay \$30 a ton for fertilizers, even if he made 300 percent on his investment. Farmers, take a lesson: it is not what you pay for a thing that you should look at; it is what you can make out of it.

Mr. A. McD. Allan (Goderich), one of the ablest apple experts in Canada, gave a list of the most reliable varieties that can be grown in the Huron tract (in which Stratford is situated)—embracing the varieties which are the best shippers and bring the highest prices in the English markets, viz.: Baldwin, Northern Spy, American Golden Russet, King of Tompkins County, Wagner, Rhode Island Greening, Wealthy, and the Pippins. He said that this Province lead the world in the quality of apples, and the price in the English markets ranged from 1s to 1s 6d higher than American apples. Mr. Nelson Monteith, a prominent farmer near Stratford, spoke strongly in favor of King of Tompkins County. He also liked the Northern Spy and Seek-no-Further. There was an excellent collection of apples (as well as other fruits), amongst which there were some excellent seedling apples laid on the table by M. Monteith. A seedling apple of excellent quality was christened "Oliver" by the Association, being the name of the originator.

Sheaves from our Gleaner.

Arthur Bryant's theory of the proper pruning season is really elementary principle. When we want a tree or vine to make wood we never interrupt it while doing so, nor allow anything else—wind, animal, weed or insect—to check it, if we can prevent. We wait until growth is completed for the season, and the plant is at rest, to do any necessary pruning. But if we have wood enough to start fruitage upon, we begin to check wood-making by some summer pinching, and by pruning before growth is quite completed, so that what remains of it may help in the building of fruitbuds, which our summer pinching has given the tree a tendency to form.

Chestnut trees, says a writer in the Mass. Ploughman, can be profitably planted in clumps and along the fences on hill-tops, as after a few years the crop of nuts yields a return equivalent to a fair rate of interest, while the trees continue to grow. I may be permitted to say that I have chestnut trees, planted in 1848, which are now fifty feet in height, and girth two feet above the ground, over seven feet. Each tree produces from a bushel to a bushel and a half of chestnuts every year.

Dr. Sturtevant, of the N. Y. Experiment Station, says: "The nomenclature of farm seed is in a state of chaos. There seems to be no authority to settle the question of variety, and hence the name under which a variety is sold is a matter of accident or ignorance."

Stock.

A General Purpose Barn.

Since the publication in the ADVOCATE of the plan and description of Mr. Murray's barn, we have received a large number of communications relating to barns, many of which were accompanied by sketches. Not having space to publish all the matter, or to make illustrations from all the sketches, we present our readers with a plan of our own; and, as will be seen in our prize essay column, we offer a prize for the best criticisms on it. For the present, we do not decide whether the plan pleases us or not, and competitors for the prize may make their criticisms favorable or unfavorable.

The plan explains itself, but there are certain points to which we wish to draw attention. We desire to have the size and the price left out of consideration, for in these respects the barn can be made to suit the circumstances of any farmer, and it requires very little ingenuity to change the arrangement into a dairy barn, although we wish the criticisms to be confined to its suitability for mixed husbandry. It will be an issue whether a round barn will hold more or less stock grain, etc., within the same number of square or cubic feet, than a square barn; whether the price will be affected by the shape; whether it is desirable to have so much material under one

roof, or whether it is adapted to the usual system of farming of the present, or the farming of the future. For instance, if the coming system embraces the cooking of the food in winter, and soiling in summer, we should be severely criticized if our arrangements for these purposes are not complete.

It will be observed that there is a cistern in the centre of the basement, which receives all the rain water from the roof. The system of saving the manure can easily be inferred from the arrangements represented in the illustration. Whether dry muck should be used under some of the stock, and the manure hauled directly to the field as fast as made, the balance being dumped into the manure shed and allowed to ferment, will be a subject for discussion.

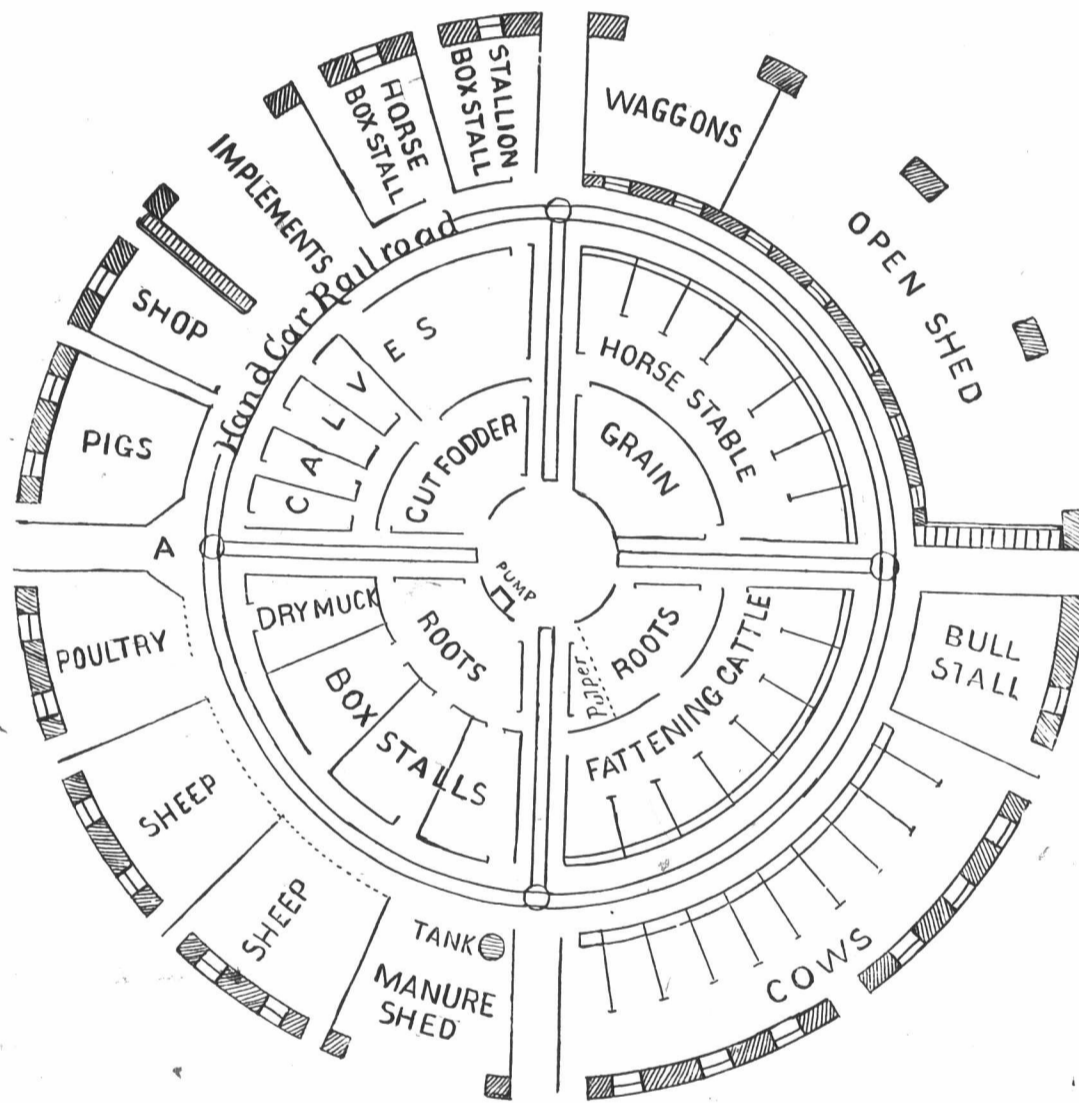
Where muck or other absorbents are not used, the liquid manure is conveyed through pipes into the tank.

The hand-car railroad runs all the way around, and the car is used for conveying food, water, muck and manure to their respective places. It will also be observed that the railroad runs into the centre of the building, where the car can be placed near the water, cut fodder, grain and roots. The dotted lines behind the sheep and poultry houses indicate that upright scantlings should be used instead of a close wall in order to throw more light into the box-stalls. Half, or more, of the quadrant used for the calves and young cattle is divided into box-stalls, with doors at both ends.

It will be observed that there are two wagon

granary excepted; also the ventilator, which goes straight up the centre of the building, at the same time acting as a source of light, casting a volume of light into the centre of the basement—into the circle occupied by the pump. A mow of hay may be built over the cow stable, not extending nearer the centre of the building than the portion of the floor directly over the railroad track. By this arrangement hay can be thrown down through the floor in front of the cows and fattening cattle. In like manner, a mow of hay may be built over the sheep, over the shop and implements for the calves, over the open shed for the horses, etc. It may here be discussed whether it would not be preferable to have openings from the mows to the mangers, thereby putting the hay di-

rectly into the mangers, instead of first throwing it down into the passage before the stock. We shall place the granary over the open shed—over the part nearest the bull stall—for the following reasons:—1. The grain can be lead through a spout into a bin in the space below marked "grain." 2. The grains to be marketed can be dropped into the wagon after it is backed up into the shed under the granary. Grain, bran, oil-cake, etc., hauled from the market may be placed into this bin either through the granary or directly from the wagon as it passes through the basement passage. With reference to the roots, they may either be put into



BARN FOR MIXED HUSBANDRY.

roads going clear through the basement, cutting each other at right angles. Looking at the position marked "A," it will also be seen that the wagon, instead of going straight through, can turn and go around over the hand-car railroad track, the corners being taken off the poultry and pig houses in order to facilitate the turning of the wagon; but it will be a question for discussion whether or not the space occupied by the railroad should be wide enough to admit of a wagon.

The plan of the basement will decide the arrangement of the barn floor, and we did not consider it necessary to give an illustration of it. However, we propose to have the whole floor perfectly clear, no bays, no posts, or anything of that sort, the space occupied by the

the root-house, through the barn floor or by driving the wagon into the basement passages. Three out of these four roads can be utilized for this purpose.

If the fodder should be cut, the grain ground, and the roots pulped, we make the following arrangement:—We place the cutter on the barn floor in such manner that the cut stuff can be most easily dropped through the floor into the space below marked "cut fodder;" similarly we place the grinding mill in such position by which we can most easily drop the chopped stuff in the bins of the department marked "grain," and we put a belt on the pulleys which can, at the same time, drive the pulper which is situated in the root-cellar. We have two stair-ways leading from the basement to

the barn floor, the one in the shop and the other in the open shed. (See illustration.)

With regard to the aspect of the barn, we say, for the sake of creating discussion, that the portion occupied by the cow stable faces the north. There are also other questions that may be discussed, such as the relation of such a barn with respect to light, fire, air, easiness of access from one department to another, etc., bearing in mind that some animals require more light than others, especially some which are constantly confined and receive little or no opportunity of basking in the sun. Consider, also, whether the heaviest eaters are placed nearest the bulk of the food, and whether the working animals are located near the implements which they are most accustomed to use.

A Chatty Letter from the States.

[FROM OUR CHICAGO CORRESPONDENT.]

Lately some of the papers in the Far West have been raising not a little complaint about the extraordinary concentration of capital at Chicago, which enables cattle buyers to so completely dictate what prices shall be. And at the very same time the same papers are urging the importance of establishing refrigerator concerns in the Far West, so as to save the long hauling of live stock. In other words, they are wanting the benefits of the vast capital necessary to run a refrigerator business, and at the same time they are quite unwilling to have the results of concentrated capital, sure to follow.

It is true that the refrigerator business is both a bane and a boon to the stock interests. It puts such vast power in the hands of a very few men who are engaged in it, that they are able in a large measure to control the beef markets by suppressing competition from the smaller and more numerous handlers of cattle, hogs and sheep on the hoof. But on the other hand, tons of fresh meat are now sent into all parts of the interior, where before the inhabitants had to content themselves with cured and dried meats, of which they ate very little, compared to the amount of fresh meat consumed when furnished in regular supplies.

"If the refrigerator business pays so well at Chicago," say some of the western men, "then it ought to pay still better if the base of operations were removed nearer the grazing fields of the west, nearer the sources of production." It may be that if it pays to save hauling an animal a thousand miles on foot, that it would pay better to save hauling him two thousand. But as yet the business has not been made to pay west of the great live stock metropolis.

The Americans are awaiting with considerable interest the result of the Montreal exporters' plan to engage in the refrigerator business in order to meet them on their own footing. It seems that Mr. Swift, who has hitherto loaded a Canadian line of steamers every year with dressed beef, is to have some interesting competition the coming summer.

The exporters of cattle are inclined to look a little long-faced just now, as prices across the water do not hold up as well as they had expected. In fact, while prices at Chicago have lately been advancing, the rates on the other side have lately been lower than for months past.

While many thousands of 1,000 to 1,300 lb.,

more or less, fat cattle, or at least cattle which feeders have turned off to the butchers, have been selling round about \$4.00, not a few enterprising feeders have been paying as high as \$4.00 to \$4.35 for thrifty 1,100 to 1,200 lb. cattle to put into their feed lots.

Only a few have ventured to pay these high prices, in view of the low rates current for beef cattle, but it is a question whether they will not come out much better than the penny-wise fellows, who at the same time were picking up ill-bred little runts at about \$2.50 to \$3. The latter will shortly be returned to sell as four cent "fat cattle," while the smooth, well-bred animals are the kind out of which the good feeders have been making five and a half-cent cattle and better, while four cents was quite a common price.

Among the new features to be added to the coming Fat Stock Show (Chicago), is a department for range cattle, with premiums the same as for corn-fed, stall-fed, etc.

It is quite interesting to stand in one of the big meat markets at the Stock Yards where the counters are piled here and there with rolls and pats of butterine. Now and then some poor person who cannot afford to pay 30 cents per pound for butter, may be seen to come in and get a pound of "painted tallow," but by far the bulk of the purchasers are boarding house keepers and hotel messengers who buy it on the sly at 14 cents per lb., and then try to make their boarders believe that they get all of their butter from a friend or a relative who has a big creamery out in Iowa.

The manufacturers sell it for exactly what it is, but unfortunately the hotel and boarding-house people do not dare to label their dishes in which they set it before an—I was going to say an unsuspecting public, but that would be wrong, as the public is very suspecting, but very helpless. That idea of "Marsfield's" about arming every person with a powerful microscope, to be continually used in defence of the inner man, is not a bad one, but before the common people can be educated up to knowing how to use them, the scientific adulterators will have found a score of other ways for getting bad things into our stomachs, in the guise of wholesome food. Verily, "Woe to the consumers!"

Business in the western sheep trade has revived considerably of late, and there is a prospect that sheep raising will soon regain something of its old and deserved popularity. The sheep men are gradually yielding to the inevitable fall of the tariff protection idea, and are turning their attention to the less vexed question of how to make good mutton and lambs that will please the butcher and bring from him a good price.

In regard to over-feeding of stallions, Prof. Williams, of Edinburgh, strongly recommends that draft stallions should be worked a little later in winter. This is not only with a view of preserving the horse's procreative powers, but his health, as now, when attacked, his organs not being in a very healthy condition, he is unable to withstand the usual veterinary remedies when in trouble, and succumbs suddenly. The late Mr. Drew was of the same opinion, and every spring-time he gave his famous stud-horse, Prince of Wales, good sweating work in the chain harrow.

PRIZE ESSAY.

Clovers and Grasses.

BY THOMAS ELMES, PRINCETOWN, ONT.

This subject is of vital importance to us as a Province at this particular time. Our lands require renovating on account of the heavy strain to which they have been subjected by continued grain raising. Although Canada stands prominent as a grain growing country, still in these days of such heavy competition, which has amounted the last few years to over-production—and is likely to continue for some time to come—we cannot expect to have the profit we have had in the past. Our own Northwest, the Western States, India, Russia, in fact, nearly every part of the globe, is pouring its cereals upon the markets, which makes it impossible for us profitably to compete with them. It becomes us to turn our attention to other branches where competition is not so keen, and is not likely to be for some time at least, such as dairying and stock raising. By so doing we would not only receive an immediate profit, but our lands would be also increased in fertility.

The fertility of a farm can be maintained, and may be increased independent of any manure outside itself, by judicious seeding and stock raising, providing the products are returned to the soil. The air is full of gasses, the rains and dews are always full of nutriment to supply vegetable life, and if we so arrange so as to have the lands continually occupied by those plants which feed largely upon them, that is, those with broad, open leaves, we produce crops which are not hard on the land, especially if they are subsoil feeders. But in order to maintain fertility we must pay far more attention to our meadows and pastures by selecting the best clovers and grasses, and securing a thick, heavy growth.

One of the greatest evils is that land is allowed to be thrown into meadow and pasture before being thoroughly cleaned of the natural grasses, and simply sown with clover and timothy, which are soon choked out, and the land is still allowed to lie producing simply nothing, having become sod-bound. I lay it down as an unerring rule that land intended for meadow or pasture should be thoroughly cleared and well stocked with different kinds of clover and grass seeds, as many kinds as are adapted to the soil, and, if possible, let there be included the seeds which are either indigenous or found to be best suited to the immediate vicinity, and on a similar soil.

The reasons for recommending several kinds are that each has its particular season of growth, and feeds on a particular kind of plant food in the soil. By multiplying the number of clovers and grasses we obtain a constant growth of herbage, and a far more abundant supply of food and nutriment. For instance, say a square foot of surface will produce six stalks of timothy. This grass growing neither early or late, the herbage will neither be abundant nor permanent; but the same square foot which would produce but six plants of timothy would support in the same season six plants of several other species, say red clover, Alsike clover, Lucern, Meadow foxtail, Orchard and Kentucky grass, Meadow fescue, &c. Of these kinds some one would be in luxuriant growth at all seasons, and the herbage would be thus increased five-fold, if the soil is good and suited to all these seeds.

Although the alternation of grass and grain crops is deemed most profitable on soils and in situations which will admit of this kind of husbandry, yet there are many situations in which this change cannot be effected without manifest injury to the cultivator. There are certain soils which are natural to meadow and pasture, and not suited to grain; also such lands as are flooded by streams passing through them, which make it imperative to keep them in meadow and pasture. The evils which are experienced in low-lying grounds are the gradual disappearance of the best grasses and the growth of coarse herbage and weeds in their stead.

The product of our natural pastures, and meadows which are inclined to dampness pro-

duce about twenty-five different species of grasses and weeds, the greater number of which are either useless or injurious. The same proportion holds good in natural upland meadow. It is apparent that we must eradicate the useless and the bad, and continue and multiply those which are good.

It has truthfully been said the value of farming lands has been increased ten or fifteen dollars per acre by the introduction of dairying in all its branches in certain localities. It might still be greatly increased by judicious seeding for hay and pasture, thereby greatly increasing the products of the land and the amount of stock, which could be better kept than at present. It is quite possible for us to support a vast amount more stock, and still raise as much if not more grain than we now do by a proper attention to this important subject.

Let us now glance at a few of the most prominent clovers and grasses. There is not a plant ever grown on the farm that has as much of the elements of fertility to return to the soil as clover, especially the common red variety, which for Canada stands first on the list; but we find a decreasing amount is being sown on account of the insect pests which prey upon the seed we have been in the habit of growing ourselves, this being really a great calamity, if we cannot avert it, but I think it is quite possible to do so. I will look at our enemy, the midge, a moment.

The parent insect deposits its eggs in the soil in the fall of the year, which hatch and become the perfect insect early in June, and proceeds to lay its eggs in the clover blossoms, after which the parent dies. The eggs hatch in a few days, and the insect preys upon the blossom. If the clover is left to stand they wiggle out of the head and fall to the ground, where they remain till they become the perfect insect, ready to make the attack on the second crop, totally destroying the seed. The remedy is this:—As soon as the eggs are deposited early in June, cut the clover immediately or pasture till the 10th, but cutting is the best remedy I have found. The eggs are thus destroyed, their means of support being gone, and as the ground is thus free from the insect, we are sure of a good crop of seed, which I have had these last two seasons. As a matter of course, we lose on the hay or pasture, but it is utterly impossible to raise seed in any other way.

The midge does not affect the *Alsike* clover, which I rank as No. 2 for usefulness. It is a strong vigorous grower, makes a large quantity of hay, especially good for cattle, but the growth of the plant after August is of very little account, which is rather a drawback. Perhaps there is nothing that will make so high a return for the outlay as raising *Alsike* seed. I have raised a large amount for several years, the price varying from \$7 to \$14 per bushel, but even this year, with low prices, my seed will turn \$40 per acre, and the straw after threshing makes excellent feed, as it does not ripen, but remains a beautiful green. I would not take \$10 per acre for it, which makes \$50 per acre, simply by sowing 6 lbs. seed per acre, besides receiving great benefit from the roots left in the ground, which are of no small account, for I find they would weigh nearly three tons per acre, which I consider better than \$15 per acre.

LUCERNE, or Alfalfa (*Medicago sativa*) is also a very valuable species of clover adapted more especially to land with an open subsoil, such as sand or gravel, as its roots penetrate to a great depth, upwards of ten feet, enabling it to resist the driest weather and produce wonderful crops, even where all other crops are parched up. It requires considerable care the first year, that is, a rich mellow seed bed, and the land should not be pastured; but after that it will produce wonderful crops and may be cut three times in the season. Although such a prodigious yielder, it does not impoverish the surface, but rather improves it. The age of this plant in our climate seems to be about eight years. It will never take the place of or rank high as the common red or *Alsike*, it not being adapted to the generality of our soils,

namely, clay loam with heavy clay subsoil, as its long roots cannot penetrate it to make it a success. For this reason it is very short-lived in such land.

Then comes the minor Clover such as the LARGE LATE, or PEA-VINE (*Trifolium pratense perenne*), also called Mammoth Clover or Cow Grass. It is very good to increase the fertility of land, but is not really good either for hay or pasture, as it grows too rank.

The YELLOW CLOVER (*Medicago lupulina*) being fibrous rooted, does very well for two or three years, as it is a very rapid grower, producing early feed, and is very good when sown with other mixtures, but is useless alone.

The WHITE DUTCH (*Trifolium repens*) is good for permanent pasture mixtures; it also makes good forage for bees, but is not as good as *Alsike* for this purpose.

The SCARLET CLOVER (*Trifolium incarnatum*) is a very handsome variety, is a very rapid grower, and will produce a late crop if sown in early spring, but is not very hardy.

The SAINFOIN (*Onobrychis sativa*) is suited to strong land; has nothing else to recommend it.

I will now mention a few of the best grasses best suited to our climate and soils. TIMOTHY (*Phleum pratense*) is too well known to need an introduction; it makes excellent hay, and is best suited for damp or heavy land, but it is one of the hardest grasses we have on the soil, as it is a surface feeder and derives most of its nutriment from the surface soil; indeed, a heavy crop of timothy on land suited for wheat is as injurious to the land as a heavy wheat crop.

ORCHARD GRASS (*Dactylis glomerata*), also called Cocksfoot, is a very good substitute for timothy. It grows all the season, and will grow as much in one day as timothy will in a week; a good hay, especially when mixed with other grasses and clovers; is not very hard on the land, and makes an excellent pasture.

MEADOW FESCUE, (*Festuca pratensis*) is one of the best, if not the very best of all our grasses; is very nutritious and productive, is adapted to any soil, and succeeds well even on poor soil. Its roots penetrate the soil to the depth of 12 or 15 inches, thus withstanding drouth. It also adds to the fertility of the soil, approaching clover in this respect, and makes a superior class of hay. It is to be hoped this grass will be allowed to stand in advance of timothy for its many good qualities and no evil one.

MEADOW FOXTAIL (*Alopecurus pratensis*) is one of the earliest and best grasses for permanent pastures, and meadows, is remarkably quick in growth, and comes early to maturity; does best on loamy or clay soils.

PERENNIAL RYE, (*Lolium perenne*). The best qualities of this grass are: it is suited to all soils and suited both for alternate husbandry and pasture, and produces excellent hay if cut as soon as coming in bloom.

KENTUCKY BLUE GRASS (*Poa pratensis*), also called June grass, is also very valuable, but in mixing it with other grasses only a small amount should be sown, as after a few years it is apt to choke out some of the better varieties.

RED TOP (*Agrostis vulgaris*) is a good grass for permanent pasture, best adapted for wet soils, but does well on any soil; is remarkably hardy, in fact will live forever if allowed to do so.

Many other varieties might be mentioned, some good; others, although good, are short lived or tender. I would select those varieties best suited to our particular soils, purchase all seeds separately and mix them ourselves, as we cannot depend upon mixed seeds so long as great impositions are practised in this direction.

After securing good seed have a good seed bed prepared, and cover not more than half an inch deep; a quarter of an inch is just as good, but I find it is better to have all the seeds lying on top than to bury them an inch or more. A roller is all that is required if used at the proper time, except on a full crop when a light harrowing may be allowed. Care should be also exercised not to pasture much in the fall, so as to allow the young plants some protection in winter.

The best mode of selection of seeds is to choose those which are as we suppose best

sued for our particular soils and situations, and profit by experience, as this is the only true guide we have on this subject at present, for this branch of agriculture has been very much neglected, and no one in this Province has had enough experience to be an unerring guide. The number of varieties shown is between eight and twelve, so arranged as to secure a good growth every day in the season which would produce such results in stock raising, dairying, &c., as would compel us all to exclaim:

"O, thrice happy farmers, if they only knew their blessings."

The Dairy.

Varying Views of Warm Water for Cows.

BY PROF. L. B. ARNOLD.

Some eight or ten years ago, at one of the annual conventions of the New York State Dairymen's Association, Prof. J. P. Roberts, of Cornell University, made a somewhat elaborate calculation of the loss sustained by dairymen, and others also, in giving their stock cold food and drink, and in particular cold drink or ice-water, during the winter season. He figured out the cost of extra food required to be consumed by stock for the sole purpose of producing heat enough to warm up the cold food and water to the temperature at which it must be before digestion or absorption could go on, or even begin. I fail to find the address in any of the reports in my possession, and doubt whether it was published, and the exact figures, of course, could not be retained, but the general conclusion is well remembered, which was to the effect that something like twenty-five per cent. of the food consumed was expended in warming the cold rations from zero to blood heat, and was entirely lost so far as all purposes of nutrition, or flesh or milk production was concerned, and that as wood and coal were a cheaper fuel than food, it would pay to warm the rations, especially the cold water, by artificial means. The reasoning by which this conclusion was reached seemed fair enough, but the conclusion itself struck the whole convention as the height of absurdity. The idea of heating water to seventy degrees to save cattle from an expenditure of animal heat for warming it up in their stomachs, was simply nonsensical, and a baseless theory in the estimation of his hearers. Water so warm, it was objected, would paralyze the stomach and weaken it, and retard digestion by the relaxation of so much warmth. Cold water, by reason of the vigorous reaction it would produce, was held to be not only better but essential. The bad light in which the Professor placed himself in the eyes of his audience excited genuine sympathy, and Harris Lewis, in the fullness of his heart, and some of the other leading spirits in the convention, were at some pains to ease him down as carefully as possible from the ridiculous position he had taken, and to have the matter die away as one of the vagaries of science in farming, and the Professor himself was probably frightened out of his own sound conclusion, for I have never known of his carrying it out on the college farm.

Recently I had the pleasure of attending the annual convention of the Wisconsin State Dairymen's Association, where, I think, was assembled more talent, and more reading, writing, speaking, thinking, and live dairymen,

than I have ever met at such a gathering before, and while enjoying the occasion I learned that three large dairymen were, at the very time Roberts was reading his paper, practically carrying out its leading feature, namely, heating water artificially for their cows to drink, and were heating to 80 instead of to 70 degrees, and were doing so with a decided benefit.

The practice of heating water for cows in winter was brought to the attention of the convention, when it appeared that a considerable number are now doing so, and that it is strongly approved as a paying operation. It was generally agreed that cows would drink about 30 per cent. more water when it was warm than when it was cold, and that they would give 25 per cent. more milk on the same feed than they would when they took water at the freezing point, and that the milk was quite as good and would make as much butter per 100 pounds as when the smaller quantity was given, all of which was in such perfect contrast with the decision of the New York convention of only a few years ago, that I could not refrain from soliloquizing how strangely do the opinions of men vary, and how conservative does the force of habit make them! Cows like warm water much better than cold, and will refrain from taking as much as they need when it is at a low temperature, and it is doubtless due more to the deficient quantity used than to any other cause that their milk fails so largely when they are compelled to take ice-water or none. Some detriment, however, must result from checking digestion by chilling the contents of the stomach, creating discomfort as well as loss of time in the labor of digestion. The marked effect which warm water has in promoting a flow of milk, it is evident, must also have a very beneficial effect upon cows when not in milk by giving them increased flesh and strength, and also upon other stock. At this season of the year when cows are coming in, or about to come in, it is doubly essential that they should be supplied with water that is some ways above freezing, so that they will be induced to take all they need without any danger of injury, and it is an excellent plan to give them some warm feed also—as they will do enough better to make it pay.

A new machine, named De-laiteuse, has been invented for eliminating water or buttermilk from butter. It consists of a sort of canvas bag into which the granular butter is placed directly from the churn. The bag is then placed into a sort of cylinder perforated with holes, and is made to revolve at the rate of 700 to 800 turns per minute. The butter is then said to be perfectly free from moisture.

Something must be done; this is avowed by the New York cheese dealers, who are unanimous in regard to the necessity for rescuing the cheese manufacture from an impending calamity, says the N. Y. Times. Unless this something is done it is evident that Canada will become the great cheese producing centre of North America. The reputation of Canadian cheese is now very high, while that of American cheese is very low. It is not possible that the narrow strip of water which separates us from Canada or the slight difference in climate, can have this result; nor has it always been thus, for it is only a recent occurrence.

Veterinary.

Breaking Vicious Horses.

(Continued from our last issue.)

More dangerous than horses that sulk in harness, or start too quickly, are the kickers, and they require still more severe treatment. For them the remedy is not so much patience as it is punishment, or, rather the patience of punishment. The gifted Prof. Bartolemew lays down the cardinal rule, that in breaking the vicious horse the homeopathic formula—*similia similibus curantur*—must be applied. If the horse is a confirmed kicker, he furnishes him with both the means and provocation to kick until he becomes not only tired, but perfectly disgusted with kicking. For instance, if the horse kicks in harness before he is hooked to the vehicle, he keeps the harness on him, and secures a bag of sawdust or straw to the crupper, so that it will hang down far enough to touch his hind legs below the hocks. Then the horse is permitted to kick until exhaustion ensues. Every day this opportunity is afforded him until kicking becomes decidedly distasteful to him. This method is efficacious with the large majority of kicking horses, but some are so cunning that they soon learn not to kick at the harmless bag, but reserve their strength for the master who devised this scheme. The horses most vicious with their heels are not conquered even with the Rarey apparatus of the Yankee bridle and strapping up one fore leg, by which the horse is thrown down, and the whip is freely used between his hind limbs. Such horses will not kick when prostrate, but will sometimes renew the battle when standing again upon their feet. More efficacious is the device which makes every kick hurtful to themselves alone. If the Rarey bridle is used, and the strap is passed between the fore legs and kept close to the body by means of a girth until it passes back nearly as far as the flank, and is then parted, so that one end, by means of a strap, is secured to one hind fetlock, and the other end to the other hind fetlock, and then drawn so tight that the mouth is brought close to the breech, then every kick with the hind feet violently jerks the mouth. So severe is the punishment that the most vicious horse will not repeat the operation more than two or three times. This operation should be repeated every day, the horse being provoked to kick, until he will, at last, raise the hind feet only to put them down again without kicking. When the master can raise either one of the hind feet, at will, and swing them forward until the stifles strike the body, or backwards, and subject them to the blows of a blacksmith's hammer, without opposition, then and not till then, is the horse conquered. With the precaution of kicking straps, he can then be harnessed to the break-cart without much fear of further rebellion. At this stage of the breaking he has become so much accustomed to the word of command that the slightest indication of kicking can be checked by a sudden jerk of the rein and a decided *whoa!* from the driver. Even the impulse to kick can thus be instantly subdued. The only injurious result of this method is the nervous fear the horse has every time you approach him, for weeks afterward, that you intend to punish him in the mouth. This will be manifested by his suddenly and spasmodically jerking up his

head whenever you ask him to take the bit, and whenever, while driving him, you endeavor to turn him from the straight course. Gentleness and patience, however, will eventually overcome this fear, and then the treatment is successfully accomplished.

Even more dangerous than the kicking horse, if such is possible, is the confirmed bolter. Unless this habit can be conquered, both the driver and the vehicle are absolutely at the mercy of the vicious brute. Frequently all the forms of bolting, from shying to the violent whirl of the horse till the vehicle is cramped and upset, arises either from timidity or defect of vision. Both of these can be largely remedied by the use of the open bridle and the power of patient kindness. Whipping never benefits such an animal, but kindness and patience, together with a firm, fearless touch, can accomplish wonderful curative results. Driving the horse up to the object of his fear so close that he may smell it, will dispel the fright better than a cruel lashing. This may take some time, but by turning again and again the horse can be made to approach the object, and then his fear will be completely dispelled. But the vicious bolter requires more savage treatment. He means destruction, and he must be punished till his evil disposition is thoroughly subjugated. He must be made to tremble at the very thought of bolting. When he bolts he should be immediately taken out of the harness and thrown down by the Rarey method, and punished while recum ent, till he feels there is no limit to the power of his master. This treatment, in connection with the open bridle, will conquer his propensity, if persevered in, till the horse knows the punishment will certainly follow the bolting.

More provoking than all these vicious habits is the practice of balking. This is generally the result of inefficient handling. It has been said that a highly bred horse will not submit to heavy draft labor, and that a game draft horse will never balk, but the one statement is no more unexpectationally true than the other. The well-bred horse, even the thoroughbred, can be made to work steadily in pulling heavy loads, provided he is properly matched and driven. If he is hooked to a pole with a cold-bred, sluggish horse, who will not start till after his spirited mate has made two or three attempts to start the load alone, then the thoroughbred is very apt to balk. But if he is matched with a horse of equal metal, and they are first subjected to light loads, beginning with the empty wagon and gradually increasing the burden as they become accustomed to a steady pull and an easy walking gait, the thoroughbred team will do more heavy work in less time, in proportion to their weight, than any other, even from the best of draught breeds. It is simply a matter of education. The thoroughbred, even the trotting horse, has been bred for speed. Lightness of draught is one of the conditions of speed. If either one is taken from the turf and placed before a loaded wagon or a plow, with the point deep in the ground, he will certainly balk. They will even prove restive if the wagon is empty or the plow turned over on its side. But gradually they will become accustomed to this kind of labor, and if it is insensibly increased, with patient encouragement they will learn to throw all their muscular power into the collar till they can be made to move prodigious loads.

Nothing succeeds with a balky horse like patience. His ears are the thermometers of his temperament. If he is disposed to stop, they will fall back, and his countenance will assume the sturdy sulkiness of the mule's. Instantly the driver should anticipate his whim by commanding him to stop before he comes to a stand-still, of his own motion. After a long pause he should speak sharply to him to start, touching the willing horse at the same instant with the whip, and by short stages, with frequent intervals of rest, the balky horse will thus soon forget his sulkiness, under the stimulus of considerate treatment and his uniform success in starting the load. The most obdurate rate of balking horses will thus be converted into a free, willing animal. But this conver

sion involves the most discriminative judgment on the part of the driver. If the team is overburdened by reason of a heavy load, or precipitous hills, then, after an ineffectual attempt, the load should be lightened. Nothing should be attempted to discourage their spirits—neither whipping, jerking, overloading, nor excessive day's work. This treatment, coupled with generous feeding and scrupulous clean grooming and bedding, and frequent watering, with intervals of human rest, while at work, will overcome the balkiness of the most faint hearted horses much more effectually than harsh and cruel management. Many devices have been resorted to for the cure of balkiness, such as blindfolding, or filling the ears with cotton and the mouth with pebbles. An aged teamster once informed the writer that if a slight cord was put in the mouth, and the horse led by the ends of the same, any balky horse could be made to start. He had never known this simple resort to fail. But all these expedients are made up, like the creed of a pagan, more from superstitions and traditions than from sound philosophy. The principles we have laid down are the outgrowth of sound reason and careful experience.

But the most successful horseman must concede that there are exceptionally vicious horses that can never be made tractable. Their insubordination comes from defective brain development, rather than from inherent wickedness. The horse that is cursed with a low, contracted countenance, exceedingly narrow between the eyes, showing the minimum of brain capacity, that is, furthermore, afflicted with a small, evil eye, and a sulking disposition that manifests itself in a sinister expression, and a never-sleeping suspicion that man is his natural enemy, will sometimes resist all the persuasive approaches of kindness, gentleness, and firmness. What progress he makes toward obedience today he forgets on the morrow. Everything that is good, generous, and cheerful he learns slowly and painfully, and forgets speedily. Every trick that is mean, cunning, and bad he learns rapidly and never forgets to practice, even upon the master who bountifully feeds him, or the careful groom who thoroughly cleans and beds him. He is just such an ingrate as the child of total depravity, who is vicious in the cradle, cruel in his boyhood, and brutally defiant on the gallows. There seems to be not even the semblance of good in him in his happiest moods. Without provocation he will kick, bite, and run away; without cause, he will sulk, balk, and bolt. Like the tormented of biblical times, he seems to be always possessed of an evil spirit. Not frequently such horses receive these afflictions as an heredity. Such sires should be castrated by law, and such dams should be sprayed by humanitarian societies interested in the welfare of domestic animals. They are a disgrace to the breed of horses, and their inherent viciousness should be promptly checked by the power of annihilation.—[Horseshoer and Hardware Journal.]

Fancy Stock.

Millions of dollars are spent every year for fancy stock of various kinds, which only disappoint their owners. The cause is one which is scarcely suspected by the self-deceived purchasers. Fancy stock is bred and reared and fed for show purposes, and the exhibitor who scores the most points and gains the most prizes expects to sell the most stock to persons who are taught to believe that the successful prize-winners are the test animals. This applies to the rotund, fattened Shorthorn at the fat stock show which gets the first prize in the show ring, but wholly fails when it is exposed—a mess of fat that is repulsive and disgusting—on the dressed meat benches, as well as to the hen which scores 99½ points for form and feather, but not a point in regard to eggs. Farmers and others buy animals for beef and milk and eggs; in short, for their profitable points, but these are never considered by breeders of fancy stock. The inference is that farmers should judge of what they purchase by intrinsic merit and not by scales of points and pedigrees used in the show ring.—[N. Y. Times.]

The Model Farm Advisory Board.

The Hon. A. M. Ross, Commissioner of Agriculture, is doing his best to place the Agricultural College and Experimental Farm on a more substantial foundation. He has been gathering information and advice from all available sources, and has displayed commendable energy in the cause of agricultural reform. His desire for a Privy Council to aid him in carrying out Model Farm reforms is a tacit confession of his own weakness and of the strength of the position of the ADVOCATE in its criticisms on that Institution.

But the Commissioner is not consistent. He had an Advisory Board consisting of three of the ablest members of the Fruit Growers' Association to aid him in the management of the fruit department of the Model Farm. He ignored their services, the result being that this department is in a deplorable state of neglect. The chances are that he or his successors will frown down the newly established Board (in case his bill passes), in a like manner, and the last state will be worse than the first.

The Advisory Board question has been agitated for some time. It was discussed at the last meeting of the Agricultural and Experimental Union at Guelph. It was then and there proposed that the Board should consist of nine members, three to be returned annually, one being elected by the Government, one by the Fruit Growers' Association, one by the Dairymen's Convention, one by the Breeders, one by the Grange, one by the Agricultural and Arts Association, and three by the ex-students of the Agricultural College. Nothing could display the inexperience and boyishness of the ex-students than the passing of such a resolution, and there is no wonder that the Commissioner ignored it, the body of farmers not being represented at all, and the continual making, changing and unmaking of such organizations being in itself a barrier to success. The Commissioner displayed commendable courage in rejecting the demands of an organization which has pledged itself to support the Government.

In one important feature, however, the Union's proposed Board is far superior to that of the Commissioner of Agriculture, it being a representative one so far as it goes. The Commissioner's Board is to be appointed by the Government, and is to consist of five members only. We do not desire to criticize a Board before it is appointed, but we feel it our duty to point out some of those dangers which can already be seen by the naked eye. We anticipate that a majority of the members of the Board will be speculators whom any Government can readily turn into a political machine, and the real farmer, whose cause they are pretending to espouse, will be farther off from justice than ever. The Model Farm has been ruled by speculators all along, and the new bill is a potent and ingenious method of giving them more power.

The appointment of a farmer's son in each county and in each district, who is to receive free education at the College, bids fair to become the gear of the machine, and will have the tendency, as the leading organ of the Government asserts, to popularize the Institute in the minds of the farmers. A forced popularity at the farmers' expense cannot last amongst intelligent men; an abiding popularity must be natural and based upon meritorious deeds. We shall see.

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.

A Paying Ration for Fattening Cattle.—I wish to ask you a question, as I see through your paper you answer such. I have three steers three years old, weight 1000 lbs. each, which have been receiving since December 1st about ten pounds each of chopped oats and small wheat mixed, one part of wheat and two of oats, all the chaff they will eat night and morning, and hay at noon. I feed chop regularly three times a day. They increased the first month, but they now seem to be going back. I want to fatten them before May. Please let me know what is the reason they don't improve faster, or is my feed sufficient, or what to do with them.—J. O., Ethel, Ont.

[Your steers should increase slightly if they are in comfortable stables, but would go back under a low temperature. If they were in a poor condition when you commenced to feed them, your ration would have produced a more marked effect than now when they have more flesh on their bones. Under any circumstances your ration is not a paying one, for no profit can now be obtained without high feeding. You may change your ration in various ways. A fairly good ration would be to substitute first-class hay for the chaff, and this would be greatly improved by the addition of three or four pounds of bran daily to each steer, at the same time reducing the quantity of chop by the same number of pounds. A still better ration would be to give oil-cake instead of bran, in about the same quantities, or a little less, or give a mixture of oil-cake and bran. Your ration is also defective from the fact that you use no laxative or succulent food; this, the bran or oil-meal will rectify, and roots will produce the same effect, but they have a much lower feeding value. If you want to continue feeding chaff, you must add more oil-cake and bran, in order that the ration may not be too bulky. Look sharply at the droppings of the animals, and see that their bowels are in good order, and vary your rations accordingly. No set ration can be made for any animal; you must use your judgment. It will pay you to sell a portion of your oats, using more wheat in their place, and buy bran and oil-cake. Bear in mind that if you use much bran or oil-cake, you should save every particle of the manure, as it is much more valuable than that produced by oats or wheat.]

Why the Boys Leave the Farm.—Why is it, Mr. Editor, that there seems to be such a desire on the part of our farmers' sons to leave the old home—that much of the unrest is due to the parents. In many cases the young lad is required to labor as incessantly as the older members of the family, and at a far too tender age is expected to do a man's work. Very frequently he is spurred on beyond his strength by ill-directed praise; praise so worded as to get more work without thought of the injury it may do. How many farmers' boys are there to-day from fourteen to twenty, who are toiling on like a horse on a tread-mill without any interest what-

ever, excepting to get their tasks done? Can we wonder that they get discontented? Fathers, sit down some of these long winter evenings and think it over. How would you like it yourselves? Give your boy an interest in something, and see what a new life it will infuse in him. Let him have a piece of ground to plant, say potatoes. Let him try some new variety. The experience gained will be something that will help him in after years. Let him market the crop. Teach him the business routine necessary to put the few dollars in his pockets. Merchants and mechanics know the value of having business habits early inculcated in their boys, but many farmers seem to think that it will be soon enough to teach their boys business when they come of age, but when that time comes: "Well, I had to look out for myself, now you must do the same thing." This system followed by so many is frequently the cause of disaster to the parent as well as the son, who from want of the business knowledge that he might have gained, makes a mistake, and father has to step in to save the family credit. The result, if continued as it too often is, leads first to the loss of credit and then the home. Boys are restless beings, full of energy that must have vent in some direction. Where wisely directed it can be made a power for good in their education. Teach them the laws of nature so far as you can; help them to experiment in such a way that the knowledge gained will help them in their business. Place good agricultural papers (there is none better than the *ADVOCATE*) and books in their hand; in short, make their home life interesting, not one unceasing round of toil, and they will think twice before leaving you in your old age to try the uncertainties of a city life. The time will soon come, in fact now is, when the farmer must know many things that a few years ago were not so absolutely necessary as they are now, and no doubt the next generation will be still further in advance of this one. We say, then, begin early, the earlier the better, to instill those business principles into our boys by giving them an interest in our work and keeping them on the farm, for intelligent farmers are working their way to the front, and will do so more and more as the old time prejudices wear away, and they are found capable of worthily bearing the honors that are in the gift of their fellow-men.—SANDIE, Vittoria, Ont.

Notes from British Columbia.—I promised you on coming to British Columbia last year to write to you. I have waited till now, so that I could write what I know instead of what I heard about the country. You will please remember I know nothing of farming on the mainland, but of Vancouver and islands I can speak from experience. The land that is really good is alder bottom. The alder is a good deal like the bass-wood in Ontario. It does not grow so large, and the stumps will rot out in four years. Where the large timber like the Douglas Fir grows it is not of much account. It grows, as a rule, on the hills and mountain side. The bottom lands are a rich clay loam, very productive; but the trouble is to fence say 20 or 25 acres in a place. The most farms have 5 or 6 pieces of alder land, separated from each other by large timber. Sanach, on Vancouver Island, has some as fine farms as you could wish. It is the richest agricultural district on the island, and distant from Victoria 18 miles. Last spring was dry and the crops were got in early, but no rain of any account fell from the 1st March until 7th of September. The consequence was that all crops were light. Hay was about the best, averaging about 1 1/2 tons to the acre; peas about 15 bushels; oats, 40; wheat, 25; and potatoes in some localities did not give more than the seed back. Of course there were some farms that did better, but I speak of the average. Old residents say it was the driest season they ever saw. Peas, oats, fall and spring wheat and potatoes, as a rule do well here, so does hay. But the farmer here does not pay enough attention to putting his land in shape to seed down. Most of the men that own farms know nothing about farming, only what they pick up by experience, as they are men that made money in the mines and invested it in farming lands. A field is seeded down to grass that an Ontario farmer would never dream of doing; full of foul weeds, not half harrowed and never rolled, it is left for eight or ten years till the moss and weeds run it out before being broken up again. Land that is seeded in the fall can't miss catching, it is so damp and wet all fall and winter. As to climate, it is beautiful. Last winter we had it cold and some snow from the 14th Dec. to the 20th Jan. Then spring came in, and although the summer was so dry it was not too warm, the thermometer about 80. It is always cold at nights; I can see no difference, summer or winter. As I said before, the fall rain set in on the 7th Sept., and it rained on and off till the 15th of this month, when about a foot of snow fell; the thermometer tonight marks 40 above zero; the snow will soon go and then spring will set in. This will be a fine dairy country, as there is fine pasture, except July and August, when green peas or other green feed is given to the cows. The water is the very best, coming as it does from the mountains. Most all the farms I have seen have a stream of running water on them. There are no flies or mosquitoes to bother stock, and three months at the outside is all the time you need to stable them. The price of butter is downwards, owing to the competition of eastern Canada tub butter. It is 40c. a pound at present, and as a good deal of the Canada tub butter is bad, it is fast going out of favor. As to prices, markets, and price of land, etc., I must leave them till the next letter.—R. J. A., Salt Spring Island, B. C., Jan. 26, 1886.

Improving Soil by Means of Ashes—Hen Manure.—Enclosed I send a few questions to be answered in the *ADVOCATE*. I have a flat sandy loam, seeded to grain; the hay was very light last year. I want to improve it next year if I can. I was thinking about ashes to put on it. I have also a field of high land which is run out; would not raise buckwheat last season. I sowed clover on it, but it did not take. I want to get it down to grass for pasture. I was thinking of sowing oats on it and seeding it down to timothy and clover. Would ashes be the best dressing to secure a crop of oats and make the grass seed take well? Questions: 1. What crops are ashes best adapted for? 2. How and when to apply dry ashes, and the quantity per acre? 3. Does the liberal use of ashes for one or two years leave the soil exhausted? 4. What is the difference in value for fertilizing purposes between leached and unleached ashes? 5. Would it pay to borrow money at 12% to buy ashes at 10c. per bushel? 6. How can I best use hen manure for onions, and what surface would a barrel cover?—SUBSCRIBER, Perth Centre, Ont.

[It is difficult to say what your land needs, as we don't know what your system of rotation has been; you should make tests to find out for yourself. Read our articles on "Experiments with Potatoes," and you will understand what we mean. Your hay having been a light crop, it is probable that the land is pretty well worn out, or is greatly deficient in one or two of the constituents of plant food. Unleached ashes, if applied alone, would probably contain much more potash than your land needs, and you should therefore add some superphosphate and some nitrogenous fertilizer, such as nitrate of soda, or sulphate of ammonia. If you use ashes alone, leached ashes would probably be better than unleached. If you cannot get commercial fertilizers convenient, your best plan is to apply a good dressing of fermented barnyard manure with the addition of leached ashes. As you have given no description of your "high land," we cannot advise you about it. 1. Leached ashes are best adapted to soils which are deficient in lime and phosphoric acid, and these soils, when thus treated, will be well adapted to any crop. 2. Ashes may be applied at any time, as their constituents are not apt to go to waste in the soil. However, you should apply them when you have the best opportunity of mixing them thoroughly with the soil. Apply at the rate of 40 to 80 bushels per acre for unleached, and double this quantity for leached ashes. 3. Yes, usually, if you use them without the addition of any other fertilizer, especially the immoderate use of unleached ashes. 4. Unleached ashes have 3 to 9 percent of potash; leached has only 1 to 2 percent. In commercial value the unleached stands highest, but in agricultural value, the one or the other may be the more profitable according to the soil on which they are applied. 5. It would pay to borrow money at 100 percent to purchase ashes at 10c. a bushel, if you know how to apply them to the best advantage. 6. Mix with say an equal bulk of dry earth, and then incorporate thoroughly with the surface soil by harrow or cultivator, or both. Hen manure having about three times more fertilizing value than barnyard manure, one-third of the quantity will produce the same effect.]

Stable Floor for Cattle.—Of the four different kinds of floors for cattle stables, viz., s'one paving, plank, cedar block, or asphalt, which do you consider the best? Also give relative cost.—C. D.

[The floor which absorbs the least moisture or urine, and makes the smoothest surface, enabling the liquid to flow readily into the gutter, is the best. All planks and blocks absorb more or less urine, and a portion of the liquid is sure to get into the joints. It is difficult to get a smooth surface from stones, and they are apt to be too hard on the feet for cattle that remain much in the stable, unless plenty of bedding is used. Asphalt or cement make the best floors for cattle, especially for cow stables, where it is desirable that there should be no odors from the urine to taint the milk. The cost depends upon the facilities for getting the material.]

Cleveland Bay Horses.—Will you kindly give me some information about the horses known as "Cleveland Bays."—L. C. D., Windsor, N. S.

[The Cleveland bay is a large coach horse, and for many years was the recognized coach horse of England. It had its origin in the vale of Cleveland, on the banks of the Tees. He was the main coach horse of the period, and was also raised for saddle and driving purposes. The renowned hunters of England were produced by a cross between him and the thoroughbred. But since the introduction of

railroads, and the increasing demand for heavy drafts for mining and other purposes, the breeding of the Cleveland bays has been neglected. However, they are again becoming popular, and the demand for them is increasing. They are a dark bay, weighing 1,300 to 1,400 pounds; height, 16 hands or more. The head is fine, the eyes mild and intelligent, neck beautifully arched, shoulders sloping, and well clad with muscle, body round and well ribbed home, tail sweeping, legs flat and strong.]

Seeding with Alsike and Timothy.—Please tell me in the March number of the *ADVOCATE* if Alsike is good to seed down along with Timothy. The land is reclaimed swamp, burnt last summer. Will Alsike last as long as red clover, and will it give as good after-feed? Does it grow again as quick as the red, and is it as liable to be killed in hard frost? Does it yield as much feed to the acre when made into hay as the red?—R. W. H., East Simcoe.

[Alsike clover is just the thing to seed with Timothy, for it matures at the same time, and is quite suitable to your soil. It lasts in the soil much longer than red clover. It is more nutritious, but has not so early or so late a growth as red clover, and it stands the frost just as well. Acre for acre, Alsike will produce more nutriment than red clover.]

Farmers' Clubs in Manitoba—Late Frosts.—SIR,—Although it is difficult sometimes to spare the subscription, it would be far more so to spare the *ADVOCATE*. We have started a farmers' club here in Swan Lake this winter, and adopted the constitution published in the *ADVOCATE* for December, 1884. Our meetings are held fortnightly, and so far have been well attended. We have had a hard time of it for the last three years in consequence of the early frosts, but I am still as confident as ever in the future of this country. With regard to the damage of wheat by early frosts, it is my experience of fourteen seasons, exceptional, and will, I think, be entirely overcome by drainage eventually. In the meantime I would strongly urge the necessity of more mixed farming, not pinning our faith entirely to the wheat crop but mixing our crops, carrying more stock, utilizing our straw, thus keeping up the fertility of the soil, and providing against unexpected damage to grain crops by establishing a home market for damaged grain.—A. C., Swan Lake, Man.

Lime as a Fertilizer.—Please inform me if lime is a good fertilizer for an old worn-out clay farm, as I have bought one, and should like to know how to bring it up?—A. C., Kilbride.

[Fertility can never be restored by the use of lime. When used alone, lime is an exhauster, not a restorer. So far as we can judge by your meagre description of your soil, we should say that barn-yard manure, with the addition of 400 to 600 lbs. of superphosphate per acre, would be the best restorer. The manure and the superphosphate will supply all the lime you need. If the soil is stiff, you may also plow under a crop of clover, if your barn-yard manure is scarce.]

Corn Cobs for Stock.—Would you kindly let me know in the next issue of your valuable paper whether there is any injurious property in the cob of corn when ground up with the corn. I am using it for my stock, but am told by several neighbors that it will kill them if I continue it long.—A SUBSCRIBER, Ancaster.

[Corn cobs have exactly the same feeding constituents as other farm crops, and can consequently contain nothing injurious. They are dangerous, however, when fed alone or with corn, for they make a very badly-balanced ration. They are too bulky and carbonaceous, and lack in flesh-forming material. The ground corn and cobs should be fed in small quantities, with bran, oil cake, pease and other foods rich in albuminoids. A few years ago we saw stock in the Southern States which had been wintered on this ration, and they looked like scare crows.]

Grasses in Manitoba.—With reference to my experiments on grasses, I met with very little success, but as I don't know whether they have had a fair trial or not, I don't wish to say much about them. Timothy was quite extensively grown last year with satisfactory results; but there is doubt as to its suitability to the country. With me red clover was a complete failure, and my Alsike and Lucerne were nearly all killed. I would recommend for pasture the following mixture:—White Dutch clover, Timothy, Orchard grass, Kentucky blue grass and native blue joint. I am sure with this you would have fresh grass from early spring until the snow would cover it. The native blue grass is the best for pastures, and has this advantage, that it increases while the other grasses decrease. It will after the first year entirely cover the ground, thus keeping the moisture in the ground, or it will get hard and dry.—J. D. S., Brandon, Man.

Farmers' Clubs—Breeding for Beef and Milk Combined.—Having seen various items in your paper concerning farmers' clubs and co-operation among farmers for various purposes, I thought I might write you for information, as we contemplate forming a club in our neighborhood, first to purchase a thoroughbred bull of good breed, and also for other purposes. I would like to ask you a few questions if you will be kind enough to answer. 1. What is the best strain to cross with a lot of what some would call scrub cows, to retain as far as possible the milking qualities they already have, and build a larger frame for beef? 2. What would be the cost of feeding and attending a bull for a year, or what would be the best rations, and what quantity to feed daily, summer and winter, for a yearling bull kept for service? Or if we club together and purchase one, what would be a fair allowance to the one that kept him? We have had one meeting, and there is a fair show for a farmers' club. Please write or answer through the ADVOCATE as you see fit, and give us all the information you can, which will be thankfully received.—B. B., Teeterville, Ont.

[We send you a copy of the August issue of the ADVOCATE containing the constitution and by-laws of the Middlesex Agricultural Council, which you can easily change to suit your circumstances. We also send copy of the AVOCATE for December, 1884, containing constitution and by-laws better adapted to small clubs. The regulations in the December issue have been adopted by various clubs in the Dominion. We do not believe in putting beef and milk into one cow; but if you want a general purpose cow you may use the Booth strain of Shorthorns upon your stock, but the Cruickshank strain would be better, it being half beef and half milk. The Booth is almost exclusively a beefing strain, while the Bates is noted for its milk. The cost of attendance should not be much for a farmer who has other stock to which he pays special attention, as all the work could be done at the same time, no extra attention being paid to the bull, and if the farmer has not much work to do in winter, the charges should be very moderate. But if he has to buy feed which he does not require for his other stock, and if much of the other work is extra, the charge will be more. In the summer extra labor would likely be more, as he should not be allowed to run at large, and green fodder should be carried to him, so that unless the fodder is also carried to his cows, the labor would be extra. In winter feed him all the good hay he will eat, with six to eight lbs. of a mixture of meal, oil cake and bran daily, with a few roots. Change the ration every three or four days, and if you find him getting too fat slack off, and always give plenty of exercise. In summer give green fodder, with five or six lbs. of meal daily. The best way to get at the cost is to weigh what he eats, say for one week, and charge the market price for the food consumed, which will amount to about 10 to 12 cents per day in summer, and 12 to 14 in winter. We cordially wish your club success, and we will help you all we can.]

Red and Alsike Clover.—Would you be kind enough to answer me through your valuable columns whether it would be advisable to mix red and Alsike clover for alternate seeding, and what you would consider the best mixture of both grasses and clovers, some thinking that red and Alsike clovers would not do well together, as one would kill the other. Please give me your advice on this subject.—W. J. S., International Bridge, Ont.

[For a hay crop they would not do well together, as the red ripens about two weeks earlier than the Alsike, and the latter out-lasts the former. Timothy and Alsike ripen together for a haying crop, and red clover ripens with orchard grass and should be sown with it. For the best permanent pasture mixtures, read our prize essay.]

Spring Fair and Stock Market of Essex.—For the past three years a spring fair and stock market has been held on the Fair Grounds at Essex Centre under the auspices of the Colchester North Agricultural Society. The enterprise has been attended with increasing success each year. The County Council has this year granted the sum of \$75.00 to assist the directors in making the enterprise more successful. At a meeting of the directors held on the 15th inst., it was decided to hold the spring fair and stock market of Essex on Tuesday, April 27th, 1886. It was also decided to admit all stock, seed, implements, &c., brought for sale free of charge. It was further decided to prepare an advertising catalogue to be circulated in the county and elsewhere, and that any person intending to offer stock for sale on that day may have the same advertised in the said catalogue free of charge by sending, not later than the 21st of March, a description of such animals to the secretary. Prize lists and sale catalogues will be sent on application after April 1st.—W. H. RUSSELL, Sec.-Treas., Essex Centre, Ont.

Hauling Manure in Winter.—Please state in the ADVOCATE which is the most economical method of applying manure for next year's crop. Would you advise drawing out on the land and spreading broadcast as hauled at this season of the year, or draw into a large heap and let remain till spring, when wanted?—S. K., Hickson.

[If you piled your manure into heaps in the barn-yard, allowing it to ferment as fast as made, the manure made before New Year will now be in a good condition to haul and spread on the land, either on the snow or on the frozen ground, but if it is unfermented and mixed with straw, you should allow it to ferment, either in the barn-yard or in the field, before spreading it on the ground, especially on light soils. The most economical and least wasteful method is to draw it right out from the stable and spread it at once without fermentation; but in this case you should use cut straw, sawdust and dry earth or muck for bedding.]

Marlboro' Raspberry.—Could you tell me where I can get some Marlboro' Raspberry plants?—L. L., St. Foye Road, Que.

[Write to the fruit growers who advertise in the ADVOCATE.]

Duty on Butter and Eggs—The Jerseys.—1. What is the American duty on butter and eggs? 2. Is the price of Jersey stock likely to rise or fall? 3. A cow that has had one calf has gone dry in one teat. Can it be remedied before next calving? G. H., Upper Steviacke, N. S.

[1. Eggs, free; butter, 4 cents per lb. 2. The present tendency of all thoroughbred stock is downward, and there is no telling what shape the next live stock boom will take. It is likely, however, that in future the breeds will be sold more on their merits, as there is a strong demand for honest records. If then the Jerseys prove themselves to be the best for butter production, their price will go up, as our butter industry is destined to make rapid strides. 3. It is too late to do anything for your cow. The loss of one teat may not affect her milking qualities.]

Permanent Pastures.—Will you kindly inform us through the FARMER'S ADVOCATE which are the best seeds to sow on land to make permanent pasture. I have 30 acres of high rolling land. We wish to seed in the spring, and wish to have it well covered with grass to save from washing in the spring. Yours truly, J. T., Franklin, Ont.

[Select from the clover and grasses mentioned in our prize essay published in this issue. The best grass for land that is subject to overflowing is water meadow grass.]

What is the Shorthorn Coming to?—One of the Model Farm professors sent out to lecture at farmers' institutes showed what science had done for the Shorthorn. He stated that science found the Teeswater a scraggy, scrubby, scrawny beast. Look at the Shorthorn of to-day—the ideal of a bovine. His beef will satisfy the appetite of the faintest epicure; the only bovine that will pay the farmer to raise, &c., &c. Thomas Hall's Teeswater cow called Tripes gave nine gallons (ale and beer measure) per day on pasture alone without any other food. Abortion was almost unknown, except from injury. Collins' white steer, that was carried about the country in a caravan for exhibition, shows that they had good feeding qualities and good constitutions. Collins said he would not keep a cow that would not give one sovereign's worth of butter a week. The spirit of the Teeswater is entirely bred out of their Shorthorn by inbreeding and pampering and stuffing them with meal, oil cake, sugar, molasses and the various compounds of the apothecary shop. The Shorthorn cows do not often give enough milk to raise their calves; they lose their calves wholesale by abortion, and the extent to which disease exists in the Shorthorn is alarming, and is transmitted to the human family by partaking of milk from tuberculous animals, and using their flesh for food. I sent the above article to a Live Stock journal, and the editor said it was got up in the interest of the Model Farm, and he would not publish the article because I was attacking the Model Farm. If that institution can't stand the criticism of an old bushwhacker the sooner it is dynamited the better.—W. C. S., New Hamburg, Ont.

[The Model Farm professors must say something for a living, else their occupation would be gone, and unless they make a boom of some kind, they fail to attract attention. The boasted "improvement" in the Shorthorn is only to catch the eye; the genuine qualities of the most aristocratic strains are depreciating every year, both for beef and milk. The highest skill of the artist is also employed in pandering to the depraved tastes of the public. Woe to science and art if this is their proudest achievements in the live stock business. Those "apothecary" rations are also to be blamed for nine-tenths of the diseases, some of which are threatening the lives of the human family. Of course, you could not expect the said editor to publish your article. He can't afford to publish the truth, for such would be his financial ruin.]

The "Scrubs" Defended—Spreading Manure in Winter—Studying Politics to Remove the Agricultural Depression.—From all the institute meetings, and from almost every other source, I hear that the "scrub bull must go" in other words, that our Canadian breed of cattle must be given up. That may be right if beef is our object, but I think it is wrong if milk is what we want. I have four pedigree Ayrshire cows and five high grade Durhams, some half-breeds of each kind, and a good many common Canadians, and for producing milk cheaply I will take the Canadian cow in preference to any breed I have had experience with. From my boyhood until thirty years of age, I was well acquainted with the Jerseys, and last fall's tests did not place the Holsteins very high in milking qualities. I have one Canadian cow at present that will beat any cow in my herd for ten months' milking. Milk being my object, why should I not raise a bull from that cow and from a young bull now in my stable? Here is his pedigree:—Sire and grand sire from first-class milkers: dam, g. dam, and z. g. dam also from superior milkers. Kindly give us your opinion on this subject, also any suggestions you may have to offer. I would beg to state to you that the field off which I lost some of the strength of the manure spread on the snow was a well drained field. It consists of eight acres and has five leading drains, also a good many branch drains. I do not agree with you that "the same shower that melts the manure will melt the soil." In my fields the frost is generally from six to twenty inches deep, and until it is all out, clear water rises to the surface and evaporates; and until that process stops, clay land will absorb nothing. You are quite right about putting out long straw in manure in winter. It has often given me quite an amount of trouble, and should all be put through the cutting box. It does not give any trouble when spread on grass land. Last February, when my cows began to come in, I used a large quantity of long straw for bedding and put the manure on a worn-out five-acre meadow, which I could not conveniently break up. Pasture came in good and we kept it at field for hay, and I think had fully three tons to the acre off it. I beg to return thanks to the "Farmer's Son, Edwardsville," for his letter, and hope every reader of the ADVOCATE will make a study of it. We have to sell our wheat, oats, barley, beef, pork, mutton, cheese and butter in a market where we must compete with all the world. Therefore, let us deeply study in what way politics can help us.—SOD, Belmont, Ont.

[Our suggestion is that your bull has a grand pedigree, and we are pleased that you have registered it in the ADVOCATE. We hope other farmers will follow your example. We charge no fee, and we are not supported by Government funds. If the farmer does not know how to build up a good dairy herd from the material he has, "registered" stock won't help him. A farmer should never buy high-priced stock till he learns how to feed and breed. Breed from the best, paying no attention to ancestral "records," even if they have not been falsified. If the dairy qualities can be traced three or four generations back, that is pedigree enough. We advocate honest investigation, leaving the farmers to use their judgment, and not taxing them because they refuse to buy aristocratic stock. We have often spread manure on the snow, both on drained and undrained soil, and have experienced no wasteful results. However, as there is difference of opinion, we are conducting an accurate experiment. We have a piece of undrained loam, gently sloping to the North-west. About a month ago we manured it heavily, part on the snow and part on the frozen ground. In spring we intend to make accurate observations as to the waste. If the rainfall is heavy we anticipate some loss; otherwise we expect none. If your land froze last fall before the water was drained out, your case is very exceptional, and this must have accounted for your waste. If farmers intend to compete with other countries they must study and practice the principles of agriculture; politics cannot help them.]

Feeding Pumpkins.—What is the proper way to feed pumpkins and squashes?—R. G., Cross Roads, N. S.

[Cut them in long slices with a large knife. If cut in short angular pieces the cattle are apt to choke themselves.]

In our last issue, page 50, in answering a question by I. J. S., relating to cure for spotted apples, the printer made a mistake in calling copperas sulphate of copper instead of sulphate of iron. We did not observe the mistake until it was too late to make the correction.

In this issue several letters remain unanswered because the writers have not complied with our "NOTICE TO CORRESPONDENTS."

The Household.

Sleepless Nights.

An inability to sleep well at night is so common, and arises from such a variety of causes, reflecting persons will direct their attention to two things: Let each one ascertain for himself the cause of his unrest, and remove that cause. This is finitely more philosophical than to take chloral hydrate, opium, or any form of anodyne whatever. If late and hearty suppers cause restlessness, make the last meal of the day of cold bread-and-butter and a cup of hot drink, and nothing else whatever. Try this a week, note the result, and act accordingly.

Some do not sleep well because the head is so low that the blood flows towards it by gravitation, and does not get back easily, hence it accumulates in the veins, makes the head too full, and sleep is impossible. If the brain is excited at bedtime from study, passion, or solicitude, then too much blood is carried to it by the arteries, and refreshing sleep is equally impossible.

There are those who toss and tumble by the hour, the mind running round in the same circle of ruinous thought, producing in some cases an agony of sweat in great drops on the forehead. It is most mischievous for such persons to remain in bed a single moment; a thousand times better get up and wash and dress, midnight though it be, and either take a walk or indulge in light reading, or some deeply interesting narrative, until you get sleepy, then slide into bed as easily as possible.

It often happens that a person wakes up in the night from some unusual circumstances, and is not able to go to sleep for some time afterwards; then there is a tendency to wake up at the same time next night without cause, and before one knows it has become a habit; it can be broken up entirely in forty-eight hours, thus: go to bed two hours later, and be waked up an hour earlier; this is an almost infallible remedy.

Hunger, or cold feet, or excessive weariness, may prevent sound sleep. Persons who do not sleep well should eat moderately of plain, nourishing food, not tempt the appetite; this aggravates the disease by making too much blood; on the other hand, if too little is eaten, the nerve tissues are starved, and make too little hydra-carbon; neither leave off study altogether, nor exercise too much.

Sandbag for the Sick Room.

One of the most convenient articles to be used in a sick room is a sandbag. Get some clean, fine sand; dry it thoroughly in a kettle on the stove. Make a bag, about eight inches square, of flannel, fill it with the dry sand, sew the opening carefully together, and cover the bag with cotton or linen. This will prevent the sand from sifting out, and will also enable you to heat the bag quickly by placing it in the oven, or even on top of the stove.

After once using this, you will never again attempt to warm the feet or hands of a sick person with a bottle of hot water or a brick. The sand holds the heat a long time; and the bag can be tucked up to the back without hurting the invalid. It is a good plan to make two or three of the bags and keep them on hand, ready for use at any time when needed.—[Selected.]

Dr. Black's Ten Laws of Health.

1. Pure air is the food of the lungs. This is obtained by scientific ventilation, which consists in admitting currents or movements of air into the apartments through two or more apertures.

2. Good and properly cooked food, not food seasoned to cover up decay, partial or complete.

3. Water not iced, but cooled upon being placed upon ice, either in pitchers or bottles.

4. Adequate exercise in the open air in order to help the skin to throw off effete matter.

5. The sun-bath. No sitting or reading in darkened rooms or those lighted by gas. Gas burns up oxygen very rapidly. Sitting under a gas jet turns the hair gray, and by over-heating the scalp destroys its vitality and causes the hair to fall out.

6. Proper and sufficient clothing. That which is loose, light and warm. Light colors for Summer, dark for Winter. In Winter wear a flannel bandage around the abdomen.

7. Occupations which are of an outdoor character—eight hours for work, eight hours for sleep, eight hours for rest. The ten-hour rule has killed more than disease.

8. Personal cleanliness is essential. Bathe once a week. Baths to be of the same temperature as the body. Bathing enables the skin to throw off effete matter, causes the dead and useless epidermis to peel off.

9. No marriage with a near relative. No Jewish marriages.

10. Avoid wine, whiskey, beer, tobacco and prostitutes. Keep thy soul and body clean.—[Medical Summary.]

Neatness at Home.

It is as imperative for women to dress to please the husband, as it is for them to adorn themselves for their lovers, otherwise a moral deception is practised, and if they change, and are less anxious to fascinate his eye, they cannot wonder that it will weary of gazing upon a picture perfectly startling in comparison with that of other days. Insensibly, but surely, the mind reverts to these things, and the man reproduces his young fancy, and asks whether his ideal beauty was not always clothed becomingly in neatly flowing but graceful habiliments, and admirably adapted to her. The ideal of woman is surrounded with everything that is beautiful and sweet; we cannot associate with her anything that is vulgar and coarse, and yet how many are content to suffer men to do so, by appearing in their loose, untidy morning wrapper, ill-devised and not always of the freshest color, with hair unkempt, and a thousand things left undone, which, though if enumerated separately, are perhaps seemingly nothing, yet conduce to produce a beautiful whole.

Taste as well as money is required to make a woman well-dressed. Those who cannot expend an unlimited amount of money in replacing finery which is ever requiring change, to prevent it from becoming tawdry, should select plain yet becoming dresses. We have seen a face look as pretty beneath a straw bonnet tastefully trimmed, as ever it did beneath the finest Mechlin lace. We have seen a ball-room belle as beautiful in a snowy clear muslin made with taste, and not a single ornament about her,

as ever did one adorned with all that is rarest in silk or lace.

The French in this one thing excel,—there is more uniformity in their mode of dress—we do not perceive the enormous gap between the poorer and middling classes that we do in England. Into this part of the subject we will not, however, enter, since it would lead us far from our purpose, which is to impress upon our readers the elevating influence of nicety in dress. It is an index of a well-ordered and cheerful mind, the sign of a cultivated intellect, of refined delicacy, of sensibility, and a capability for appreciating what is high and noble. The old proverb speaks volumes:—"Cleanliness is next to godliness;" and this refers as much to dress as to anything; and let it be borne in mind that it is far more important to carry this golden rule into the bosoms of our homes, to work it out between husband and wife, brother and sister, than it is to affect it at certain times, and for hours which swiftly pass, and when gone leave but a transient impression on the mind. Pleasure and its pursuit pass quickly; but it is love which endures,—home love, which will last a lifetime, if properly ministered to by the nameless arts which affection prompts.—[From "Young Ladies' Jl."]

The Cook's Table of Weights and Measures.

SOLIDS.

Wheat flour, one pound is one quart.

Indian meal, one pound two ounces is one quart.

Butter, when soft, one pound is one quart.

Loaf sugar, broken, one pound is one quart.

White sugar, powdered, one pound one ounce is a quart.

Best brown sugar, one pound two ounces is one quart.

Eggs, ten eggs are one pound.

Flour eight quarts are one peck.

Flour, four pecks are one bushel.

LIQUIDS.

Sixteen large tablespoonfuls are one-half pint.

Eight large tablespoonfuls are one gill.

Four large tablespoonfuls are one-half gill.

Four gills are one pint.

Two pints are one quart.

Four quarts are one gallon.

A common-sized tumbler holds one-half pint.

A common-sized wine-glass holds one-half gill.

A teacup holds one gill.

A large wine-glass holds two ounces.

A tablespoon holds one-half ounce.

Forty to sixty drops are equal to one teaspoonful.

—

Dr. Davenport, a Brazilian traveller, relates how butter is made in that country. They fill a hide with milk, and it is tightly closed and lustily shaken by an athletic native at either end, or it is dragged about upon the ground after a galloping horse until the butter comes. In Chili the filled hides are placed upon a donkey's back, and he is trotted about until the butter comes. In Morocco a filled goatskin is rolled about and kneaded by women until the same effect is produced.—[Everett, Mass., Free Press.]

SIR,—I do like the ADVOCATE well. I would as soon try to live on two meals a day in harvest as to try to get along without the ADVOCATE.—D. MCKENZIE, St. Mary's.

Minnie May's Department.

MY DEAR NIECES.—We are well aware that plenty of exercise in the open air is necessary to good health, and riding on horse-back is rightly considered a most invigorating and graceful pursuit, but one which has been too much neglected by young ladies, especially in this country. A smart canter for a few miles or a swinging trot along some country road will bring a set of muscles into play that often otherwise remain unused, rouse the torpid liver and paint many a pale cheek with roses. The eyes, lips, and every feature even, possess the fresh and sparkling grace, imparted only by the purity of the blood, and its brisk and equal circulation, which are produced by temperature and exercise. Every man of sense and genuine taste will prefer the ruddy glow of health, the active, agile step and exuberant gaiety of her who is accustomed to spend some time of every day in active outdoor exercise, to the pale, languid countenance of the lady whose leisure hours are passed without occupation in listless lounging. Ride, by all means, if you have the chance; if not, go on foot, for human life, to thrive, must have open air exercise.

MINNIE MAY.

Work Basket.

TOILET COVERS.—Handsome and durable covers for dressing bureaus can be made of plaid or plain Turkish toweling. Cut the covers the size of the bureau, and hem; crochet an edge around and finish with a scallop. Use a sharp crochet hook and you can push the needle through the toweling. Toilet sets for wash-stand can be made the same way.

SACHETS.—Are easily made and are always acceptable to gentlemen or ladies. Purchase an ounce of violet or heliotrope powder at the druggist's, and scatter a teaspoonful of it over some cotton wool and cover it over with some coarse muslin. Make an outer cover of handsome ribbon, or a piece of satin or silk or velvet, and sew up three sides of it; then slip in the scented bag, and either sew up the edges or draw them up like a bag and fasten them with a bow of ribbon or a gold or silk cord and tassels, and put a tassel or a bow on the corners of the bag. If you can paint in water colors you can decorate a bag of satin or silk very handsomely.

When your cane-seat chairs begin to wear out, mend the break the best you can by weaving in cords, or if very bad, replace with a piece of canvas securely tacked on; put on a generous layer of cotton batting or curled hair, and cover with a piece of any kind of upholstery goods, an embroidered pattern, crazy patchwork, or a large "log-cabin" block. Finish the edge with furniture gimp, and fringe if desired. The back may be finished with a similar panel.

BABY'S CARRIAGE ROBE.—A pretty carriage robe for a baby is made of crocheted seine twine, with a lining which may be of flannel, cashmere, silesia, or satin; the thinner the better for summer use.

A DAINY BED COMFORTER.—Is made in this way: Cut a piece of double-width cheese cloth large enough to reach from the pillows to the foot of the bed. Put over this a layer or

two of nice batting. Cover it with a piece of cloth like that underneath and catch it through and through in spots with blue zephyr worsted, passed lightly without drawing tight, and cut these loops left by the thread on the right side. If preferred, a strand or two of yellow can be added to the blue worsted; the general appearance will be that of daisies scattered over it. Besides being cheap and very soft-looking, it makes a very useful addition to a bed, and can be easily ripped up at any time and made over. The edges can be caught together by overcasting with worsted or binding with narrow ribbon.—[Housekeeper.]

RUG MADE OF PIECES OF TAPESTRY CARPETS.—Cut them in any shape or form the same as for patchwork, bind all of the pieces, join together the same as for a bed quilt, the dark and light; finish the edge with fringe. It must be seen to be appreciated.

One of our readers, whose letter we have unfortunately mislaid, and therefore cannot give the name, asks for directions for working the "star stitch" in crochet, mentioned in the January number. It is as follows:—Crochet a chain the required length. Without putting the wool over first, put the hook into the second chain, thread over and draw through, leaving the two loops on the needle; do the same in the next three chains successively, drawing the loop up longer, and having five loops on the needle, put wool over hook and draw through all together and make one chain to hold it. (a) Put the hook into the stitch just formed by the one chain, draw thread through, put the hook into the back part of the last loop of the star before, draw thread through, put the hook into the next two chains just the same, then thread over hook and draw through the five loops on the hook at once and make one chain; repeat from (a) to the end of the row.

Answers to Inquiries.

F. A.—The first generation are cousins, the second generation are second cousins, and so on. So the children of "A" and "B" are second cousins.

LEILA.—1. There is no set form of reply to such a question. If you are acquainted with the gentleman, and feel satisfied that he is a suitable escort, you may simply say: "I shall be very happy," or "Thank you, I will go with pleasure." 2. We can see no impropriety in a young lady sending a birthday card to a gentleman friend, providing the sentiment is a suitable one. 3. It is not customary or wise for a girl of fifteen years to attend "evening parties." The present generation grow old too fast at best, without beginning so young to keep late hours. Girls are only school girls at that age, and cannot study properly when the hours of rest are encroached upon. "One evening's dissipation spoils three day's study," which does not pay for school-girls and boys. 4. Mildew can be removed from white cloth by wetting and rubbing with salt and lemon juice on both sides of the article, and exposing to the air.

LOTTIE C.—The poem you refer to as "The Heathen Chinee," we suppose to be the one entitled "Plain Language From Truthful James," written by Bret Hart, whose poems can be obtained through any bookseller.

A SUBSCRIBER.—1. We recommend a solution of carbolic acid to destroy the green insects on your rose plants. About a tablespoonful to a pail of soft water, wetting the entire plant. 2. We know of no better way to clean white bead fringe, as it is largely owing to the dust having settled in the thread on which the beads are strung, than to unstring them and place in a cotton bag, allowing plenty of room to shake about; then rub and shake well in plenty of water, spread the beads out to dry, and string again.

LOVEY AND NELL.—1. The average height of woman varies in different parts of the world, but in this country it is about 5 ft. 4 or 4½ inches, so 5ft 5½ is a little above the average, but not what we should call "exceedingly tall," and 140 lbs. is a fair weight for a person of that height. 2. We do not know the name of A. L. O. E. 3. "Hudibras" is the title of a poem written, as a burlesque on the Puritans at the time of the Commonwealth, by Samuel Butler, about the year 1660. It is considered the best satirical poem in the English language. 4. Bridal veils are made of white tulle, reaching nearly to the feet, finished all round with a plain hem about an inch and a half wide. The veil is not usually removed until after the supper or breakfast. The bride sits in front of the wedding cake, which is placed in the centre of the table, the bride groom at the left hand and the groomsmen and bridesmaids at her right; at the left of the groom is the mother of the bride and the clergyman; the rest of the guests as you choose. The dress of a bride admits of great variation. When a veil is worn the dress should be either white, cream or some very light shade, but a rather dark dress, such as maroon or green silk or satin, or any color desired, with the exception of black, is perfectly suitable for a bridal dress, and much more serviceable to a person in ordinary circumstances, as few, except society ladies, have occasion to use very light silks. A cream cashmere could be worn and be useful afterwards for summer wear. Besides the wedding dress, you should have a good suit, which would answer for travelling and street wear; a neat house dress, and perhaps a pretty wrapper. Of course, if you choose a light bridal dress, you might need another dress, such as dark satin, or some very nice material, for best. A great deal depends upon the position you are taking. The daughters and wives of some farmers live much more retiring lives than others, consequently do not require so many changes of dress. It is very foolish for a bride to expend more than is necessary, either on dress, which soon becomes old-fashioned in style, or on a wedding breakfast, as she may need all that her friends can afford to begin house-keeping.

If you have not sunny windows do not attempt to keep flowering plants. The west windows may always be a delight if the plant stand be filled with aspidistra, ivy, begonias, and varieties of fern which only require light.

The German method of getting rid of rats: A mixture of two parts of well bruised common squills and three parts of finely chopped bacon is made into a stiff mass, with as much meal as may be required, and then baked into small cakes, which are put down for rats to eat. It proves an exterminator.

Recipes.

A GOOD WAY OF DRESSING COLD FISH.—This recipe is suitable for dressing cod, haddock, plaice, turbot. Remove the skin and bones from the fish, and break it into flakes. Have ready two or three hard boiled eggs, some white sauce made rather thick with milk, butter and flour, a little salt and cayenne, also some well mashed potatoes. Take a hot flat dish and place a bank of mashed potatoes two inches high round near the edge of it, lay the cold fish evenly over the middle of the dish. Cut the eggs in quarters and place them on the top of the fish, then pour in the sauce, which must be quite hot, fill to nearly the top of the potato bank, and put into a brisk oven to brown.

ONE HOUR SOUP.—Two pounds round steak with bone, two quarts cold water, one fourth cup each of chopped potatoes, turnips, cabbage; two tablespoons rice, salt and pepper to taste, and if you have celery add a little chopped fine, cook one hour, keeping water enough in to make two quarts of soup.

OAT MEAL BATTER CAKES.—To one half pint of oat meal cooked as a porridge, add two well beaten eggs, one cup each of sour and sweet milk, flour just sufficient to make the cakes turn, soda to counteract acidity of milk, and salt to taste. Or use all sweet milk and baking powder.

BAKED CABBAGE.—Boil a cabbage, then put in a colander, and drain it until perfectly dry; then chop fine; put in pepper, salt, and a little cream, and put in an earthen baking-pan and into the oven. Bake one hour.

TEA BISCUIT.—One quart flour and three heaping teaspoons baking powder; sift together well, and add enough nice rich milk to make dough as soft as can be rolled; flour the board and roll till about an inch thick. Have ready three tablespoons soft butter, into which beat two tablespoons white sugar, spread evenly and quickly over the dough, commence at one edge and roll, like jelly cake. When all rolled up, commence at one end and cut off pieces an inch thick, with a very sharp knife, till the roll is all cut up; place quickly in the biscuit tin, and into a hot oven; they will bake in about twenty minutes. They should be handled as little as possible; the more quickly they are put together and got into the oven the better they will be; easily made, and just delicious.

CREAM FRITTERS.— $1\frac{1}{2}$ pints flour, 1 pint milk, 6 beaten eggs, $\frac{1}{2}$ nutmeg, 2 teaspoons salt, 1 pint cream; fry in small cakes, in very hot fat.

AUNT LUCY'S APPLE CUSTARD PIE.—Peel some apples; stew until tender (not too much water), put through the colander; for 1 pie take 3 eggs, $\frac{1}{2}$ cup butter, $\frac{1}{2}$ cup of sugar, flavour with lemon (fresh or extract), and nutmeg; use only the yolks of the eggs in the pie, and cover with the whites, and brown the same as for lemon pies.

CAKE WITH MAPLE FROSTING.—Three eggs, one cup white sugar, two tablespoons sweet milk, one heaping cup flour with two teaspoons baking powder in it. *Filling*—one cup maple syrup boiled to wax; beat the white of one egg to a stiff froth, and pour on the syrup, stirring briskly. Very nice.

PLUM PUDDING.—Baked.—Six butter crackers, rolled fine and soaked in three pluts of milk. Cream one-quarter of, a cup of butter

with one cup of sugar; add a teaspoonful of mixed spice and six well-beaten eggs. Stir it all into the milk, and add one pound of the best raisins. Bake in a deep pudding dish, well greased with cold butter. Bake very slowly in a moderate oven three or four hours. Stir several times during the first hour to keep the raisins from setting.

Household Hints.

A good way to clean an iron sink is to rub well with a cloth wet in kerosene oil.

Glaze the bottom crust of fruit pies with white of an egg and they will not get soggy.

Whole cloves are now used to exterminate moths, and are better for that purpose than either tobacco, camphor, or cedar shavings.

By rubbing with a damp flannel dipped in the best whiting, the brown discoloration may be taken off cups in which custards have been baked.

The Village Choir.

[Some distance after Tennyson.]

Half a bar, half a bar,
Half a bar onward!
Into an awful ditch,
Choir and Precentor hitch,
Into a mess of pitch,
They led the Old Hundred.
Trebles to right of them,
Tenors to the left of them,
Basses in front of them,
Bellowed and thundered.
Oh! that Precentor's look,
When the sopranos took
Their own time and hook,
From the Old Hundred,

Screached all the trebles here,
Boggled the tenors there,
Raising the parson's hair,
While his mind wandered;
Theirs not to reason why—
This psalm was pitched too high;
Theirs but to gasp and cry—
Out the Old Hundred.
Trebles to right of them,
Tenors to left of them,
Basses in front of them,
Bellowed and thundered.
Stormed they with shout and yell,
Not wise they sang, nor well,
Drowning the sexton's bell,
While all the church wondered.

Dire the Precentor's glare,
Flash'd his pitchfork in air,
Sounding fresh keys to bear
Out the Old Hundred.
Swiftly he turn'd his back,
Reach'd he his hat from rack,
Then from the screaming pack
Himself he sundered.
Tenors to right of him,
Trebles to left of him,
Discords behind him
Bellowed and thundered.
Oh, the wild howls they wrought;
Right to the end they fought!
Some tune they sang, but not,
Not the Old Hundred.

—*Andre's Journal.*

Pat borrowed some money of a friend, and was unable to pay it back when he came for it; and the friend became very angry, and said: "Now, Pat, if you don't pay me that money by next Monday, I shall give you a thrashing." The next day, as Pat was strolling along the street, he jostled a man, who cried out, "Look out what you are doing or I will knock you into the middle of next week." "Be jabbers: an' I wish ye wud, sorr'; for then I wud be over Monday."

The Girl that Everybody Likes.

She is not beautiful—Oh, no! Nobody thinks of calling her that. Not one of a dozen can tell whether her eyes are black or blue. If you should ask them to describe her they would only say, "She is just right," and there it would end. She is a merry-hearted, fun-loving, bewitching maiden, without a spark of envy or malice in her whole composition. She enjoys herself, and wants everybody else to do the same. She has always a kind word and a pleasant smile for the oldest man or woman; in fact I can think of nothing she resembles more than a sun-beam, which brightens everything it comes in contact with. All pay her marked attention, from rich Mr. Watts, who lives in a mansion on the hill, to Sam, the sweep. All look after her with an admiring eye, and say to themselves: "She is just the right sort of a girl!" The young men of the town vie with one another as to who can show her most attention; but she never encourages them beyond being simply kind and jolly; so no one can call her a flirt; no, indeed, the young men all deny such an assertion as quickly as she. Girls—wonderful to relate—like her too, for she never delights in hurting their feelings, or saying spiteful things behind their backs. She is always willing to join in their little plans and assist them in any way. They go to her with their love affairs, and she manages adroitly to see Willie or Peter, and drop a good word for Ida or Jennie, until their little difficulties are all patched up and everything goes smoothly again—thanks to her. Old ladies say she is "delightful." The sly witch—she knows how to manage them. She listens patiently to complaints of rheumatism or neuralgia, and then sympathizes with them so heartily that they are more than half cured. But she cannot always remain with us. A young man comes from a neighboring town, after a time, and marries her. The villagers crowd around to tell him what a prize he has won, but he seems to know it pretty well without any telling, to judge from his face. So she leaves us, and it is not long before we hear from that place. She is there, the woman that everybody likes.—[*Christian Advocate.*]

A woman living near Glendive, Montana, was the owner of a pet dog, which on Tuesday last, when playing, gave a yelp of almost mortal terror as a large eagle, with wings larger than a blacksmith's apron, swooped down and picked up the little cur in his talons. On this instant its owner flew into the kitchen, where her husband kept his shotgun, and hurried to the front door gun in hand. In an instant she directed her eye into the air, where, soaring about ten feet distant, she discerned the emblem of national liberty with her yellow poodle grasped convulsively, but firmly, in its claws. For a moment she ran her trained eye along the barrel of the gun, in the direction of the bird, and banged away. When she opened her eyes the eagle was prospecting interstellar space, and the dog lay scattered around in fragments all over the yard.

SIR,—Inclosed I send one dollar for FARMER'S ADVOCATE for 1886. I like your paper very much, it is the only real farmers' paper in Canada that I am acquainted with, although I get several. Wishing you every prosperity in your undertaking, I remain a lover of the ADVOCATE.—J. W. REID, Reabara.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES,—When reading your letters and trying to decipher your writing as well as your puzzles, it struck me that really the writing of nearly all of your letters was unworthy of a small boy or girl in the first or second readers. What with letters of all shapes and sizes, some sloping to the right, some tumbling over one another to the left—till the puzzles looked very much as though a spider had contrived to fall into the ink-pot, and then crawled over a sheet of paper until he had got rid of the ink that covered his body and legs. Surely you are not encouraged by your master in your carelessness and taught to consider bad writing a sign of genius. Nevertheless handwriting is not taught so carefully and industriously as in by-gone times, partly because the headlong speed which characterizes most of our daily transactions; there seems to be some fear lest penmanship may become as much a lost art as letter-writing. Our ancestors, who knew nothing of the frenzied rush of our nineteenth century life, regarded correspondence as a serious matter not to be lightly undertaken; but then what marvels of composition and calligraphy many of their letters were. How often does it happen that a letter is received from a correspondent the very signature of which is not decipherable? Seek for information from the Post Office authorities upon this point. From this cause thousands of letters are posted annually with the signature of the intended recipient cut out and pasted on the envelope! What ordinary persons cannot make out, let the Post Office people take it in hand; and, strange to say, they generally manage to solve the riddle. Yet surely such a state of things should not be possible amongst a nation which prides itself upon its system of education. Taking all the facts of the case into consideration, I have decided to arrange a competition amongst the young readers of the *ADVOCATE*, with a view to encourage beauty and legibility in hand-writing, and therefore I offer three prizes, one in each of the following classes:

1. Ladies' Hand-writing, prize, a silver bracelet.
2. Girl's Hand-writing (under fourteen), prize, a pair of silver earrings.
3. Boy's Hand-writing (under seventeen), prize, a beautiful pocket-knife.

These competitions are open to all readers of the *FARMER'S ADVOCATE*. In each of the classes 1, 2, 3, in which the candidates may enter, the following letter should be written: (Full address and date.)

DEAR SIR,—I have the pleasure of sending you a specimen of my hand-writing in competition for the prize offered by you in class (here give the number of the class). I can hardly hope to be successful, but, as the old proverb says, "Nothing venture, nothing win," so I take my chance.

I am, dear sir, faithfully yours,

UNCLE TOM,
"THE FARMER'S ADVOCATE,"

All specimens of hand-writing must be in by the 25th of March; but because I give you this as a little variety I do not want you to neglect the puzzles. Send me some real good ones for April.

UNCLE TOM.

Puzzles.

1—ANAGRAM.

Drwso fo nikesnd rwsod fo nawring
Mede ont rvee peko ni niva
Neev ot hotes hyt nesoloc nooriusg
Fot labal hyte rtenur nagia. MARY ALLAN.

2—DROP VOWEL PUZZLE.

W. c-mp-l- n-fth- t-m-s
B-t th y n-v-r w-ll m-nd
T-ll w- l-v- p-t- th- r-l-
T- --rn m-r- th-n w- sp-nd. MARY ALLAN.

3—ENIGMA.

From the depths of the sea,
From the foot of a rock,
I am brought to the earth
To do dirty work;
I have mouths to take in
All the liquor I meet,
And am given to drinking,
Though never to eat. LIZZIE C. WATT.

4—ACROSTICAL CHARADE.

My first is found in the north,
My second is found in the east,
My third is found in the west,
My fourth is found in the south,
And my whole comes from all points of the compass. FAIR BROTHER.

5—PICTORIAL REBUS.



6—PROPER DIAMOND.

- 1—In "Uncle Tom."
- 2—An insect.
- 3—A place for offerings.
- 4—One of the British Provinces.
- 5—(Ital.) a slow movement in music.
- 6—Meaning river Span.)
- 7—In the *ADVOCATE*. FAIR BROTHER.

7—HIDDEN CAPES.

The thaw rather hindered us in our journey.
Can Sophia crochet neatly.
She is able to read Latin.
Is life a rare blessing. LILLIE STOVIN.

8—ENIGMA.

My first is in Henry, but not in Sam.
My second is in oyster, but not in clam.
My third is in drum, but not in flute.
My fourth is in shoe, but not in boot.
My fifth is in eagle, but not in hawk.
My sixth is in stroll, but not in walk.
My seventh is in horse, but not in mare.
My eighth is in look, but not in stare.
My ninth is in stable, but not in stall.
My whole is a part of Niagara Falls.

Names of those who have Sent Correct Answers to Feb. Puzzles.

R. P. Hogan, Frank L. Milner, Martha E. Jackson, Lillie Stovin, Fair Brother, Will Thirlwall, Becca Lowry, Robert Wilson, Minnie B. Ricketson, Adele La Pierre, Mary Burnett, Robert J. Risk, Lizzie C. Watt, Mary Allan, Ada Armand, Becca Forbes, Beatrice Gunn, Mary Marshall, May Coulson, Willie B. Bell, Henry Reeve.

Answers to February Puzzles.

- 1—Dee, Humber, Elbe, Thames, Oder.
- 2—Meanness shun and all its train,
Goodness seek and all is gain.
- 3— A W E
W H O L E
V A L U R
W A V E S
S C E N E
W O R T H
G A I L Y
S I G N I F Y
P R A Y E R F U L

4—The whole secret of good manners is to "Do unto others as you would that others do unto you."

5— M
D I N
M A N O R
W I T N E S S
M I N N I E M A Y
V I N E G A R
H O M E R
M A R
Y

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

7— M O T H S
T O R C H
S C O W L
S T O R E
T A S T E

8—Be wise worldly, be not worldly wise.

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

10—Swift=sift=W.
Steam=stem=A.
Store=sore=T.
Niece=nice=E.
Cord=cod=R.
Flag=fag=L.
Coast=cast=O.
Host=hot=O. } Waterloo.

THE BENEVOLENT OLD MAN.—Just as evening was closing in, a curly-headed little boy was standing on tiptoe on the door-step of a house in Chelsea, trying to reach the door-bell. Just then a benevolent old man passed along. He paused, and, with a kindly smile, patted the boy on the head.

"My son, that door-bell is a little beyond your reach, isn't it?"

"Yeth, thir."

"Ah!" continued the old gentleman, musingly. "It is a fit symbol of the striving of youth after the unattainable. How often in this world the thing we most desire is beyond our grasp! And when, after continued effort we have secured the object of our ambition, how often we find that it is not worth what it has cost! My little man, I am taller than you shall I ring the bell for you?"

"If you want to," replied the boy, looking at him out of the corners of his roguish eyes.

With another fatherly smile, the old gentleman gave the bell handle a vigorous pull. What was his amazement to see the boy jump from the steps and slide around the corner with the words:—

"You'd better hurry now, or they will be after you!"

The boy had scarcely disappeared, when an upper window opened and the contents of a bowl of water descended on the old man, accompanied with the words.

"Take that for your impudence!"

There is one man in Che'sea who thinks he will not help any more little boys pull their neighbors' door-bells—at least until after he has asked a few questions.

Apt Pupils.

Ah, duckie! poor duckie! how did it happen that it is your sad fate to make a dainty meal for those really "cute" looking little foxes? Little did you think that beautiful soft breast would be cruelly ruffled by Foxie No. 1, while greedy Foxie No. 2 gnaws at the sinewy leg, and Foxie No. 3 crushes with his sharp little teeth the foot which has been a good servant to you on both land and water, while No. 4 runs off with your pretty feathers. No. 5 looks on with apparent interest; his claws will soon find

know?) Mother says she doesn't know; they were all there when she saw them last. But rosy-cheeked Jennie comes to the rescue. "When me and Minnie Gray was going to school this morning, we seen a fox running through the woods. It had a sharp nose and short ears, its back was yellowish gray, but its breast was white, and it had a long, bushy tail. We scared it away, but the ducks was in the creek and it run that way." (Come now, Jen., read over your statement with me again—can you correct it?) That tall boy poring over a

And so, duckie, that is how you came to be in the foxes' nest. You will not soon be forgotten, but before those greedy little rogues eat you up, come Jennie, Rob, Will, and even father and mother, and take a parting glance. Jennie and Rob, if you were half as apt at school to do what you are taught, do you think you would be gnawing grammar even as the little foxes gnaw poor duckie. Will, more thoughtful, does it not flit across your mind what the wisest of men said about "the foxes, the little foxes, that spoil the vines." Don't, we beseech you



APT PUPILS.

other resting-place than the back of No. 3; while the provider of this interesting household looks on his "Apt Pupils" with a great deal of satisfaction showing itself in the expression of his face, for foxes, like people, can look pleased or displeased, according to the circumstances. Little duckie, in the foxes' nest, can you not teach us a lesson? Is there a farm-house somewhere in which a little, brown-handed, open-faced boy shouts, "Ma, there is only nine ducks; where's the other one?" (Little boy, when the duck question has been settled, correct your grammar. Who can tell him if he doesn't

book now speaks. "When father and I crossed the bridge this morning, we saw one of the ducks straying away from the others. Is it the pretty white one which is missing? (Will, we too would read with you—be the book grammar, history, or an agricultural journal. When boys on the farm learn to speak as you do, we will make politicians respect our rights and listen to our voices.) In answer to Will's question, brown-handed Robbie mournfully says. "Yes, the one I called mine;" then, vehemently, "I wish I had a gun—I'd kill them old foxes."

with a sister's affection, let the little foxes of indifference, idleness, carelessness, rudeness and slothfulness destroy your promising manhood. Father and mother, would you keep your flock from straying? would you not grieve, as you never grieved before, should even one of the flock become a prey to the foxes? Then, while young and while the power is yours, attach them to you and to your home by a cord so strong, that however far they may have to separate, the hallowed influence of a Christian home may ever keep them in the "green pastures" of right-doing.

NEW ADVERTISEMENTS.

AUCTION SALE
 OF HIGHLY-BRED
BATES' SHORT-HORN CATTLE,
 Horses, Sheep, Implements, &c.

Having made a business arrangement in the West, and rented my farm, I will sell by auction, without reserve, on my farm, lot 25, con. 16, London Township.

On Wednesday, March 10, 1886,

my entire herd, consisting of 18 females and 9 bulls, headed by the Imported Bull, "Wild Eyes Selgrava," 5 splendid Yearling Bulls—4 reds and a red roan. Also 7 Horses, &c. Terms—six months on approved joint note, or six per cent. per annum off for cash. The farm is 16 miles from London, 1 1/2 miles from Denfield (a station on the L. H. & B. Railroad). Sale to commence at 11 a. m. sharp. Catalogues on application.

241-c

JOHN GIBSON, Denfield, Ont.

Holstein-Friesian Cattle
AT AUCTION


AT GRAND'S REPOSITORY,
 47 TO 53 ADELAIDE-ST. WEST, TORONTO, ONT.
 W. D. GRAND, AUCTIONEER.

TUESDAY, MARCH 30TH, 1886, AT 11 A. M.

The great demand in Canada for these cattle, and the inconvenience attending the quarantining of small lots, has induced us to send a shipment of 28 head from our own herd, to which will be added about 15 head from the prize herd of H. M. Williams, of Picton, Ont. These cattle will arrive at Grand's Repository, March 25th, and remain there for inspection until date of sale. Every animal is registered in the Holstein or Holstein-Friesian Herd Book of America, and the certificates of registry and transfer papers will be furnished with each animal sold.

For illustrated catalogue address

B. B. LORD & SON,
 242- Sinclairville, Chaut. Co., New York.

IMPORTANT AUCTION SALE
 —OF—
SHORTHORN CATTLE
 —ON—

Wednesday, April 7th, 1886,

at my farm, four miles from Brampton, on G. T. R. and C. P. R., and two miles from Edmonton, on C. P. R. I will sell 45 head of pure-bred Shorthorns—35 females and 10 young bulls. These are good cattle, with pedigrees that will stand the test of all the herd books. Catalogues will be ready by first of March, and will be sent on application.

243-a **J. O. SNELL, EDMONTON, ONT.**

FARMER WANTED.

A first-class man of experience, energy and ability, to take charge of

A LARGE AND WELL-EQUIPPED FARM

Good wages to a suitable man on a year's engagement. Address until March 15th with experience and references. Address—"H. A. P." FARMER'S ADVOCATE, London, Ont. 243-a

THE GLASGOW AND LONDON INSURANCE COMPANY making a speciality of Farm Insurance, and issuing a liberal Policy for such, are desirous of securing agents in certain townships in Ontario. Township Clerks and Treasurers invited to apply for same. Liberal terms to the right men.
 Address **HEAD OFFICE, MONTREAL,**
 243-a

Advertise your Stock in the Farmer's Advocate.

Best Advertising Medium in America.

Grand's Repository, Toronto.


R. PAUL, Proprietor.

Great Combination Sale

—OF—
THOROUGHbred CATTLE

of all breeds, and

150 HORSES AND STALLIONS

of all Descriptions and Classes, on

MARCH 30th and 31st, and APRIL 1st and 2nd.

Messrs. Lord & Sons and Mr. H. M. Miller's consignments of Imported Holstein Cattle will be sold first day. We respectfully solicit correspondence from breeders and others having stock of any kind to dispose of.

W. D. GRAND,

243-b

Manager and Auctioneer.

HORSES.
IMPORTED HORSES FOR SALE.

W. A. Schoenau, of Mildmay, Ont., has just received from Scotland, per steamer *Carthage*, a fine lot of Clydesdale Horses; 3 Fillies, and 3 Stallions, from 1 to 3 years old; all registered Pedigree and which will be sold by auction at Mildmay, County of Bruce, on **TUESDAY, MARCH 9th,** at 3 p.m. All parties wanting first-class stock should attend this sale. Terms made known at time of sale, 5 per cent. off for cash. Also the highest price paid for first-class Carriage Geldings, Bays or Browns, about 16 hands high.

W. A. SCHOENAU.

243-a



FOR DESTROYING TICKS AND VERMIN ON Sheep, Cattle and Horses, Leicestershire Tick and Vermin Destroyer is well worth the price, year, double the price. It was first used in England with wonderful success, and has now been introduced into Canada, and is sold at 30 and 60 cents a box: one small box is sufficient to treat 20 sheep. It effectually destroys Ticks, Lice, Worms or Grub, to which sheep, horses or cattle are subject, and enables the animal to thrive. It is used as a wash. Sold by Druggists. **G. C. BRIGGS & SONS,** Agents, Hamilton, Ontario. 243-c

FOR
Fruit Packages

—AND—
BASKETS

Of every description and of the best quality, send to THE

OAKVILLE BASKET FACTORY!

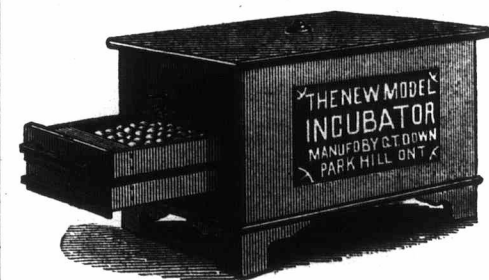
Strawberry and Raspberry Baskets.
 Cherry, Peach, Plum and Grape Baskets.
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 1, 2 and 3 Bushel Baskets.
 Satchel and Market Baskets.
 Gardener's Plant Boxes.
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W. B. CHISHOLM, - Oakville.
 243-d

OWN A HOME—\$3 an Acre for 40 Acre Farms. Raise two crops a year. Worth at home \$100 to \$400. Send 25 cents in Canada Stamps for Circulars and State Map.
J. M. STIGER, Glenmore, Wan Co., State of Georgia, U. S.
 243-a

Brockville Chemical & Superphosphate Co
 (Limited)
BROCKVILLE, ONT.,
 MANUFACTURERS OF

SUPERPHOSPHATES
 and Artificial Manures,
 Oil of Vitriol, Muriatic and Nitric Acids

Write for prices and particulars. 243-c

THE NEW MODEL HATCHER.


The cheapest, simplest, and most practical machine for hatching poultry; also Brooders, Egg Testers, Galvanized Wire Poultry netting, Poultry Journals &c. One Thousand Breeding and Exhibition Birds for sale write for price list.
 241-c **G. T. DOWN,** Park Hill, Ont.

VIRGINIA FARMS—Mild climate, cheap homes. Northern Colony. **A. O. BLISS,** Centerville, Va. 239-y

FARMS FOR SALE
 IN MICHIGAN.

New Price List just issued for Free Distribution. Over 200 of the finest farms in the State fully described. Also a map of Michigan, showing railroads, towns, cities, etc.

GEO. W. SPOVER,

REAL ESTATE & LOAN AGENT.

103 Griswold St., Detroit, Mich. 242-b.

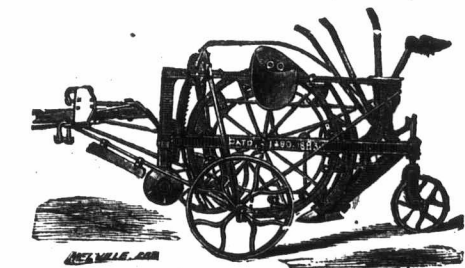
FOR SALE
100 ACRE FARM

Seventy clear, in high state cultivation, good buildings. One and a half miles from town, very desirable place for a farmer from the Old Country.

CHAS. CLARK,

243-a

BOTHWELL, Ont.


ELEVATOR DITCHING MACHINE
 FOR UNDERDRAINING.

One man with The Elevator Ditching Machine can do more work than thirty men with spades.
 Manufactured by **WM. RENNIE, TORONTO.**

In order to procure the Ditcher for spring delivery orders should be given at once. 243-

FRIENDS! If you are in any way interested in **BEES OR HONEY** We will with pleasure send you a sample copy of our **SEMI-MONTHLY GLEANINGS IN BEE CULTURE**, with a descriptive price-list of the latest improvements in Hives, Honey Extractors, Artificial Comb, Section Honey Boxes, all the books and Journals, and everything pertaining to Bee Culture. **Nothing Patented.** Simply send your address, written plainly, to **A. I. ROOT, Medina, Ohio.** 243-a

SEND FOR CATALOGUE

of my sale of 45 head of Short-Horns, 35 Females and 10 Bulls, on Wednesday, April 7th.

J. C. SNELL,

243-a

EDMONTON, Ont.

SEEDS

EVERYTHING FOR THE FARM & GARDEN
Our new Catalogue for 1886 mailed free to all who apply.
A choice selection of SEEDS, SEED GRAIN,
SMALL FRUITS, &c. Send for one. Address
JOHN S. PEARCE & CO., LONDON, ONT.

PERMANENT PASTURE

EVERY FARMER IN CANADA SHOULD HAVE A GOOD PERMANENT PASTURE, WHICH CAN ONLY BE SECURED BY SOWING A SUITABLE MIXTURE OF GRASSES IN PROPER PROPORTIONS

RENNIE'S MIXTURES FOR PERMANENT PASTURE

have been prepared from prescriptions based on a practical experience of 16 years, and have given the most complete satisfaction to purchasers in former years. The Mixtures contain the best and most nutritious GRASSES and CLOVERS, and are specially prepared for HIGH LANDS and LOW LANDS. A full seeding of 30 lbs. supplied per acre. PRICE, per acre, \$4.50 (bags extra). For quantities of ten acres and upwards, PRICE, per acre, \$4.25. Special quotations for quantities of 100 acres or over.

Wm. Rennie's Illustrated Seed Catalogue for 1886

of FIELD, GARDEN and FLOWER SEEDS, will be mailed free to all intending purchasers on application 243-a Address, WILLIAM RENNIE, SEED GROWER, TORONTO, ONTARIO.

"THE NIAGARA"

The Grape for Vineyard Planting.

PLEASE TAKE NOTICE.

Murray Pettit, of Winona, Ont., Canada, received as the net proceeds of the crop of 1885, from 300 Niagara vines planted in 1882, \$553.20, over \$1.84 4-10 per vine, being at the rate of \$802.14 per acre.

John S. Collins, of Moorestown, N.J., from a little less than four acres of Niagara vines set in 1883, sold in 1885 (two years and six months from the time of planting) fruit to the amount of \$1652.36.

R. R. Smith, of Winona, Ont., Canada, who has a vineyard of 800 Niagara vines, reports sales in 1885, from his vines planted in 1882, \$1.60 net per vine, or \$896.00 per acre.

John S. Carter, of Port Monmouth, N.J., received as the net proceeds of his crop of Niagaras in 1885 over \$1.54 per vine, having taken off more than one-quarter of the fruit which set, for the purpose of making ALL fine clusters, making \$678.60 per acre.

Vines for vineyard planting on special terms. Address the sole owners—

NIAGARA WHITE GRAPE CO., Lockport, N. Y.

243-a

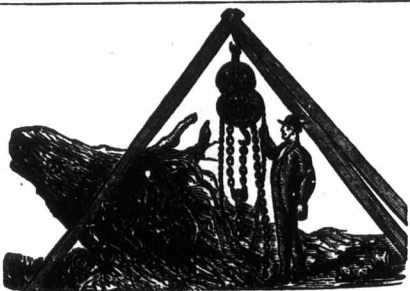
PERCHERON HORSES

ALL PERSONS CONTEMPLATING THE PURCHASE OF A STALLION OR BROOD-MARE ARE REQUESTED TO SEND AT ONCE FOR OUR ILLUSTRATED AND DISSCRIPTIVE CATALOGUE WHICH WILL BE MAILED FREE

SAVAGE & FARNUM ISLAND HOME STOCK FARM DETROIT, MICH.

COME AND SEE OUR STOCK

243-tf



STUMP MACHINES! STONE MACHINES! SPINNING WHEELS!

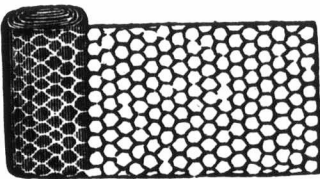
We manufacture four different sizes of Stump and Stone Machines, also Bryce's Pat. Spinning Wheel. This Wheel fastens to any ordinary table; can be worked sitting or standing; for speed and ease beats them all. Sent to any part of the Dominion on receipt of price, \$5.00. Every wheel guaranteed to give satisfaction. Send for Illustrated Circular. Agents wanted. Address

243-y

J. W. ANDERSON, BARRIE, ONT.

WANTED,

An active interest in a Stock and Breeding Farm in Ontario. Could invest three or four thousand dollars. Apply, with references, "Farmer," Canada Advertising Agency, 49 King-st. West, Toronto. 243-a



POULTRY NETTING

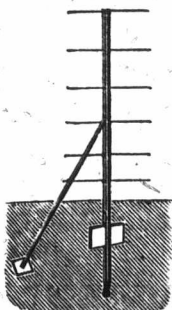
GALVANIZED WIRE POULTRY NETTING. Meshes from half-inch to two inches; widths, 30-inch to 72-inch in stock. Ask your hardware dealer for Greening's Poultry Netting. Circular on application. B GREENING & CO., Hamilton, Ont. 243-a

VIRGINIA FARMS & MILLS For Sale & Exchange. FREE Catalogue. R. B. CHAFFIN & CO., Richmond, Va.

FENCING CHEAP AND DURABLE.

E. C. JONES' Patent Iron Fence Post

(Patented Oct. 29th, 1884.)



The attention of the public is called to E. C. JONES' Patent Iron Fence Post and Gates, they having met with universal approval wherever tried.

Some of the advantages of this fence are its great durability and strength; it will not cause snow to drift; is much cheaper than wooden fences; is fire and wind proof; takes less time to build, and gives thorough satisfaction when done.

SEE TESTIMONIALS:

JONH GAGE, Esq., 200 rods of this fencing; has ordered 400 more for this spring. THOS. BARNES, Esq., 150 rods last season; 50 more ordered for this spring.

I have put up about 25 rods of Mr. E. C. Jones' Patent Fence, and I think it a very cheap, durable, neat fence, and take pleasure in recommending it to the public.

North Easthope. (Signed) ALEX. FISHER, Oakville, 7th August, 1885.

Mr. Jones put up for me last autumn some rods of his Iron Wire Fence. It has stood the winter perfectly, and I am quite satisfied with it.

(Signed) E. S. JACKSON, Stratford, June 29th, 1885.

Mr. Jones has put up for me some 20 rods of Wire Fence, using his new Patent Iron Post. I think the fence for cheapness, durability and neatness excels anything ever brought before the public. This is just the fence for our farmers, and in cost is within the reach of all. The Posts and Gates will never give out and never rot.

(Signed) D. D. HAY, Lot 10, East Range, Seneca Township, Haldimand Co., Feb. 4, 1886.

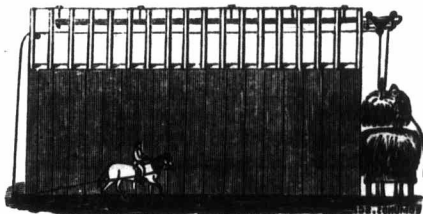
One year ago, having decided to put up a wire fence along the front of my place, and wishing to get the best in use, went to see Mr. E. C. Jones' Fencing, and four other kinds; deciding Mr. Jones' Fence was the best for the money, I gave him an order for 34 rods, including three Gates, one of each kind of his manufacture; they give the best of satisfaction. I can highly recommend Mr. Jones' fence to the public, as I am satisfied it is the best fence for the money in Canada, and is an ornament to any place. There have been hundreds of people admiring my Fence since it was put up.

Yours truly, (Signed) NORRIS HUMPHREY.

The Cost is from 50c. to \$1 per Rod, according to the number of Wires and Posts.

For further particulars and testimonials apply to the patentee, E. C. JONES, 79 Catharine Street, Hamilton. Orders for Fencing should be in as soon as possible to insure it being up in good time. Territory for sale at reasonable rates. 243-a

BUCHANAN'S Improved, Doubling-Acting



PITCHING MACHINE

FOR UNLOADING HAY AND ALL KINDS OF LOOSE GRAIN.

This machine can be used in barns, sheds or on stacks. It can be used to unload to either side of the barn floor without being turned around on the track, thus saving the trouble and annoyance experienced in climbing to the top of the barn to make the change. This is a special feature in my double-acting carrier, for which I hold letters patent for the Dominion, and hereby caution the public against buying from any others than me or my authorized agents, any infringement, as I will hold all persons using imitations liable for damages. This machine has never been beaten, either on a fair ground or in the barn, although it has been submitted to any test that the opposing makers could suggest, and proved to be a much better machine in the barn at work than on the fair ground empty. We will send this machine to any responsible farmer on trial, and guarantee satisfaction or no sale. Agents wanted in a great many parts of the Dominion, where I still have no agents established. Liberal discount to good agents, no others need apply, as we will not deal with any but good responsible men. Send for circulars and prices to

243-d

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ROSES GRAPE VINES ETC. All who intend to purchase this Spring should send for our illustrated and descriptive Catalogues. They contain full information about Old and New Fruits, Ornamental Trees, Roses, etc., and are the most complete published. To regular customers free; to others as follows: No. 1, Fruits, 10c.; No. 2, Ornamental Trees, etc., 15c.; No. 3, Small Fruits, No. 4, Wholesale, No. 5, Roses, free. ELLWANGER & BARRY, Mt. Hope Nurseries, Rochester, N.Y. 243-

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Mr. E. Leedham of Aroyo Grande, Cal., and J. C. Ward of Plymouth, Me., write me that from my strain of seeds, they raised Marblehead Mammoth Cabbages weighing 92 lbs. Seed taken from the same lot from which these monster cabbages were grown, accompanied with a statement of how they were grown, supplied at 15 cents a package. I will pay \$1.00 per lb. for the largest Cabbage from this seed (freight prepaid), provided it weighs not less than 70 lbs. when received. My large Vegetable and Flower Seed Catalogue will be sent free to all who write for it.



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Gardener's Assistant and Illustrated Catalogue of Garden, Agricultural and Flower Seeds

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We again offer for sale a first-class, well-assorted stock of Fruit Trees, Small Fruit Plants, Hardy Grape Vines, &c., Ornamental Trees, Flowering Shrubs, Roses, Climbing Plants, &c., all the best old and new varieties.

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We pack our stock to carry safely anywhere. Descriptive priced Catalogues mailed free to all applicants. Correspondence solicited. GEO. LESLIE & SON, TORONTO NURSERIES, LESLIE P. O., ONT. 243-c

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500,000 Plants of all the Leading Varieties of Small Fruits. Also Fruit and Ornamental Trees. Send for Catalogue. Send in a list of what you want to plant for prices.

Niagara Grape a Specialty. Address A. M. SMITH, Dominion Fruit Gardens, ST. CATHARINES, ONT. 243-b

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Apple, Pear, Cherry, Plum, Mulberry and Evergreen Trees, at Wholesale Prices in small quantities. Also Strawberry, Raspberry, Gooseberry, Blackberry, Currant, Rose, fine Shrubby and Bulbs. 1,000,000 of Grape Vines of Niagara, Empire State, Lady, Delaware and all other new and old sorts. Concord 1 year from \$10. to \$15. per 1,000; 2 years, \$15 to \$30. Address Bloomington, Ill., DR. H. SCHROEDER.



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Grape Vines, Empire State, Niagara; Woodruff Red; Berries of all descriptions, new kinds and old; Roses etc., etc. Plants by mail a specialty. Illustrated Catalogue mailed free, containing \$1, \$2, \$3, and \$5 collections and instructions for planting; be sure and see it before giving your order. For variety of stock send for my new Catalogue, sent free to all. A. G. HULL, Central Fruit Gardens, St Catharines, Ont. 242-c

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SIMMERS' SEEDS the most popular brands. Sow them and you will use none but Simmers'. All Seeds Mailed Free on receipt of Catalogue Price. Please send your address for a Seed Catalogue, free on application.

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Will be mailed FREE to all applicants, and to customers of last year without ordering it. It contains about 180 pages, 600 illustrations, prices, accurate descriptions and valuable directions for planting all varieties of VEGETABLE and FLOWER SEEDS, BULBS, etc. Invaluable to all, especially to Market Gardeners. Send for it. Windsor, Ontario. D. M. FERRY & CO., Detroit, Michigan. P-17c

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As early as the Hartford or Moore's Early; equal in quality to Brighton or Delaware; an iron-clad in hardiness; does not mildew or rot, and in vigor of growth surpasses all other sorts. Has been tested in all parts of the United States and in Canada. Send for circulars.

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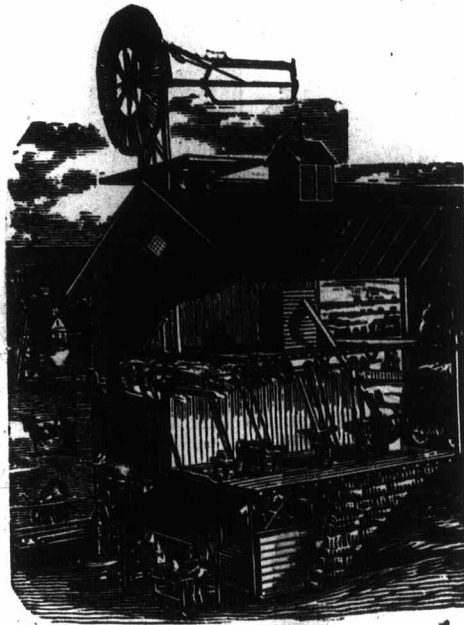
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SEEDS AT YOUR DOOR AT WHOLESALE PRICES.

In order to sell our seed crop—1886—direct to the planter, we make the following PROPOSITION: **60 CENTS** in postage stamps or money, we will send by mail postpaid, **19 PACKETS** each, of the following new and improved seeds:—**Bastian's Early Blood Turnip Beet**, the earliest and "BEST OF ALL" BEANS most remarkable as a snap best for table use. **Podas** tender and buttery in winter as in summer. **Hawaii Sugar Corn** from the Sandwich Islands; the sweetest sugar corn that grows. **Early Etampes Cabbage**, best and earliest of all early varieties. **Sure Head Cabbage**, best winter cabbage in cultivation. **Wilson's Early Green Cluster Cucumber**, good for early cucumbers or pickles. **Golden Self-Bunching Celery**, needs no banking up; excellent quality; keeps all winter. **Perpetual Lettuce**, tender and crisp all summer. **Pride of Georgia Watermelon**, none sweeter or better. **First premium at Penna. State Fair**. Pronounced the best-flavored muskmelon in the world. **New Red Kosca Onion** from Italy. Grows large onions from seed first year. **Tennessee Sweet Potato**. **Pumpkin**, none better for pies or custards. **Abbott's Improved Sugar Parsnip**. **Ruby King Pepper**, the largest and finest sweet pepper ever seen. **Improved Long Scarlet Radish**, best for early use. **Half-long Strasburg Radish**, good for spring or summer. **New Brazilian Sugar Squash**, sweetest and best-flavored, for summer or winter. **Livingston's Favorite Tomato**, large, smooth as an apple; for summer or winter. **Early White Egg Turnip**, sweetest and best for table use. In all **19 PACKETS** for **60 CENTS**; **TWO COLLECTIONS** for **\$2.00**. **ANOTHER PROPOSITION** To adorn your home and make life pleasant, as we grow flower seeds by the pound, bushel, and by the acre, to give our lady friends the benefit of the wholesale trade, we will send by mail following, for **30 CENTS** **Chrysanthemum** (Paris Daisy), very fine. **Mignonette**, sweet scented. **Double Rose-flowered Portulacca**, nearly all double; all bright colors. **Pansies**, finest strain. **Petunias**, large, double, blue, large-flowering; **Phlox Drummondii**, all bright colors. **Verbenas**, ten beautiful colors. **Zinnias**, large, double, bright colors. One fine **Ornamental Grass**. One splendid **Climbing Plant**. One beautiful **Everlasting Flower**. In all, **18 PACKETS** for **30 CENTS**; **TWO COLLECTIONS** for **50 CENTS**. Directions for cultivating on each packet. **ONE COLLECTION OF FLOWER SEEDS AND ONE OF VEGETABLE SEEDS FOR 50 CENTS**, OR **TWO OF EACH FOR \$1.50**. Our Beautiful Illustrated Catalogue accompanies each order. No change. Address **SAMUEL WILSON SEED GROWER, MECHANICVILLE, BUCKS COUNTY, PENNSYLVANIA.**

THE STANDARD CHOPPING MILLS

Most Successful Chopper Ever Built.

Made in Two Sizes with 12 and 20 inch Stones, using the Very Best Old Stock FRENCH BUHR STONES.

THE POPULARITY OF THESE MILLS ARISES FROM THEIR

Great Simplicity

Being readily worked by any intelligent man.

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There being absolutely nothing to get out of order; nothing wears but the face of the Mill Stone, and these are readily sharpened and kept in order by the occasional use of the Mill Picks furnished with the Mill. The simple directions given in our Circular will enable any ordinary man to become an expert at this work in a short time.

THE STONES will last a many years with ordinary care.



20 INCH STANDARD MILL WITH ELEVATORS.

When stones have to be dressed, these arms are bolted to the base. The four bolts holding cases together are removed, when the separate halves turn over to the arms, as shown in cut, bringing face of stones to a convenient height for dressing.

GREAT CAPACITY

For its price and size, this Mill cannot be equalled as a GRINDER. Thirty-five bushels of Chop per hour is not an infrequent output for a 20-inch Mill and 12 Horse-power Fire-proof Champion.

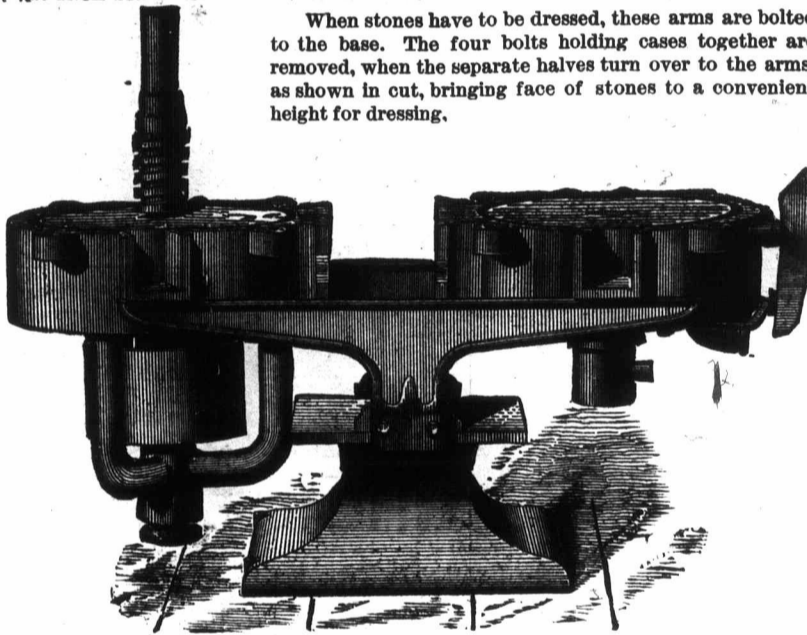
—THE—

IMPROVED ELEVATOR ATTACHMENT

Can be added to either of these Mills at an extra cost of \$25. It is faithfully represented in the cut. Grain is emptied from bag into the hopper on the right, and from there elevated and discharged into the hopper over the mill. After grinding the meal discharges into the other elevator, which elevates it and delivers it to the bag hung from the spout.

When bag is full the slide is closed while another bag is being hung on the spout.

With elevator attachments **ONE MAN** can readily attend to the chopper and run the engine.



MILL OPEN FOR DRESSING, SHOWS APPLICATION OF THE ADJUSTABLE DRESSING FRAME.

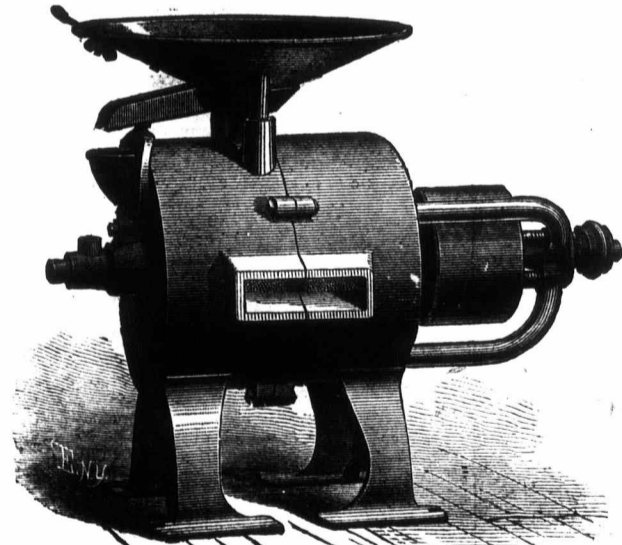
We are often asked to guarantee a certain amount of work with a certain power with these Mills. A moment's reflection will convince any one the impossibility of our doing this owing to the numberless conditions, such as, if ground fine, less can be ground than if coarse, or it takes more power. Damp, wet grain will paste and stick more than dry and does not grind so freely. Stones may be dull and need sharpening, or the centre may be worn flat and not kept hollowed out. When we first send out a mill it gets dull and wears flat in centre sooner than after a few weeks run, as the stone has not come down to the perfect solid face it gets from use.

The Grinding Capacity of an "Old Stock French Buhr" is universally known, it having been in use for ages and needs no recommendation from us. Ask any miller and they will tell you its the best grinder known.

Our arrangement of stones and case permit of most rapid feeding, grinding and delivering without heating. We have never had a Standard Mill returned because it did not please the purchaser, and do all we recommend.

Season being somewhat advanced, Special Quotations will be given.

EASTERN OFFICES: { 154 St. James Street, - MONTREAL.
{ 30 Paul Street, - - - - - QUEBEC.



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WATEROUS ENGINE WORKS CO.

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MANUFACTURERS OF

"L. D. S." ENGINES,

Awarded FIRST PRIZE, 1885, at Provincial Fair, London; Central Fair, Hamilton; and Northern Fair, Walkerton.

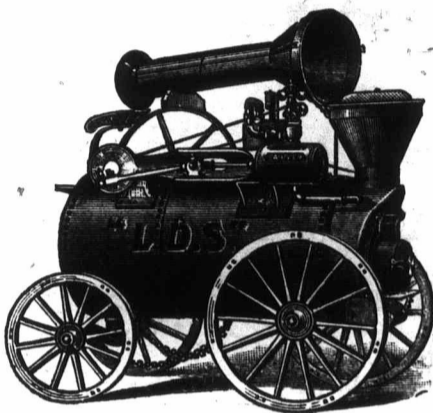
"Grain Saver" and "Peerless" SEPARATORS.

"Pitts" Horse-Powers, for 4, 6, 8, 10 and 12 Horses.
Tread Powers, for 1, 2 and 3 Horses.

Light Separators, for Tread and Sweep Powers.

Send for Illustrated Catalogue.

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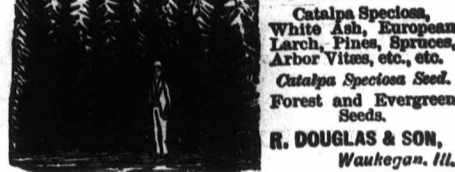


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Catalpa Speciosa, White Ash, European Larch, Fines, Spruces, Arbor Vitae, etc., etc. Catalpa Speciosa Seed, Forest and Evergreen Seeds.

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CREAM BY MACHINERY.

DeLAVAL'S CREAM SEPARATOR.

Frank Wilson, Esq.:
Dear Sir,—I having bought and used the first Centrifugal Cream Separator in Ontario, take much pleasure in giving you the following facts:
I bought a Burmeister & Wain Machine, which is the same as the Danish Weston. It did good work for a time, but before the end of the first year it had cost me over (\$300) two hundred dollars for repairs, and would not work satisfactorily, so I put in a DeLaval, and have given it a thorough trial, and find it does its work to perfection. I will recommend it to all, as any boy or girl can run it, and I must say that nothing short of a first-class machinist can manage the Burmeister & Wain.

I have seen the DeLaval running now the second year, and it has not cost me (\$2) two dollars for repairs the whole time, and is doing as perfect work as ever.

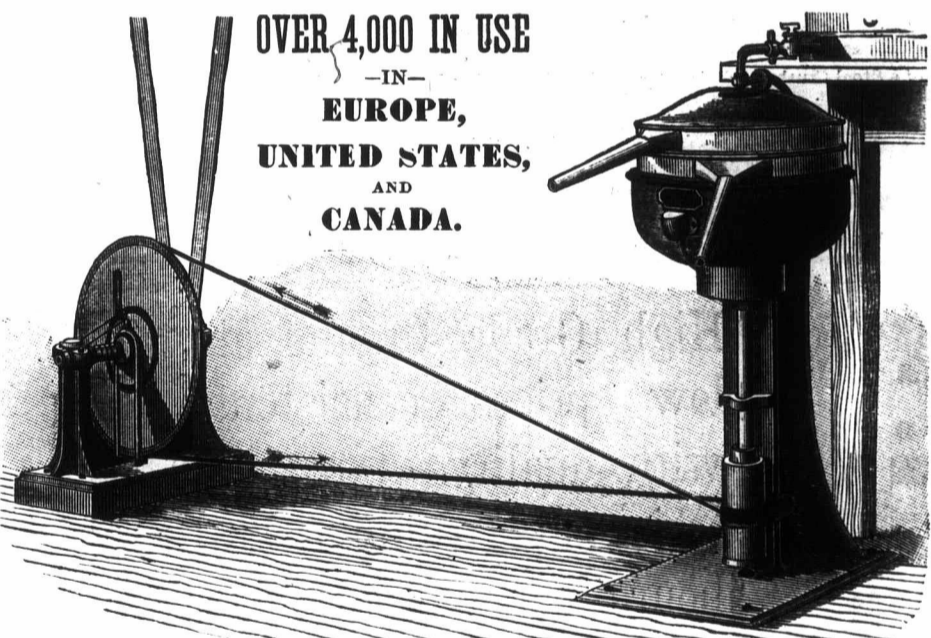
I also find that the DeLaval will work at its best by setting it level on any ordinary floor, and the Burmeister & Wain requires a solid stone foundation. The foundation for my Burmeister & Wain cost me over (\$50) fifty dollars.

I do the largest cream trade in Canada, as well as manufacture butter and cheese, and I can with the DeLaval Separator, make a better sample of cream for a city trade than can possibly be done with the Burmeister & Wain, and equally good for butter.

All parties wishing to buy Separators are invited to come to my place in the centre of the City of Hamilton, and see the Burmeister & Wain and the DeLaval working side by side, and draw their own conclusions.
Yours truly,
W. G. WALTON.

Wyoming, Ont., Oct. 5th, 1885.
Dear Sir,—My decision has been formed for some time past, and I can say after due consideration (having used the Burmeister & Wain machine for the past two years and the DeLaval for the past season) that the DeLaval is in many ways superior to the Burmeister & Wain, both in regard to speed in separating, durability, and simplicity. Space does not permit me to enumerate the advantages the DeLaval has over the Burmeister & Wain, suffice it to say that if I was going to start a butter factory I would put in the DeLaval Separator.
Yours truly,
ALEX. PREFONTAINE, Butter Maker.

The Judges of the great English Dairy Fair, just held in London, have made a report of an exhaustive comparative test between the DeLAVAL and DANISH machines, resulting in favor of the DeLAVAL on every point covered by a Cream Separator. They give it the highest recommendation for superiority in construction, operation and results that any implement has ever received, and their endorsement clinches the evidence of the great merits and advantages of this most useful of all dairy appliances. They state that no butter-maker can afford to be without one. They say, also: "In regard to the essential points of construction, separation, temperature and quality of cream, the DeLaval was far ahead of its opponents, and quite deserved the GOLD MEDAL given by the Council. The power of raising the skim milk after separation to a lighter level seemed to entitle the large A Danish to a second prize, but the failure to separate the milk satisfactorily debarred the other Danish machine from any further recognition."



OVER 4,000 IN USE
—IN—
EUROPE,
UNITED STATES,
AND
CANADA.

St. Lin, P. Q., Dec. 30, 1885.

Dear Sir.—After minute examination and repeated trials, I certify that the DeLaval Cream Separators work extremely well. They offer great advantages to the dairy interests by their economy, quality and increased quantity of butter produced, and the great advantage to farmers to have only to send their milk once a day to the factory. The process of working is very simple; however, it would be a good plan for anyone about to establish a creamery to serve a few days' apprenticeship to save himself unnecessary expense. I believe it essential to its proper working to procure a good engine and to have a competent man to set up and start the machine.

The following is the result I have obtained by using the DeLaval Cream Separators during one and a-half months, from 1st Sept. to Oct. 15th. I received 207,420 lbs. of milk, and have manufactured 9,643 lbs. of butter from it, which gives an average of 21 1/2 lbs. milk to the pound of butter. I could not obtain this result by any other process. I invite any persons desirous of establishing a creamery to come and pass a few days at my factory, and I will give them all the information and lessons they want, free of charge.

E. DESMARAIS.

Wyoming, Ont., Oct. 10, 1885.

Dear Sir,—I have now used three DeLaval Cream Separators daily for five months. They are running nicer to-day than when we first started, give the highest satisfaction, and have not cost me one cent for repairs except to renew two small belts. After they are put in motion in the morning my daughter, aged 15 years can run them until we put through 6,000 lbs. milk; in fact, I think they will be hard to beat. Anyone intending to purchase a machine could not do better than buy a DeLaval. They make a thorough separation of cream from milk, and I also claim that is the only way to get pure butter, viz. by passing the milk through a separator, as it takes all foreign matter out of the milk which is retained in the bowl of the separator. I have no interest in the sale of machines.

JOHN HARTLEY.

DeLAVAL CREAM SEPARATOR CO.

WM. CLIME, Jr., Agent, LISTOWEL, ONT.

243-a

FRANK WILSON, General Manager for Canada, 19 St. Peter Street, MONTREAL.

PETER R. LAMB & CO.,

FERTILIZERS

TORONTO, CANADA.

SEND FOR CIRCULAR.

243 b



Subjects the soil to the action of a Steel Crusher and Leveler, and to the Cutting, Lifting, Turning Process of Double Gangs of Cast Steel Coulters. Immense cutting power. Crushing, Leveling and Pulverizing performed at the same time. Entire absence of Spikes or Spring Teeth avoids pulling up rubbish. Only Harrow that cuts over the entire surface of the ground. Sizes 3 to 15 feet wide. With and without Sulky attachment. We deliver free at Distributing Depots.

Send for pamphlet containing thousands of testimonials from 48 States and Territories.

BRANCH OFFICE: HARRISBURG, PENN. **NASH & BRO.,** MANUFACTORY & PRINCIPAL OFFICE MILLINGTON, NEW JERSEY.

N.B.—"TILLAGE IS MANURE" and other Essays sent Free to parties who name this paper. 242-d

THE BELL ORGAN

High Grade Organs at low prices consistent with quality. Our factories are running 12 hours per day to keep up with orders, which are constantly increasing. Catalogues Free.

W. BELL & CO.,
Guelph, Ont.

BRANCHES AT
Hamilton, Ont.; St. Thomas, Ont.,
and London, Eng.

Stock Notes.

Mr. J. C. Snell, of Edmonton, has a sale of Shorthorns on the 7th of April next.

Catalogues received from Thos. Nelson & Son, Brantford. Parties desiring first-class stock should write to John Hope, Manager, Brantford.

R. Beith & Co.'s, Bowmanville, Ont., which gives full particulars of their choice Clydesdales.

B. B. Lord & Son, of Sinclairville, N. Y., giving particulars of the Holstein stock which they will offer for sale at Grand's Repository, Toronto, on March 30th. Those desiring to procure some good Holsteins should attend this sale.

M. Cook & Sons, Aultsville, Ont., report the following sales of Holstein Friesian cattle: Bull, Robbie Burns, 513, H. F. H. B., to A. R. Kidd, Warsaw, Ont.; bull, Lord Byron 4th, 233, H. F. H. B., to H. Campbell, jr., Ingersoll, Ont.

Mr. W. A. Schoenau, Mildmay, Ont., offers for sale, on March 9th, some choice imported Clydesdale horses. See advertisement in this issue. Our readers who are in quest of first class stock of all kinds should consult our advertising columns.

Henry Arkell, Arkell, Ontario, has made the following sales: One Oxford-down ram lamb, to Collin C. P. Wright, P. E. I.; ditto to Henry Bailey, Victoria county; one ram and two ewes to Leslie Ellis, Dundas Co.; one ram and two ewes to Capt. Macfarlane, Parry Harbour, and two yearling ewes to D. P. L. Campbell, Vannleek Hill, Prescott; also six Southdown ewes to the English Grazing Co., Parry Sound; one Berkshire boar to Wm. & Geo. Thompson, Eden Mills, and one ditto to Duncan Gilchrist, Puslinch.

Notices.

The Ontario Pump Co.'s catalogue is before us giving particulars of the numerous articles they are manufacturing and testimonials from thousands who are using the Hallaway's Wind Mills, which is giving universal satisfaction. Our readers contemplating utilizing wind power should send for it.

If you have not a Black Walnut tree growing on your farm, plant one, this the 21st year of the publication of the FARMER'S ADVOCATE. You can easily get one new subscriber; you could give him one or two plants and have one or two left for yourself. Get your plants from the best stock. See cut in this issue and our prize list.

A GOOD RECORD—In the seed catalogue of J. H. Gregory, of Marblehead, Mass., page 10, is found the following extract from a letter of D. S. Lyon, Solisville, N. Y.: "This makes twenty-one years we have used your seed and always to our complete satisfaction." In our advertising columns Mr. Gregory offers to send his catalogue of such seed as this, free to all mankind.

Wire fences should always be built on a ridge about twelve inches high, with a slight ditch on each side, which saves one wire, prevents the snow from injuring the bottom wire, sheep or other stock from being injured by coming in contact with the barbed wire. Iron and wire will in due time become the almost universal fence of the country. Mr. E. C. Jones, of Hamilton, is making great improvements in this direction; his fences are meeting with general approval by those that have seen them.

We mention a few of the most reliable Seedsman's Catalogues that have been received: J. A. Simmers, Toronto; Wm. Rennie, Toronto; Geo. Keith, Toronto; Steele Bros, Toronto; Jno. A. Bruce, Hamilton; J. S. Pearce London; Wm. Evans, Montreal; Peter Henderson, 27 Colborne St, New York; James J. H. Gregory, Marblehead, Mass.; James Vick, Rochester, N. Y.; Geo. Leslie & Son, Toronto, Nursery Stock; Pratt Bros, Nurserymen, Rochester, N. Y.; Ellwanger & Barry, Rochester, N. Y., Fruit and Ornamental Trees; Allen Mayer, Nurseryman, St. Catharines; W. W. Hilborn, Small Fruits, Arkona; A. M. Smith, Nurseryman, St. Catharines.

COGENT REASONS WHY THE CHATHAM WAGON

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STANDARD



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WAGON.

should command your preference :-

The intrinsic cost and value of it is at least \$10 more than any other wagon made in Canada, and any unprejudiced practical man will tell you so, and the thousands who now have them in use say so, because it is not only made from the best, carefully selected and thoroughly seasoned timber and best of iron, but the skids used, made only by us, are superior to any skids made or used in Canada, and are constructed specially to receive our Patent Climax Truss Rod, which doubles the strength of the axle; the boxing of the hubs are pressed, not wedged in; a guarantee for a year accompanies each wagon, and notwithstanding this additional cost and superiority the Chatham Wagon can be purchased at no greater price than is charged for inferior wagons. Bear in mind, it is the running gear that carries your load, and no amount of fancy painting on the box will make an easy running and great Carrier of a poorly constructed wagon. Liberal Terms to Parties Buying in Carload Lots. Correspondence Solicited.

CHATHAM MANUFACTURING CO., Limited.

IMPROVED PRIZE LIST FOR MARCH, 1886.

Most Pleasing and Profitable Premiums to be Obtained without Money. Given only to Old Subscribers for Sending in New Subscribers Names, Accompanied with Subscription Price, \$1 for each New Name sent in.

The following articles will be all sent by mail, postage pre-paid. The trees will be good plants, cut back, leaving good roots, thus ensuring good growth the first season, and will be carefully packed. Subscribers who have not the time to secure the requisite number of names to entitle them to any (or as many as they may require) of the following articles, can obtain the same by remitting the cash value set opposite each. These are supplied to ADVOCATE subscribers only.

No. of New Subscribers.	Value.	No. of New Subscribers.	Value.
1	Two strong plants of Black Walnut trees, cut back. The most valuable timber tree we can grow; see cut and description in Feb. issue, p. 34, and this issue, p. 66.	1	Package consisting of one Virginia Creeper; this is the hardiest creeper, very handsome; will thrive in Manitoba; also three of the Alder, or Ash-leaved Maple trees; they are well adapted to all parts of Canada; they are too seldom met with, but should be planted; they appeared the most thriving and most beautiful of deciduous trees that we saw thriving in Manitoba.
1	Four small plants Black Walnut.	1	One of each of the following varieties of Grapes, the hardiest and best approved of for general cultivation: Clinton, Hartford Prolific, Delaware
1	Two plants largest variety of Sweet Chestnut, on trial; see p. 355, Dec'r.	1	One plant each of the best Apple and the best Crab Apple adapted to our northern latitudes; see particulars in future issues
1	Four cultivated Sweet Chestnuts	1	One package of the earliest maturing Field Corn offered this season; see future issue.
1	Two Catalpa speciosa; see page 322, November issue.	1	One package of a new and highly approved Cabbage; see future issue.
2	One Niagara Grape vine; one-year old plant. See vol. 20, p. 31.	1	Two plants of the latest improved and highly commended Raspberry.
3	One do.; two-year old plant.	4	One dozen plants do.; see future issue
2	One Empire State Grape vine; one-year old. See page 2, vol. 21.	1	Two plants of the most promising new Strawberry; see p. 41, this issue.
3	One two-year old do.	4	One dozen do.
1	Two small plants Ampelopsis Veitchii, or Japan Ivy; see p. 353, vol. 20.	1	One package choice assorted Vegetables, containing many of the latest and most approved varieties.
1	One strong plant do.	2	Large packages and greater variety do
	A very few of these plants have as yet been introduced into Canada, and the price charged by some dealers has been from 75c. to \$1.50. Most of the above list is best adapted to Western Ontario.	1	One package varieties choice flowers.
	Among the following will be found the very hardiest and best plants and seeds, that will be very valuable to our subscribers in our northern latitudes.	2	One larger package and larger number of varieties do.

N. B.—We have no direct interest with any particular seed establishment. We disposed of all our stock of seeds years ago, and only offer these in our premium list to our subscribers only. For their benefit and the benefit of the ADVOCATE, we select the most valuable and the most promising new varieties from the most enterprising and honorable propagators, dealers and importers. There is an advantage in having the first of any valuable variety in any section. The cheapest way to procure them is by sending in a few names of new subscribers. Address the FARMER'S ADVOCATE, LONDON, ONT.

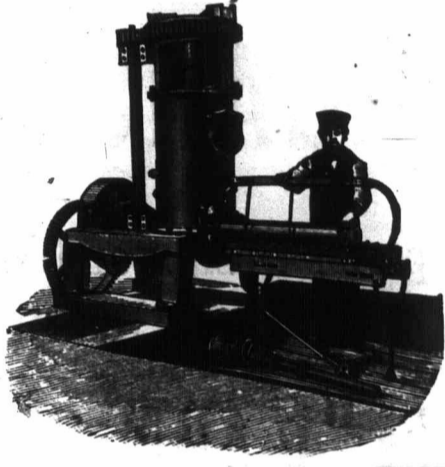


LOVETT'S GUIDE TO FRUIT CULTURE

is a book of 70 Pages, with illuminated cover, embellished with nearly 200 engravings of Orchard and Small Fruits, Nuts, &c. Gives honest descriptions of Golden Queen Raspberry, Lawson-Comet Pear, and over 200 varieties of other fruits, and instructions for planting, pruning, cultivation and managements. with Low Prices for Trees and Plants. Also directions so clear that even a novice can readily determine what and how to order. Price, with colored plates, 10c., without plates, 5c. Price list of Trees and Plants Free. All who mention this paper will receive a copy of "Orchard and Garden" gratis. J. T. LOVETT, Little Silver, N. J.

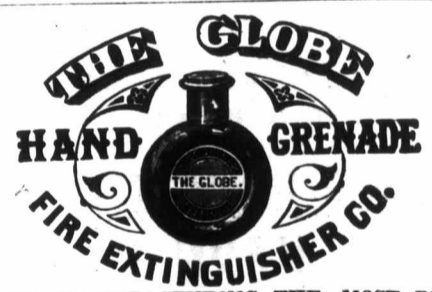


DARVILL & CO.'S



BRICK and TILE MACHINE

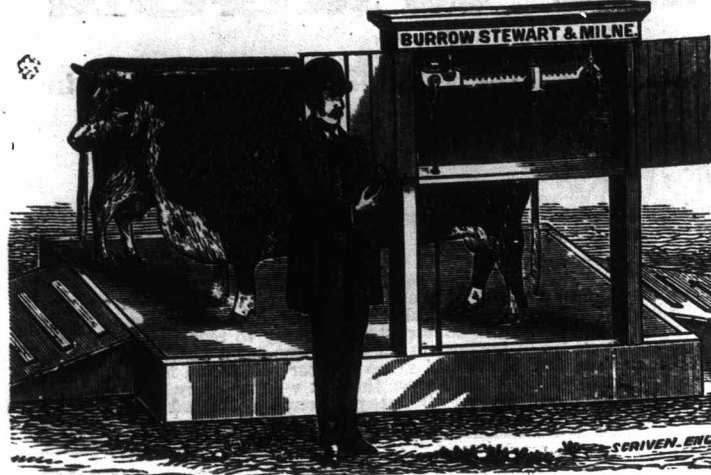
This is the most perfect Machine manufactured in Canada; manufactured with or without brick attachment. Highly recommended by all who have used them. You will please refer to the following parties who are using it and purchased last season:—Chas. Pratt, London; Peter McIntosh, London; H. C. Rider, Nilestown; Robert Myers, Stratford; James Kerr, Alisa Craig; R. D. McCormack, Watford; W. M. Doherty, Glencoe; John Hoch, Strathburn; Alex. Stewart, James Nichols, Frome. Send for Descriptive Circular. Address—D. DARVILL & Co., LONDON, ONT.



ARE MANUFACTURING THE MOST PERFECT Fire Extinguishers in the market. It is the Simplest, Easiest, Quickest, Most Efficient and LEAST EXPENSIVE WAY OF PUTTING OUT FIRES KNOWN. It is simply a glass bottle filled with a liquid that generates gases when broken into the fire, that kill it almost instantly. Every factory, every mill, every business house, every home should be supplied with these goods. Price \$9 per dozen. For further information, circulars, etc., address GLOBE FIRE EXTINGUISHER CO., 64 and 66 Dundas street, London, Ont.

CAUTION! There are some fraudulent companies endeavoring to palm off their goods as being same or similar to ours, etc. We give warning that all infringements on the patent will be prosecuted and all purchasers of the same are liable and unprotected. If you want Fire Extinguishers buy only the Globe; it's the best made and you are protected. Correspondence invited. 242-b.

SCALES! SCALES!



The Platform of this Scale is 6 feet by 4 feet.
No Farmer, Stock Raiser or Produce Dealer should be without one.
It weighs Accurately from half pound to 4,000 pounds

DAIRY SCALES,
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COUNTER SCALES,
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Quality, Accuracy and Beauty of workmanship unsurpassed.
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HAMILTON, ONT. 243-y

ORGANS! ORGANS!

Superior Design and Workmanship.
Every Instrument Warranted 7 Years.

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NEW FACTORIES COMPLETED. CAPACITY 500 ORGANS PER MONTH.

Awarded Silver Medal and First Prize Over all Competitors at the Dominion Exhibition, Held at St. John, N. B., 1883.

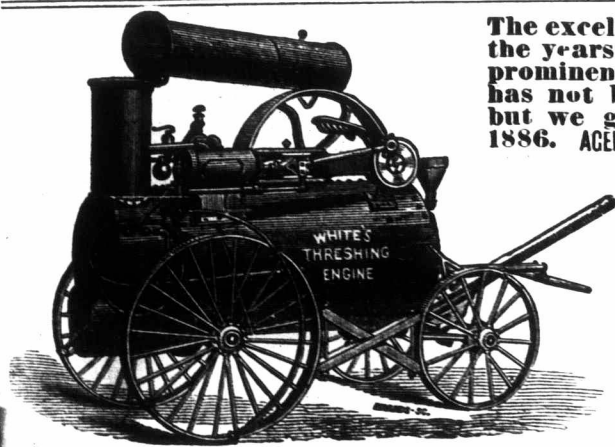
Received the Only Medal Awarded Cabinet Organs, Toronto Industrial Exhibition, 1882.

Awarded Silver Medal, Toronto Industrial Exhibition, 1881.

Awarded Three Diplomas and Two First Prizes, Dominion Exhibition, Montreal, 1882.

These, with many other Medals, Diplomas, Prizes, &c., place the "KARN ORGAN" ahead of all others. We call the attention of the public to the facts above. We manufacture Organs suitable in style for Churches, Parlors, Schools, Lodges, &c. Send for Circulars and Prices to

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The excellent record of this Engine as the years roll on has brought it so prominently in favor that the supply has not been equal to the demand, but we guarantee a full supply for 1886. AGENTS WANTED IN SOME LOCALITIES.

It is licensed by all Insurance Co's and has proved itself to be the most durable.

The Engine for the Northwest is made to burn either coal, wood or straw. Farmers, procure a Genuine White Threshing Engine at the Forest City Machine Works, London, Ont., Can. GEORGE WHITE, Proprietor and Manager.
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The engines may be seen at Van Tassal's foot bridge warehouse, Belleville. 242-y

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EMPIRE HORSE AND CATTLE FOOD CO., MITCHELL, ONT.

The only Food Co. in Canada ever awarded "A SILVER MEDAL" by the Provincial Association of Ontario.

In constant use at the Model Farm since 1881—last shipment of 500 lbs. on 29th Sept., 1885. Used more extensively by leading feeders than any other preparation. Invaluable for horses, fattening cattle, milch cows, calves, sheep and pigs. Numerous testimonials from prominent breeders. We grind our own ingredients and guarantee their purity, which is done by no other Food Co. in Canada. If you cannot get our food from your dealers, send direct to the mill. Do not be deceived by dealers, who may wish to sell you an inferior article. Price at the mill \$5.25 per 100 lbs., less quantities at higher rate. Cash must accompany all orders. We also manufacture an excellent Poultry Food. 240-e

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The College has been thoroughly re-organized and placed in the hands of a most able staff of teachers (including two who have been principals of similar and successful institutions). Course most thorough and practical. Fees very moderate. For full information, address—

N. WOLVERTON, B. A.,
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MANUFACTURERS OF
SOFA, CHAIR AND BED SPRINGS.
A LARGE STOCK ALWAYS ON HAND.

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Agricultural Savings & Loan Company
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President—WM. GLASS, Sheriff Co. Middlesex.
Vice-President—ADAM MURRAY, Co. Treasurer

Subscribed Capital,	\$600,000
Paid Up do.	575,000
Reserve Fund,	61,000
Total Assets,	1,339,000

The Company issues debentures for two or more years in sums of \$100 and upwards, bearing interest at highest current rates, payable half-yearly by coupons.

Executors and Trustees are authorized by law to invest in debentures of this Company. For information apply to

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TEMPERANCE STREET, TORONTO.

The most successful Veterinary Institution in America. All experienced Teachers. Fees, Fifty Dollars per Session. Session 1885-8 begins Oct. 21st. Apply to the principal, PROF. SMITH, V. S., Edin., TORONTO, CANADA. 237-y

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M. C. P. S. Ont.—Eye and Ear Surgeon, 34 James St. Hamilton, Ont. Dr. Anderson gives exclusive attention to the treatment of the various diseases of the EYE and EAR.

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