

The FARMER'S ADVOCATE

AND HOME MAGAZINE.

FOUNDED 1866.

VOL. XXII.

LONDON, ONT., MAY, 1887.

Whole No. 257.

REGISTERED IN ACCORDANCE WITH THE COPYRIGHT ACT OF 1875.

THE FARMER'S ADVOCATE & HOME MAGAZINE

WILLIAM WELD, EDITOR AND PROPRIETOR.
THE LEADING AGRICULTURAL JOURNAL PUBLISHED
IN THE DOMINION.

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

Terms of Subscription—\$1.00 per year in advance; \$1.25 if in arrears; single copies, 10c. each. New subscriptions can commence with any month.

The Advocate is sent to subscribers until an explicit order is received for its discontinuance, and all payment of arrears are made as required by law.

Remittances should be made direct to this office, either by Registered Letter or Money Order, which will be at our risk. When made otherwise we cannot be responsible.

Always give the Name of the Post Office to which your paper is sent. Your name cannot be found on our books unless this is done.

Discontinuances—Remember that the publisher must be notified by letter when a subscriber wishes his paper stopped. All arrears must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given.

The Law is, that all subscribers to newspapers are held responsible until all arrears are paid, and their paper ordered to be discontinued.

The Date on your Label shows to what time your subscription is paid.

Advertising Rates—Single insertion, 25 cents per line; Contract rates furnished on application.

Address—THE FARMER'S ADVOCATE,
360 Richmond Street,
LONDON ONT., CANADA.

Our Monthly Prize Essays.

CONDITIONS OF COMPETITION.

- 1.—No award will be made unless one essay at least comes up to the standard for publication.
- 2.—The essays will be judged by the ideas, arguments, conciseness and conformity with the subject, and not by the grammar, punctuation or spelling, our object being to encourage farmers who have enjoyed few educational advantages.
- 3.—Should one or more essays, in addition to the one receiving the first prize, present a different view of the question, a second prize will be awarded, but the payment will be in agricultural books. First prize essayists may choose books or money, or part of both. Selections of books from our advertised list must be sent in not later than the 15th of the month in which the essays appear. Second prize essayists may order books for any amount not exceeding \$3.00, but no balance will be remitted in cash. When first prize essayists mention nothing about books, we will remit the money.

Our prize of \$5.00 for the best original essay on *Root Culture*, has been awarded to W. A. Hale, Sherbrooke, Que. The essay appears in this issue.

A prize of \$5.00 will be given for the best original essay on the *Management of the Orchard*. Essays to be handed in not later than May 15.

A prize of \$5 will be given for the best original essay on *Poultry Farming as an Occupation for Farmers' Wives and Daughters*. Essays to be handed in not later than June 15.

Post Office Orders.

We have received numerous complaints of late regarding money sent by P. O. Order from Ontario and the Maritime Provinces, and, upon making inquiries, find that some people keep the order they get from the postmaster as a receipt instead of forwarding it to us. We have known instances where orders have been kept in this post office for over twelve months, after which they have been returned to the parties who procured them, when the mistake is explained. When remitting money care should be observed in writing the name and post office legibly. Please examine the label on your paper and see that it is marked '88.

The Position and Duty of the Farmer.

An address delivered by W. Weld, before the Agricultural Institute of the North Riding of Norfolk, at Waterford, on April 7th.

You, gentlemen, the farmers of Canada—particularly of this western portion of Ontario—have been truly blessed. Many of you or your ancestors procured your lands at a small price. This Province has been a garden of fertility, clothed with valuable timber and capable of producing the most profitable and varied crops with but little expense; we have one of the most healthful and invigorating climates; no dire pestilence or disease to man or beast has ever swept over our country; war or famine have been unknown to us; fruits and flowers have strewn our paths; prosperity, peace, happiness and contentment have been your lot. Truly it may be said you have a goodly heritage—an earthly paradise. What pleasure you experienced when clearing up field after field—when yearly some improvement was made in erecting a new house, or barn, or adding some additional luxury to your household. Some few may still be progressing, but many now begin to find it difficult to make things balance at the end of the year, particularly so if they reckon keeping up the fertility of the soil, the wear and tear of machinery, fences, buildings, etc. Your expenses of living are increasing, while too often crops are decreasing. The Provincial and Dominion debts are as mortgages on your farms; they are daily increasing, and the pay day will come. We should try to reduce both public and private expenses. Every bank or mercantile failure has to be borne in a great measure by you; the expense of every additional public officer or his increase of salary comes from you. Many public enterprises are commenced to make places for partisans; the needy office-seeker, personally, or by his money, engages the best talent to represent his side of the question to you with all the colors of the rainbow; they are united, and their object is to confute or confound any one opposed to increase of offices or increase of salaries. They are trained; they are too often under the direct pay received from your hard earnings to advocate greater burdens on your shoulders. Sometimes even some of you may be influenced by party spirit to lend your aid to measures which with due reflection your consciences would revolt against. You are made to bear a much greater proportion of public burdens than other callings. Stock jobbers and others can shirk money and fair taxation, but your properties can all be seen. Too many of the officers that you pay to look after your interests flinch from duty and use their influence

in shielding men and fostering measures that they well know are not for your interest.

These remarks may give offence to some, but when accepting your invitation I accepted it as the editor of the FARMER'S ADVOCATE, and as such I deem it my duty to speak plainly, as we believe we are now in a most precarious position, judging from the political atmosphere here and in other parts of the world. The present condition forbodes a state of serfdom, and the worst form of slavery. The depression of the agricultural class is claimed by some to have been the cause of the downfall of the Roman Empire. It is also said that the tax collector swept the last vestiges of the agriculturist from that once beautiful and fertile land of Palestine. The depression and poverty of tens of thousands of farmers in the Western States is now deplorable. Our heart has often throbbled with pity at the accounts from some of our agriculturists in our Eastern Provinces. Then to compare the high-fed, luxurious, numerous and increasing army of dead-head or useless officials, and the devices to extort money from you which are countenanced by them, has caused me sorrow.

YOUR DUTY.

This depends on the instruction you have received and on the creed you believe, or whether you accept any creed. The Brahmin, Mohammedan, Jew, Mormon, etc., etc., all have different creeds; the Protestants and Roman Catholics do not agree; the Conservatives and Reformers differ; Christians and Infidels are wide apart. If you are an Infidel, many would advise you to grab all you can; the canny Scot said, "Get money, honestly if you can." It is written that "Righteousness exalteth a nation." Do you believe it? Do you believe in the Bible? Do you believe the Decalogue? Was the Decalogue a command of God, or devised by men? Are there in all the statutes of our country any commands so admirably adapted for the government of mankind? I presume nearly all of you profess to be Christians, go to some church, and have a lively hope. Perhaps from a strong partizan feeling, you may be aiding or countenancing a person or combination that, by suppressing some facts and exaggerating others, may be termed a false witness; and yet we support such knowingly. Without truth, all other commands fail; righteousness will follow truth. It is admitted that agriculturists as a class are truthful, and have quite as sound judgment as any other class; that it must be from them that rulers of our country must come. Unite and elect the most reliable men to be office-holders. These institutions may become popular, useful, and the most powerful organizations in the land, if you select the most trustworthy men for your officers. It is not

necessary that they should be the most loquacious, the most wealthy or the most learned. Aid them, support them, and let no party clique take the control. I know the task will be difficult. Let the object be first for the farmer's interest; that will be to give light or information, which must be reliable, or it will not stand. The exaggerations of imaginary beneficial plans and erroneous information must tend to injury, if permitted to go uncorrected.

You should endeavor to obtain all the useful information you can afford in regard to your calling; at the same time, you should bear in mind that gold is often bought too dear. Do not be led away by every clap-trap that is boomed before you, or endorse by signature, voice or silence, devices that you know are injurious to you. The changes in market prices for products should guide you; our most prosperous farmers read and observe the changes. Wheat was at one time our most remunerative crop. How many thousands of farms are now mortgaged by those who persisted in continuing its production? Those who turned their attention to raising beef for a time made money; those who devoted their attention to raising good, useful horses, are now reaping a reward for their forethought; and those engaged in the production of cheese have been able to improve their circumstances. We should not advise you to abandon the cheese production for the butter boom; the losses and failures that have taken place in connection with butter making, are not depicted to you by the strong advocates of the radical changes too often and too persistently brought before your notice. Our farmers' wives have been too often and too mercilessly condemned for the bad butter; whereas the lash should here be placed on the backs of the condemners of our frugal, industrious, over-worked farmers' wives. Instead of feeing these orators by payments wrested from these industrious toilers, the burdens, if possible, should be lessened. Is it possible to improve our present state of affairs? We unhesitatingly say, yes. In what way, you may ask? By uniting; by resolving to do right. Abandon partyism for agricultural interests. You have the power in your hands if you unite for one great cause—your interest and your country's interest. Any legislator that knows nothing about your interest, and cares less, should be left at home. Your plea is to organize, and your battle ground is the ballot box. Watch the votes and the words and the acts of your representatives, and if any one opposes you on proper measures, if he does not try in earnest to guard and protect you, out with him. Now is the time for you to mark out. Make up your minds now whether you will return your member or not. I know not, or care not, what party your members may be allied to, if they support a party measure that is adverse to your interest, mark the fact on your mind now, and let no clap-trap orator with all the wiles and bribes of election time, turn you from duty's course. You cannot stand still; you are either advancing or receding, both financially and morally.

I will give a few remarks taken from a speech delivered by James Russell Lowell, at Chicago, on the 22nd of February, which should command consideration. He says the practical politician is a man afraid of his constituents; who studies the weathercock of what he calls public opinion, which is not public opinion, but trades on the opinion that the corner-grocery politician manu-

factures; that public opinion is, in the eyes of any man who has studied history, the opinion of about half a dozen men, six weeks, six months or a year afterwards, not the opinion of ten, twenty or fifty million men at the moment. What is wanting in politicians of the present day more than anything else is courage. Courage is the highest of all virtues, as it is the safeguard to all other virtues. He said: "I remember when the Duke of Wellington broke away from his party and voted with Lord Melbourne; he was reproached by some of his friends, and he answered in this way: 'I cannot afford to do what is not right.' The more intelligent and superior being can always govern the inferior being if he does his duty. Now, gentlemen, is there a great city in this country that—I wont say is well governed—but that is decently governed? Now, whose fault is it? I tell you that the loss of money is great, but it is the smallest loss. It is an infinitesimal loss. The loss of morals is the great loss. Every day that you let it go on your moral loss is at compound interest. You can recover your pecuniary loss, but I tell you that your moral loss is every day going on at compound interest, and that the sternest accountants that are known to human history are keeping the accounts."

When at the National Agricultural and Dairy Convention in New York, in February last, one of the delegates, in responding to an author who had been questioning the worn out, hackneyed adage of *vox populi, vox Dei*, said the voice of the people is the voice of God, or, in other terms, the majority are right. Another delegate, in reply, said that one and God constituted the majority.

When in Belfast last summer, placards were posted up announcing that the Rev. Hanna would preach a sermon in the Presbyterian church. The subject, "Politics and Religion," was most conspicuous on the poster in large letters. We heard that discourse, and that very night the first bullets and brick-bats were fired, lives were lost, and that war is not yet ended, but parties on this continent are and will be engaged in it. And this venomous party spirit that inflamed the worst passions of the people in the Irish city, is only an exaggerated example of the evils that party spirit produces in all countries, dividing as it does the farmers of this country—a class whose interests are identical, but who are so equally and almost hopelessly divided by this baneful political party spirit that they can hardly unite even to give expression to their grievances, much less to enforce their rights.

We now regretfully announce that this picture, "Religion and Politics," has come to be "Politics and Agriculture," and we unhesitatingly believe that of the moneys granted nominally for agriculture, nearly the whole is absorbed for political purposes, even to the appointment of the lowest menial, and too often for the ascendancy of a prize, whether for a prize essay, a prize farm, or prize grain; partizan ends are served in the distribution of political literature, the wresting of land, agricultural exhibitions or herd books out of the hands of the practical farmers, and placing those in office who have never been known to aid agriculture.

If it be true that righteousness exalteth a nation, legislators, exalt your nation. Dare to do right, and you will not regret it, despite the fact that the masses may now oppose, brow-beat and ridicule you.

Mr. Blayney endorsed the remarks made on moral grounds.

Mr. Nickerson did not approve of reading essays; he approved of discussions. He did not consider farmers were in a worse position than formerly. He used to get 20 and 25 percent for money; now farmers can get it for 6 percent. The Russian war and the Manitoba boom were the worst things Canada had ever experienced; one inflated the country, the other depleted it. Farmers should make money by using thoroughbred stallions.

An influential farmer afterwards remarked to us: "Mr. Nickerson is a horseman; his views are not correct in regard to the position of the farmers. He is from the other side of the lines."

Mr. Carpenter, late of the Model Farm, had expected a tirade against that institution. He suggested that farms should be established in different parts of the country to instruct immigrants how to work before they go on the farms. He depicted the losses sustained by farmers in allowing the green hands on their farms, and said that to adopt his suggestion would only cost 10c. for each farmer. He would like to have our opinion on this subject.

In reply, we stated that this was a dangerous subject to touch upon, as we had always avoided anything that might partake of a partizan nature. Nevertheless we would reply to it in accordance with our convictions in the presence of any who would unite to support the farmers' interests in preference to the interest of any party.

Mr. Blayney was the first to support the proposition, and another speaker favored the suggestion; the voice of the meeting was taken by the chairman, and the proposition was unanimously supported.

We then condemned the creation of additional offices in the nominal interest of agriculture, and the asking for more grants; we held it would be better to devote the moneys now granted to really beneficial purposes. When once the point of the wedge had entered, the log was pretty sure to be burst. The demands were yearly increasing, and the balance sheets of officials too often showed imaginary profits only; the losses caused by public expenditures were never made public.

Mr. W. Pegg read an essay on "Farm Studies," and Mr. D. Woolley one on "The Soil—its Impoverishment and Enrichment," but want of space forbids a full report. There were over a hundred farmers present.

Mr. Wm. Weld, editor of the *Farmer's Advocate*, published at London, Ont., gave a most interesting and profitable address on the "Farmer's Position and his Duty," showing the oppression of the agricultural classes by the laws of the country, and the burden under which these classes labor. The farmers' duty is to be truthful, banish partyism and maintain agriculturalism. The duty is to unite together for the purpose of advancing the interests of the farmer, not only materially, but morally, intellectually and religiously. The address was listened to with marked attention and received hearty applause. A vote of thanks, moved by W. W. Pegg, Esq., Reeve of Townsend, and seconded by Loder Culver, Esq., was passed and tendered to Mr. Weld for his labors in connection with the Institute.—Waterford Star.

Thorough tillage not only helps to destroy weeds, which feed on the nutriment that the crop should receive, but the loosened soil draws moisture and nutriment from the atmosphere.

Cutting out the old stalks in raspberry bushes is a work that is often neglected in the fall; if so, it should be attended to early in spring. The fruit appears on last year's growths, and all older stalks should be cut out in the fall as soon as the leaves drop. Trim the growing stalks back to two or two and a half feet in length, and treat all suckers as weeds.

The Jubilee.

On the 28th of June, D. V., our Queen will attain the 50th anniversary of her reign, and her most loyal subjects are now contemplating in what way they can best do her honor. The peaceful prosperity and progress that have characterized her reign will be brought before your notice by the most able orators and writers of the world. Her worst disparagers must admit that she has exercised her power and influence for good. Might we not all, in like manner, consider if there is not some useful or beneficial plan we might commence or try to carry out to benefit others, as well as ourselves and our nation?

When partaking of a lunch in the Colonial Exhibition last year, a lady from Lancashire was seated near us. The Queen that day had visited

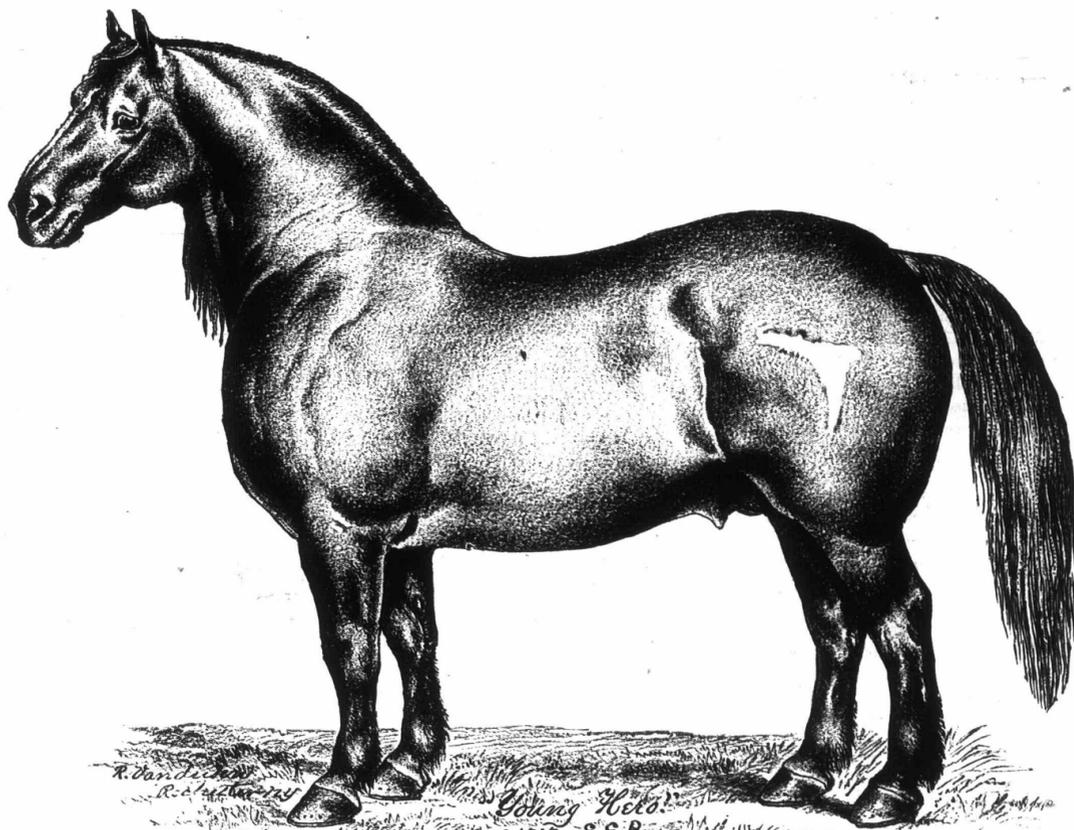
Uncle Sam's Seed Shop.

The agitation against this worse than useless institution is still kept up. One horticultural and agricultural society after another declares itself unanimously against the continuance of sending common seeds at public expense broadcast over the land, as in nine cases out of ten they are sent to parties who have very little or no use at all for them, or if they have, are abundantly able to pay for all the seeds they desire to plant. The whole business, at best, is a foolish and useless waste of public money, and such is never without its demoralizing influences. It is so utterly a miscarriage, so hopelessly gotten into the mire, that it would be vain to expect any considerable good by means of a "reformation." We desire its entire abolition, and we—the tillers of the soil—demand it. *It has got to come.*—[Orchard and Garden.

[Uncle Sam's seed shop cost \$300,000 per

A Champion Suffolk Punch Stallion.

The accompanying engraving represents "Young Hero," a famous imported Suffolk stallion, 1515 Suffolk Stud Book. He is sired by Cupbearer III (566); he by Cupbearer (542); dam Butter Mogge (326) by Wilson's Britton (1303). The color of "Young Hero" is a golden chestnut; he stands 17 hands high, and weighs 2150 pounds. He has a compact body borne by short, strong limbs, and is more active than many stallions of his weight. He girths 8 feet around the heart and 8½ feet around the flank. He possesses great lung capacity; his quarters are well let down behind, and are very muscular. The legs are short, flat and cordy, and the skin is thin, indicating a good constitution. His disposition is gentle, and there is no tendency to vicious habits



SUFFOLK STALLION, "YOUNG HERO," THE PROPERTY OF WM. SADLER, GALT, ONT.

the exhibition, and the lady had seen the Prince of Wales assist her to a seat in a perambulator. She had not previously seen the Queen, but expressed herself thus: "I would willingly die for her; she is the best Queen that ever sat on the throne; she has done more to elevate mankind than any other person living." It is our opinion that every noble-minded woman in the world who has heard of her noble acts will endorse these sentiments. It is the duty of every minister of the Gospel and of the State, of every editor, to inform their hearers and readers who may yet be in ignorance of these acts. This subject being foreign to an agricultural publication, we touch but briefly on it.

Thorough tillage and high manuring are the best preventatives of destructive insects.

annum. We have two already on foot and more to follow. They may increase the value of property in their immediate vicinities, and will afford places for partizans, at the cost of the masses and the suppression of private enterprises.—[Ed.

There is no garden implement which is more labor-saving and profitable than the hand cultivator. It will perform as much work as five or six men with the hoe, and the labor is much easier. In a suitable soil, a row can be cultivated as quickly as a man can walk along. What more can a horse do? A horse can go over more acres in a day because the rows are farther apart, but with rows of vegetables say 9 to 12 inches apart a man can cultivate as many bushels of onions or roots as a horse, and will not feel more tired in the evening than if he spent the day behind the plow.

of any description. When three years old, he was awarded the silver cup in England, valued at \$20. He won 14 first prizes, 2 seconds, 1 third, 2 specials, 8 diplomas, one gold medal (value \$40), and 3 silver medals (value \$20 each). His "get" are making their mark in various quarters.

Mr. Sadler is the proprietor of "Rosehill," a fine stallion got by "Young Hero," and was awarded first prize at the Toronto Industrial Exhibition, in 1885. "Rosehill" also swept the first prize at the Columbus, Ohio, State Fair; first prize at the Toledo Tri-State Fair; and second at the Guelph Provincial last year.

Also, "St. Elmo" (No. 3332 E. C. H. S. B.), a fine specimen of the Norfolk stallion. He is a beautiful bay, with black points, standing 17h., and weighing 2000 lbs. Since 1881 he has figured in the leading fairs in Canada and the United States.

A Criticism.

We recently received the following:

DEAR SIR,—I like your paper very much in the main, but regret your rabid hostility to the Government's endeavors to benefit us farmers, and also your enmity to the Durhams. It seems to me preposterous to boom up the Ayrshires; I suppose I have seen the best they have to show at the different Provincial shows, and a mean lot I have always thought them. Wishing you every success, I am yours truly,

N. H., Guelph, Ont.

We respect and admire N. H.'s criticism, and only wish every person, whether official or otherwise, would speak as candidly. At the same time, the public should consider that the locality whence this criticism comes is just where the Government money is being expended. We admit we have written in opposition to Government expenditures, because we have not believed and do not yet believe that the first and chief consideration has been the benefit of farmers, but for gaining power over them, to the injury of every private individual or enterprise that may have been conducted by any independent person; that truth has been perverted and suppressed; that secrecy has been enjoined, and that no plan or device has been allowed to go untried to exalt imaginary good and suppress all evil results from such expenditures. Anything to be of real or lasting benefit to the farmers or the country, must be founded on truth, or the farmers and the nation must suffer. Officials must support each other, and in this continual increase of offices, jobs and salaries, we fail to see good that has been done equal to what private enterprise has accomplished, or what might have been thus accomplished. We know of inestimable injury having been done from the introduction of Government agricultural expenditures, and if still persisted in, from this you may date the downfall of a contented yeomanry and the introduction of serfdom that must follow.

No one admires the Durhams more than we do; no one appreciates the good that our Shorthorn men have done for our country more than we have done; no one knows better the devices and plans that have been adopted by those advertising the use of and using Government money to force the Durhams into the hands of farmers whose lands are not suitable for that class of stock, and whose pockets are being depleted by the degeneracy of Durhams in size and the diminishing of the milking qualities of milk-producing animals. Our course has been guided by the conviction that we have been doing our duty to the farmers in condemning injurious practices. We are as strong an advocate of the Durhams in their place as any one, but other breeds have merits. The baneful manipulation supported by Government officials to the injury of the farmer is what we have objected to. We believe there have been many breeders injured or ruined by Shorthorns since the establishment of the Model Farm and their importations of stock. Our pages are and have always been open for fair discussion. We believe N. H. and every other honorable person only wishes for facts.

My opinion is that the way to save boys and girls and make them fine men and women is to give them something interesting and valuable to do. Young folks like experiments. There is nothing they like better. So you will do well to give them an experimental garden, and then help them over the difficult points. A mere knowledge of botany is of very little value, unless it is accompanied by a practical sympathy with vegetable life, and a cultured power to bring out of nature something new and better.—[E. P. Rowell in *Isis*, 1887.]

Farmers' Clubs.**Dominion Farmers' Council.**

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

The regular monthly meeting of this Council was held on the 21st ult., President Leitch in the chair.

After routine and reading of communications, the following motions were made:

Moved by Henry Anderson, and seconded by John Wheaton, that the Pittsburgh Farmers' Club be amalgamated with this Council—Carried.

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

Several other applications for amalgamation were read, but amalgamation was deferred until further information is received.

A motion was made and carried congratulating the Pittsburgh Farmers' Club (which is a central organization with several local clubs associated with it) for the efforts it is putting forth in securing better representation of farmers in parliament, and for the success of its delegate, Mr. Henry Bawden, in forming an association of the members of the Ontario Legislature who are engaged in agriculture.

The Secretary stated that out of the 90 members in the Ontario Legislature there were 20 farmers—besides a few others who did not make a specialty of agriculture. There were 15 lawyers and 10 doctors in the house. Seventy percent of our population were farmers, and only 22 percent were represented in parliament.

A MEMBER—How many farmers are there in the Dominion Parliament?

JAS. K. LITTLE—According to the *Toronto News*, there are 33 farmers against 63 lawyers, 36 merchants, 22 doctors, and about 22 lumbermen. There are altogether 215 members in the House.

RAISING CALVES.

The following paper, sent by the Secretary of the Granton Farmers' Club, was read. It was written by John J. Biggins, a young lad about 20 years old, who is a member of the club, and was read and discussed by the club before being sent to the Council:

In regard to raising calves, I had almost come to the conclusion to write these few remarks altogether on grade calves, but after thinking it over, there was a difficulty in the way, as we could not raise grade calves unless one kept the thoroughbred article, and I think the same method will do equally well for all kinds of calves. In the first place, if we intend to feed well and to lay the foundation for good heavy cattle, we should make it a special object to breed good calves to commence on; and I think the following is a very good method of feeding:—Give new milk from the cow, for the first month, in quantities as follows: about 1 quart morning and evening for the first week, and raise it up to 2 quarts during the second week, and up to 1 gallon morning and evening for the third and fourth weeks; then commence giving 6 quarts of sweet skim milk and a handful of linseed meal mixed in it twice a day for the next 5 months, and it is very beneficial when the calf is six or eight weeks old to learn it to eat a few dry or chopped oats.

If the calves are dropped in the fall they will be ready to go out to grass about the first of June, and if they are spring calves, put them in a small grass field with some old shed or covering in it,

to protect them from the hot sun and rain; be sure to take them in before the cold rains and frosty nights in the fall, and give the following rations daily to each calf: 1 pint of either corn or pea meal, 1 quart of chopped oats, 1 pint of bran, ½ pint of coarse ground oil cake, all mixed together, and a pailful of mangels, with clover hay twice a day and straw at night. Calves will do very well on unground oats, but as a general rule grinding renders all the cereal grains more digestible by reducing the size of the particles. To be a careful and successful feeder a man does not require to be a thorough physiologist, but he does require judgment and experience. It is sometimes said of a man that he is a good feeder because he slashes out meal to his cattle with the scoop shovel, but this does not entitle him to the name of a profitable feeder, and all good cattle feeding must have its start in calf feeding, for it is very seldom that a neglected calf makes a profitable beast. Now, Mr. President, a skilful and practical feeder will strive to keep his calves constantly growing in every part of the system, and I think it is very important to never let a calf lose what is termed its calf fat. But a calf at six months old might be fed up to 400 or 500 lbs. weight on milk alone, and only one part of its stomach would be brought into activity. The consequence would very likely be that when the food was changed the calf would get sick, as the other parts of its stomach would be entirely undeveloped and not in a condition for digesting fibrous food. That is the reason that I think it profitable to learn calves to eat a little chopped oats or something dry as soon as they will, to develop and enlarge the first stomach, because we can not get a good, healthy, full grown beast unless he has enough capacity for stowing away his dinner.

Coarse ground oil cake is very highly esteemed by the breeders of Great Britain as a food for calves, as they consider that it keeps their stomachs and blood in a good healthful condition, which is a very important object; and it is also very nitrogenous and has got some of the same properties as milk; ground oats are also an excellent food, as they are not only perfectly safe to feed, but also contain about 5 percent of fatty matter. Now, Mr. President, I think a nice layer of fat over a calf's body is something like an overcoat for a man, it prevents a good deal of shivering on a cold day. And whatever mode of feeding we practice, if we want to raise good cattle we should never stunt the calves.

Sometimes we allow our thoroughbred calves to suck the cows till they are 6 or 7 months old, and commence giving them a little chopped oats and bran as soon as they will eat it, but I don't think there is much advantage in letting them suck, only it saves the trouble of milking, and after a cow first calves she will have more milk than the calf will take and consequently needs milking at least once a day; and one great disadvantage in this system is that after a few months the cow decreases in milk as the calves older and requires more of it. I think the best way is to feed them by hand; then as the calf gets older and larger we can increase the quantity of milk to suit the requirements.

I must say a few words about the "scrubs," as I am called upon to write my essay on all kinds of calves, and I think the most effectual method of raising poor scrub calves would be to commence when they are very young with a few pounds of dynamite.

The paper elicited a good deal of attention, and the writer was highly complimented. The only point objected to was the small quantity of milk fed to the young calf, several members having stated that their young calves consumed more than two quarts a day for the first week.

Several members stated their experience in calf feeding, but it was unanimously agreed that the plan adopted by President Leitch was the best, which he described as follows:

I feed new milk for the first three or four weeks, and then I gradually change by feeding sweet whey, with ground linseed meal in it, and after each feeding I give dry bran, usually with some oats; but I like bran best, it being

smoother on the stomach, and contains more bone and flesh forming ingredients. In this manner I raise splendid calves, and they do not hunt or suck each other. I take the second lowest board out of the fence, and nail upright strips, forming a sort of stanchion for each calf, and I give the feed in pails on the outside of the fence. A trough is objectionable for two reasons—(1) the big calves gobble up the lion's share, and (2) the feed should differ according to the age of the calf, so that it should be fed in different vessels.

Vice-President Anderson stated that he preferred feeding the oats whole instead of ground, as the calves then learned to masticate better.

John Wheaton stated that his calves ate hay readily after they were 3 or 4 weeks old.

The President replied that calves would not eat hay if they got plenty of the other foods mentioned, although he did not disprove of feeding foods that were somewhat bulky.

INTERESTING DISCUSSION ON HORSES.

The Secretary stated that he had heard from Mr. J. B. Freeman, M. P. P., who regretted that he could not prepare his paper on "Renting Farms on Shares" until May, as the work in the Legislature occupied his whole attention. However, Mr. F. C. Greenside, V. S., Professor of Veterinary Science and Practice at the Ontario Agricultural College, kindly consented to contribute a paper, and he (the Secretary) worded the subject as follows:

THE BEST CLASSES OF HORSES FOR FARMERS TO RAISE: (1) FOR FARM USE; (2) FOR THE MARKETS.

The paper reads as follows:

The Dominion Farmers' Council could hardly have chosen anything more important to deliberate upon than the above mentioned subject, particularly as the breeding season is just upon us.

In order that profit may be derived from the consideration of this subject, it is most important that all prejudice be set aside, for unfortunately we find that most people enter the discussion of this subject with biased minds, and preconceived ideas often influenced by individual interest, and that debate only seems to

FAN THE FLAME OF PREJUDICE

instead of rectifying error. Many people are apt to form very decided opinions upon very slender evidence and limited experience. We should be particularly careful to avoid making up our minds from exceptional cases. Although the title of my subject has been carefully worded for me, as comprehending the points most worthy of our attention in connection with this subject, still I think that in making plans for breeding horses we should never overlook their market value, or the demand there is likely to be for the particular class we may select.

It would open up a wider field for discussion, but one of much practical interest, to consider whether it is not possible for the Canadian farmer to get all his horse work done for nothing by colts, while undergoing the necessary training to make them bring the best price in the market, and by brood mares during the time they are carrying their young and suckling them. This plan would necessitate keeping a larger stock of horses than are usually kept on farms, but if they were looked upon as stock returning a profit by increase in numbers, as in the case of cattle and sheep, this would be no drawback. According to the present management of nearly all farms, the keeping of horses is looked upon as one of the necessary expenses, and only about enough breeding of them is carried on to replace worn-out animals. If the only demand for horses was to supply the home market, there would be every reason for limiting the production of them to about the extent referred to. But fortunately we have outside markets, and it is by breeding for them, and improving the

standard of our stock, that we are likely to raise our reputation as a horse country.

In looking at our Dominion statistics we find that there were about 22,000 horses exported from the Dominion of Canada in the year 1880, and that in 1885 there were about 11,000 sent out. The reason for this extraordinary output some seven or eight years ago was due to the Americans conceiving the idea that their city draft work could be more economically done by a heavier class of horses than had hitherto been doing it. They had been using horses weighing from ten to eleven hundred in their lorries, but wished to replace them by animals weighing from fourteen to sixteen hundredweight. So they came into our markets and bought almost anything that had much weight. This raised the price of draft horses fully thirty percent. We have since found that the demand for heavy stock has lessened considerably, and on the whole their prices have declined about ten or fifteen percent. This is no doubt due to the fact that the Americans got most of our best mares, and that they have imported heavy draft stallions by the hundreds, so that they are now breeding what they want as fast or faster than we are, and are thus supplying their own market, hence we can never look to them again for providing such an extraordinary outlet for our surplus heavy stock.

The fact that Canadian horses have a better reputation for stamina than the corn-fed ones of the west, continues to help our sales even under the disadvantage of a twenty percent tariff.

The boom in heavy horses has had the ill-effect of inducing many breeders to breed indiscriminately to heavy stallions without considering the suitability of their mares, so that many mares of small size have been bred to stallions much too heavy to cross well with them, and such progeny usually turn out coarse animals with light tops, heavy legs, and poor constitutions. Although this harm has resulted, yet much benefit has accrued from the stimulus that was given to the importation of a high class of draft stallions, which we have many specimens of in this country at the present time.

It will not do to go to extremes in laying down rules for breeding particular classes of horses to the exclusion of others. We can hardly say that we breed any class of horse in this country that is not required, though in some cases the wrong course is pursued in getting them, while in others too many are bred of the class, and in others not enough. The

CLYDE AND ENGLISH CART HORSES

are *par excellence* the draft breeds, but few people hold the opinion that their get from suitable mares give the farmer the most satisfaction in doing his work. A good sized specimen of a half-bred Clyde, or cart horse, is unnecessarily heavy for the performance of almost any of the farm work in this country. They are of course proportionately inactive, and to a great extent unfit for work that is most economically and comfortably performed with moderate speed.

Granting that draft stock is not the most suitable for the general requirements of the farmer, still it does not follow that we should not breed them. On the contrary, if the production of them is not overdone—as it might readily be when we come to consider that our market for them has become more limited, and is likely to become more so, as the Americans produce more largely—still there will always be a fair return from high class draft stock, even sufficient to compensate for any inconvenience the farmer may suffer from having to do his work with animals not exactly suited to it. Having mentioned the Clyde and the Shire together, a comparison of them seems in order. The united intelligence of Scotland on the one hand and England on the other have not come to terms, or given an expression of opinion as to the respective merits of the two breeds, in order that foreigners can be guided to a definite and correct impression, thus showing that prejudice is ever at work. We further find that those supposed to be good judges of either breed cannot in many cases tell whether a horse is a Clyde or a Shire, indicating that there is a blood relationship, and in many cases not very far removed. In the face of all this, it seems like a piece of presumption for an humble individual to attempt to offer a solution of the vexed question of superiority in

these two breeds. That there are some points of difference between the two there is no doubt, and that there are many exceptions to these usual differences is a further fact. Of the two breeds, the heaviest specimens are to be found amongst the Shires, and their upright shoulders give them superior draft ability, but at the expense of their joints further reduce. In comparing their bone, skin, hair and feet, our observation leads us to conclude that evidence of good quality is more frequently manifested by the Clydes.

On the other hand, defective middles are much more common amongst the Clydes, showing that their constitutional vigor is often defective. Many lovers of the Clyde strongly oppose this assertion, but it is nevertheless an undoubted fact, and is even admitted by the compilers of their own stud-book. The verdict of American importers of draft stock is evidently in favor of the Scotch horse, as indicated by the greater numbers they have purchased when compared with other breeds. Such evidence of superiority should, however, be received with caution, for fashion runs riot in horse flesh as in other things. The Clyde is on the whole a more stylish and flashy breed, and it is a matter of opinion as to the value to be attached to this quality in animals whose function is chiefly one of usefulness. The weight and range of the

PERCHERON AND SUFFOLK PUNCH,

as well as the absence of long hair on their extremities, suggest a comparison of these breeds.

The man who will assert that we should not give these breeds a place in our consideration and patronage in this country, is certainly a bold one. Although we cannot perhaps compare their get, when crossed with the common mares of this country, to that of the breeds previously spoken of as heavy draft horses, yet we must concede to them the qualities of greater compactness and activity, and consequently of being more suitable to get farm horses and light drafts, for which there is nearly an equal demand in towns as for heavy drafts, and not at a much lower figure either.

For a breeder who has small mares, and who wishes to increase the weight of his stock, without hazarding the risk involved in violent crossing, will find these breeds most suitable.

Fault is often found with the amount of bone which they possess, and although we do not wish to minimize the importance of a sufficiency of bone, still we think that the quantity of bone necessary is best estimated by an animal's ability to remain sound in his limbs, or in other words, free from bony diseases of them. We have no evidence to show that either Suffolk or Percherons are more subject to such unsoundness, and until we have, it is not fair to condemn them for a lack of bone. It is much more important to attend to the texture of bone, as indicated by flatness; and it must be admitted that too much bone of good quality is seldom seen, but it is not unusual to find an excess of bone, when of a spongy texture, as pointed to by roundness of the canons.

As is well known, the Suffolks and Percherons have no long hair on the legs, which in the opinion of the writer is a decided advantage. A profusion of hair presupposes a coarse skin, and a coarse skin a corresponding decrease in the vitality of that covering, and consequently a greater tendency to disease of mal-nutrition, as grease, scratches, swollen legs, etc. Hair is very retentive of moisture, and being a good harbinger of dirt, it leads to excessive irritation and itching, and consequently to the troubles spoken of.

There is not the range of style in these breeds so noticeable in the heavier draft ones, which the shortness of their necks is largely accountable for. This deficiency is especially noticeable in the Percheron, and many of the half-bred ones seem to have their necks half covered by a good sized collar.

It is hard to beat the Suffolk Punch's middle, and, consequently, his thrift and durability. There is no doubt that an increased use of the Suffolk sire in this country would accomplish much good, and furnish a class of horses, when mated with our common mares, that would be particularly suitable for heavy farm work, and withal moderately active and very docile.

The error is often made that to get a farm horse you must breed to that so-called, but indefinite, animal termed an

AGRICULTURAL STALLION OR GENERAL PURPOSE HORSE.

These are generally light draft horses made up from all sources, possessing no purity of blood, and, consequently, no pre-potency, and giving no reliability as to what they will get, frequently breeding back to something undesirable. There is no doubt that it would be a great benefit to this country if only pure bred sires were used. The lighter type of Clyde, of which there are a great many, and are easily procured in the old country, and also the Suffolks and Percherons, will get light draft horses with moderate activity, and of much more satisfactory quality, than the nondescript general purpose.

There is not so much fault to be found with the quality of the heavier classes of horses in this country as with the light ones, which is of a sadly low standard.

The demand for them is good in all the grades, from the heavy large carriage horse down to the low, chunky, symmetrical, active cob. There is no better opportunity of improving our reputation as a horse country, than of raising the quality of our light stock. We want more good looking, symmetrical animals, and, above all, to possess more of that most essential element called *quality*. The majority of people don't understand what *quality* is, and it is not easy to give a very concise and comprehensive definition of it. It may be said to be evidenced by clean cut or well defined points, by fineness of the coat, pliability of the skin, which fits closely to the bones of the limbs, which have a decided tendency to flatness.

The original source of all this quality appears to be the Arabian horse, but we have directly got what exists of it amongst our horses from the

"THOROUGHBRED" OR "BLOOD."

as he is sometimes called, and which is simply the Arabian horse modified by climate, soil and management. The modification is a great improvement, as the Thoroughbred has more size, range, substance and speed than the Arabian. Now, in order that we can improve the quality of our light horses, we must go to the source of that quality, viz., the Thoroughbred. Nothing has brought the light stock of Great Britain and Ireland to such a high state of excellence as the large infusion of Thoroughbred blood they possess. We have had a few Thoroughbreds in this country, some good ones and others not up to the mark, but it is only in exceptional cases that farmers could be prevailed upon to use them. They generally imagined that if they used a Thoroughbred on their common mares, they would be breeding race horses, which is, of course, a great piece of absurdity. In the majority of cases only very small mares were used, and often old, broken down cripples, and, consequently the size of the progeny was too small, and in some cases unsound. But when good-sized, sound mares were used, the get have brought the highest figures. Of course, a suitable "Thoroughbred" to mate with the common mares of this country must be one of good size and substance, and free from hereditary disease. Many such horses can be got in the old country and in the States for very moderate figures.

Half-breds can easily be produced if proper sized mares are used, weighing from 1,100 to 1,250 pounds, and there are many that have used such horses on their farms that consider them the best general purpose animals that can be procured. So that, apart from their high value in the market, they can be made profitable use of.

It is next to impossible to procure a good looking

CARRIAGE OR SADDLE HORSE

in this Province, and it costs as much to look them up as half the purchase money.

Many people imagine that such a class of light horses as has been spoken of can be produced by stallions with trotting blood in them, but nothing can demonstrate the error of such a conclusion more forcibly than the wretchedly low standard of the carriage and saddle grades of horses found in the United States. The only quality they possess that is desirable is ability

to trot in many cases, but for style at a practicable road gait, and for all-day staying power, they cannot even compare favorably with half-breds for roadsters. Trotting horses are very seldom good looking, nor do they possess much quality, so that they have not got what is required to make them suitable to cross with the common mares of this country, and, being made up from mixed sources, they do not possess much impressive power. Breeding for trotting speed is a matter of much speculation and the work of a specialist, and it seldom pays the farmer to indulge in it. Of course there are a certain number of people that want speed beyond everything else, and are willing to pay for it, but they are limited in numbers, and farmers have not time to develop what frequently takes a long period of education to bring out and make worth much money.

In the course of forty or fifty years there may be a trotting breed of some purity, but it will take time to bring it about, as it has done in all other breeds of horses.

What we would most like to impress upon the minds of the members of the Dominion Farmers' Council, is the urgent necessity for introducing a larger infusion of Thoroughbred blood into the light horses of this country, for it will not only result in pretty immediate benefits, but it will have a lasting and favorable effect.

It is certainly most unfortunate that we have not got a sufficient number of suitable horses to supply the demand opened out for us from the British army, and no less a judge of the circumstances of the case than Colonel Ravenhill attributes their scarcity to the fact that we have used Thoroughbred sires so little.

Some of the leading horse breeders in the neighborhood who were invited to be present expressed their regret that they could not attend. However, the paper elicited a lengthy discussion, and although some of the farmers and horsemen present were interested in different breeds of horses, yet they admired the calmly deliberate, thorough and impressive manner with which the paper was written.

The only noteworthy points brought out in the discussion were: (1) That farm work done by colts was a fine thing for the boys, and old mares were a fine thing when the teamsters were old men; (2) Farmers had to be guided to a large extent by the mares they had on the farm, the selection of the stallion being controlled thereby; (3) The specimens of thoroughbred stallions usually found in this part of Ontario were too small for the purposes indicated in the paper.

A motion of thanks for the instructive and unprejudiced paper was passed, and the secretary was instructed to forward a copy of same to Prof. Greenside.

ROYAL RAILWAY COMMISSION.

Under the head of new business, several members spoke of the Royal Railway Commission appointed by the Dominion Government, which is now travelling the Province taking evidence as to the grievances against railways, with the view of discussing in Parliament the propriety of establishing a permanent commission for the regulation of railway freights. It was brought out in the discussion that this Royal Commission was composed of lawyers and railroaders, that the railway companies brought witnesses who were unfavorable to the establishment of a commission, that these witnesses were afraid to speak the truth for fear the railway companies would go against them in the matter of rates, and that little or no attempt had been made to get evidence from farmers or others who were unfavorable to the continuance of this monstrous injustice.

Vice-President Anderson denounced the rail-

ways and the Royal Commission in the most vigorous terms. He doubted that an independent commission could be appointed to regulate freights, for the railways could control the Commission as easily as they could control the Government, but some change was absolutely imperative, and hardly any change could be for the worse. No harm could accrue in trying a commission. The enormous capital wasted in building independent lines of railway, which moneys came out of the farmers' pockets by bonuses and taxation, should be looked into, and some attempt must be made to prevent these railways amalgamating into gigantic corporations and monopolies for the purpose of crushing the farmers to death. Our money was wrenched out of our pockets and used for our own destruction, and yet we tamely submitted to such degradation. He therefore made the following motion: "That this Council considers the Royal Railway Commission to be a farce, an insult and a fraud upon the farming community, it being already well known that the most peremptory measures should be taken to secure justice to the farmers in matters of railway freights."

The motion was duly seconded and carried.

President Leitch spoke of the great national expense incurred by the wanderings of the Royal Railway Commission, and, as an extensive shipper of cheese and apples, related several obstacles under which he labored owing to unjust railway rates and regulations. Farmers in his section could make money by raising apples, were it not for the uncertainty of railway freights; the best apples were often wasted on this account.

After further discussion, it was thought that the railway magnates would be successful in their designs unless this Council or other farmers would make a supreme effort to send independent witnesses to be examined before the Royal Commission. It was thought desirable to make the best out of a bad thing.

W. Weld stated that Mr. Valancey E. Fuller, of Hamilton, was endeavoring to gather witnesses from Farmers' Institutes, and he has arranged for a special sitting of the Royal Commission to be held in Toronto, in May, for the purpose of examining farmers. He (Mr. W.) asked if it would not be well for the Council to send witnesses or delegates.

W. A. Macdonald said he had written to Mr. Fuller, asking when the Royal Commission would sit to take the evidence of Institute representatives. The reply stated that the sitting would take place on the 13th and 14th of this month, and that the Council should send witnesses; but we did not meet till now, and, besides, the Royal Commission sat and adjourned for want of witnesses.

After further deliberation, the following resolution was carried: "That it is desirable in the interests of the farmers that the Royal Commission should sit in London for the taking of evidence, that the Council will endeavor to obtain as many witnesses as possible from western sections of the Province, that W. A. Macdonald be appointed to meet the London City Council and ask it to co-operate with the Dominion Farmers' Council in procuring a session of the Royal Railway Commission in the city of London, the date of the sitting to be hereafter fixed, and that copies of this resolution be sent to the Secretary of the Royal Commission and to the Hon. John Carling, Minister of Agriculture."

ORGANIZATION OF THE FARMERS.

W. A. Macdonald stated that there would be a meeting of representatives of Farmers' Institutes in Toronto, on the 28th inst., to consider the advisability of organizing the farmers of Ontario by establishing a central organization. The meeting was called by Mr. Valancy E. Fuller, President of the Wentworth Farmers' Institute, and several leading questions were booked for discussion. Mr. Fuller intended to invite other farmers' organizations as well as Institutes, but the Council had not yet received an invitation. He (the Secretary) thought it desirable to unite all the farmers into one solid body, if possible. There were now four organizations which might be amalgamated, viz.: The Farmer M. P. P.'s Association, the Farmers' Institutes, the Grange, and the Dominion Farmers' Council. He had written to Mr. Chas. Drury, M. P. P., President of the M. P. P.'s Association, asking him to impress this subject upon the minds of this association at their meeting to be held before the Legislature adjourned.

After some discussion, it was resolved that President Leitch be appointed a delegate to represent the interests of the Dominion Farmers' Council at the Toronto meeting to be held on the 28th inst., providing the Council receive an invitation to send a representative.

The Dairy.**Cheese Making.**

BY PROF. L. B. ARNOLD.

The principles involved in the manufacture of cheese are few, but the modifying circumstances are many. They are quite too numerous to be comprised in an article of a length suitable for an agricultural periodical. Hence in responding to a request to furnish plain and concise directions for making fine cheddar cheese, I can do little else than to give such as will have the most general application.

I will begin by supposing that we have milk of average quality coming from grass-fed cows, the cheese to be made every morning from the night and morning's milk mixed, and that a curd-mill is to be used. The night's milk should be cured and cooled to 70°, whether it remains on the farm or is taken at once to the factory. If delivered but once a day, the evening and morning messes should be carried in separate vessels, if they have any considerable distance to be carried, and provision should always be made for odors to escape while in transit.

Supposing the milk to reach the factory in good order, it may be heated to 85°; a few degrees below or above that point will not be very material. The degree which is adopted or preferred should be the same every day. Either rennet extract or ordinary rennet may be used. If the latter, it is essential that the rennet skins should be soaked only in brine and the steepings sweet and clean. It is impossible to make fine cheese with tainted, foul, or badly prepared rennet. The use of whey for soaking rennets in, is especially objectionable. Before adding rennet or extract to the milk, let it be well diluted, so that a common pailful will be required to coagulate 5,000 pounds of milk, and if coloring is to be used, it should be equally diluted and thoroughly stirred in before applying rennet.

Rennet or extract enough should be added to have curdling begin to be apparent in about 20

minutes with the milk at 85°, and the milk well stirred while it is being added, and as long afterwards as it can safely be, and have it come to rest before curdling begins, in order to prevent the cream from rising, and the top of the milk may continue to be gently stirred till the milk begins to thicken. As soon as the stirring ceases, the vat should be covered to prevent cooling, otherwise the top of the curd will be too soft and waste when it comes to be worked. When the curd becomes firm enough to cleave before the finger, it may be cut into half-inch cubes and left a while—say 15 or 20 minutes—till it becomes hard enough to admit of stirring without injury. Heat may then begin to be applied slowly, not faster than to raise the temperature a degree in two to four minutes, careful stirring being continued till the contents of the vat are raised to 98° or thereabouts, and for about 15 minutes after the heating stops, so that the curd will be sure to heat evenly and not mat and injure by settling upon the bottom of the vat. After that the stirring may be continued at intervals just frequent enough to prevent the bits of curd from adhering till they are hard enough to be dipped, or the whey drawn off.

The stage to which the curd may safely advance before it is separated from the whey, is an important item, and should be carefully studied by the cheese-maker till he is perfectly familiar with it. If the curd is too immature and soft when it is separated from the whey, it will form into pasty and soggy masses, from which the whey that will continue to be liberated within the masses of curd cannot be properly separated, and the resulting cheese will be sour, dauby and poor. If, on the other hand, it remains in the whey too long—till the whey becomes sour—then a new set of chemical changes at once take place by which certain mineral matters in the curd, which it is important for the quality and healthfulness of the cheese should remain there, are rapidly dissolved out and pass off in the whey. The free acid in the whey also dissolves out of the curd and carries off in the whey that element in rennet which causes the curd to cure into a plastic, rich, smooth-feeling and easy-melting cheese when in the mouth, and its loss makes the resulting cheese hard and comparatively insoluble, with a feeling in the mouth as if it contained uncooked meal. Several other adverse changes will result from permitting the curd to lie immersed in sour whey, by which the flavor and quality and durability of the cheese are altered and impaired.

Though it is very important that the curd and whey should not be separated too soon nor remain together too long, there is ample time between the two extremes in which to make the separation—from 15 to 30 minutes or more. It will do to draw the whey when the curd becomes so firm that if a handful of it is pressed by closing the hand for a few seconds, it will spring apart when the hand is opened. Or it may remain in the whey till it will adhere to hot iron without showing any fine threads when pulled from the iron. The space of time between these two stages of maturity is usually from 20 to 30 minutes. The temperature of the whey should be kept up to 98° till it is drawn, and its separation should be begun soon enough to give ample time to get it off before it gets sour.

After the vat is tipped for drawing the whey, the curd should be gradually worked to the sides and upper end of the vat, and stirred briskly

enough to keep it fine till the whey is well drained out of it, which will require about ten minutes. It may then be allowed to settle together and adhere. When it has become tenacious enough to admit of handling, it may be cut into pieces convenient for handling, and turned occasionally to facilitate draining and to keep the temperature in all parts of the curd as uniform as possible. Keeping the temperature at 95°, or as near it as may be, the curd may lie, with occasional turning, till it is ripened enough to withstand the changing temperature in the curing room, and till all strong odors or taint, if any there should be, are removed. This generally requires from three to five hours time. To stand the vicissitudes of the average curing room, the curd ought to be far enough advanced to respond to the hot-iron test with threads at least one-fourth of an inch long. Longer threads would be preferable, and would make the cheese safer. No harm will ensue if the ripening continues till the threads are several inches in length, or till the curd, when applied to the hot iron, will give a distinct smell of toasted cheese. Danger will lie not on the side of over-ripening. It will be on the side of under-ripening always, which is likely to occur from allowing the curd to become too cool. This is where most cheese-makers fail, and to insure best results and for shortening the time for reaching the desired stage of ripening, it will pay to make special provision for keeping the curd warm while maturing after it is out of the whey.

When advanced to the proper stage, as above indicated, the curd may be pulverized by grinding or slicing, and about 2½ pounds of salt added for each 1000 pounds of milk, and, a half hour later, or when it has cooled to 80°, put to press. With an average curing room, this curd will cure into a "fine, flaky and fat" cheese in 30 to 35 days, with a buttery texture melting in the mouth, with high flavor.

A variation of conditions will call for a variation in treatment. If the milk is sweeter than usual, it will require either to be matured in the vat by heating, or set with more rennet, or cut finer or salted higher or varied a little in all these respects. If the milk is riper than usual, opposite variations will be in order. If strong with any odor or from bad flavored food, it will require to be got out of the whey early, and matured till the bad odors disappear. If permitted to sour in the whey, taints and odors will not disappear, no matter how warm the curd is kept or how long it is aired. If milk from hay-fed cows is to be used, and rapid curing is desired, it may be set with a little more rennet than usual, cut coarser to retain moisture, matured a long time and kept quite warm after out of the whey, salted light and cured in warm room. When curing rooms are faulty, cheese cures much better in boxes turned upside down occasionally. The cheese will be finer and will shrink less.

Quality of Milk from Different Breeds.

The average variation in the quality of milk from the different breeds is not so great as is generally supposed, although the individual variations are very great.

The following table gives the results of tests recently made at a Swedish fair. The milk from 800 cows was tested at each milking during the fair, the tests having been made with the lactocrite. The figures represent the percentage of fat in the milk:

SWEDISH BREEDS.	
Highland	4,290
Herregards	4,188
Stromsholmk	3,648
Grades	3,878

LOWLAND BREEDS.	
Dutch	4,023
East Friesland	3,420
Oldenburger	3,192
Angler	3,460
OTHER PURE FOREIGN BREEDS.	
Ayrshire	3,889
Yorkshire	3,530
Algauer	3,364
Norwegian Mountain	4,503
CROSS BREEDS.	
Stromholms (Swedish), $\frac{1}{2}$ Shorthorn, $\frac{1}{2}$ Algauer	3,858
Herregards (Swedish), Yorkshire Short-horns	3,423
Herregards (Swedish), Yorkshire Short-horns, East Friesland	3,185
Herregards (different herds)	2,968
Dutch and Herregards	3,545
Swedish and Dutch	3,562
Swedish and East Friesland	3,350
Oldenburger and $\frac{1}{2}$ Ayrshire	3,778
Ayrshire (different herds)	3,760
Ayrshire and Swedish	3,460
Ayrshire and Shorthorn	3,787
Katrineholm (Swedish) and Ayrshire	3,328
$\frac{1}{2}$ Algauer	3,217
$\frac{1}{2}$ Algauer	3,882
Grades	3,464

Testing Milk and Cream.

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

No. VI.—SOXHLET'S MILK-TESTER.

This instrument was invented by Dr. Soxhlet, a distinguished German investigator, in 1879, and is little known in Canada, although it is extensively used by dairymen in Europe. It works on a principle quite different from any of the other instruments which I have described. I shall not trouble you with figures comparing its accuracy with the results obtained by chemical analyses; but shall merely mention that, although it only costs \$12 at the manufactory, the results correspond so closely to those obtained by chemical analysis that the instrument is all that can be desired for all practical purposes; the average differences are mere nothing, and the variations in individual cases are very insignificant. Any farmer or dairymen, after a little practice, can operate the instrument successfully. The butter fat in the milk is dissolved by ether and caustic potash, and then the percentage of fat in the milk can be read off in a graduated glass tube by taking the specific gravity of the ether-fat solution, which is the more concentrated the more fat the milk contains.

VII.—THE LACTOCRITE.

This instrument is quite a new invention, and tests the quality of the milk with the same accuracy as the apparatus which I have just described. It was invented by De Laval, but cannot be used except in connection with his separators. Twelve samples of milk can be tested at one operation, and 60 tests can be made in an hour. It does not require an expert to operate it. It makes more tests in a shorter time than Soxhlet's apparatus, but its cost is seven times greater. In this country it costs as much as the hand separator. In making the test, the milk is first boiled in acetic acid, which dissolves the casein—so curdled or sour milk can also be tested—the milk serum being thus transformed into a clear and thin fluid, the fat not being affected. The fat is gathered by revolving the milk in a De Laval separator, and the percentage is read off in a graduated glass tube. The results given by the lactocrite in testing skim or butter milk are always one-fifth percent too low, and the

instrument is therefore inferior to Soxhlet's in these branches of testing.

VIII.—CORONANDER'S MILK TESTER.

This apparatus is a new German invention, and bears the name of the inventor. Small glass flasks, the number corresponding to the number of tests desired to be made at one operation, are required. The samples of milk to be tested are placed in these flasks, and a solution of caustic potash and ether is added. The flasks are then placed in a hot water bath, the temperature being kept regular, and after a short time the temperature is slightly raised to evaporate the ether, which holds the fat in solution. A cork is now provided in which two glass tubes perforate, one of which extends nearly to the bottom of the flask, and water is now poured into the flask until the butter fat, which swims on the surface of the liquid, reaches the null point in one of the glass tubes, which is so graduated that the percentage of fat in the milk can be read at a glance. The one cork, with the fitting glass tubes, is sufficient for all the flasks, and the determinations can be made as quickly as the operator passes from one bottle or flask to the other. This apparatus is sufficiently accurate for all practical purposes, being very nearly as accurate as Soxhlet's and the lactocrite. The cost is very little, say about five or six dollars, which will include flasks enough to make 60 analyses at once. It requires no expert to operate it, and it is the cheapest and most labor saving apparatus that has yet been invented. It will analyze milk, cream, skim-milk and butter-milk with the same accuracy and facility. It is adapted for creameries, cheese factories, for testing at exhibitions, and for all circumstances in which a large number of tests are required to be made at one operation.

I have now given you a short description of the most noteworthy instruments for testing the percentage of fat in milk and cream, and my task would now be ended if our dairymen adopted the same methods of thinking as those in Europe.

Our dairymen affect to be extremely practical; but there is scarcely a limit to the complications in their methods. Neither they nor our dairy professors seem to care about the percentage of fat in the milk or cream; what they want to get at is the butter capacity of the cream, which they regard as the plain, practical way of solving the question. They are even working blindly under this system, while the Europeans have solved and abandoned it. I must admit this, however, that our conditions at present are somewhat different, but their policy should be to make our conditions more akin to those on the continent of Europe.

If the butter capacity of the milk or cream can be shown to correspond with the chemical analysis, then it makes no difference whether you adopt the fat or the butter standard, provided (1) that the butter can be obtained with the same facility and at the same expense as the fat, and (2) that the same degree of justice can be meted out to the respective patrons of the creamery, and to the other parties concerned.

Last year about 160 tests were made at the New York experiment station, comparing the butter obtained with the chemical analysis of the milk. The Cherry Churn was used, the milk being set moderately deep about 54 hours in running water at a temperature varying from 40° to 50° Fahr. The conditions for cream rising were therefore rather more favorable than those ob-

tained on the average farm. The cows were natives. The churns were stopped when the butter appeared in the granular form, and, being washed and weighed, the butter was allowed to stand 24 hours in a warm, dry place, after which it was weighed again, the percentages of butter being taken from the last weighings. I shall not trouble you to notice each test individually, but shall divide the tests into groups of about 20 individual tests in each group, the following being the average results:

	Percent of fat by Analysis.	Percent of butter from milk.		Percent of fat by Analysis.	Percent of butter from milk.
1	3.32	2.21	5	3.40	2.97
2	3.60	3.68	6	3.80	3.24
3	3.87	3.89	7	4.18	3.81
4	4.41	4.39	8	5.11	4.73

If you take the grand average of all these 160 tests, you will find that the percentage of fat obtained by chemical analysis is 3.96, while the average percentage of butter obtained from the milk is 3.74—a difference therefore of 0.22 percent in favor of the analysis, so that the percentage of butter would be obtained by multiplying the percentage of fat by 0.944. In some individual cases, there is a wide difference between the fat and the butter. In some instances the churning lasted several hours, and in others no butter could be obtained after a whole day's churning, although the milk showed high percentages of fat. These tests were made from milk and cream which were under the control of the experimenter. In actual practice, where some of the cream must necessarily be churned sweet, some sour, etc., etc., the variations are much greater—the sweeter the cream the greater the percentage of fat left in the butter-milk, varying from one-half to five or six percent. Besides all these irregularities, the labor and expense of churning are greater than many of the fat tests. The pertinent question now arises, which is the more correct and just standard, the percentage of fat or the percentage of butter? I have already pointed out the crying injustice of the standard adopted by many of our creamerymen, viz., the bulk of cream.

(To be continued.)

A report to the Michigan Horticultural Society says: Michigan apple growers are beginning to fight the codling moth with poisons successfully. Those of experience in the work say: Get only pure Paris green, then use three ounces to forty gallons of water. Apply just as soon as the trees are out in bloom, but avoid inhaling the spray, and handle the nozzle with gloves, lest the poison find some break in the skin of the hand. Wm. A. Brown, who made large exhibits at four great expositions, found his specimens almost exclusively in sprayed orchards.

It often happens, says the Farm and Garden, that we have varieties of apples that are tender and winter-kill. We wish to grow them, but are not able to do so on their own roots. We find there are varieties—like the Northern Spy and Golden Russet—that are usually very hardy. If we take the trees of those varieties, and a few others that are alike hardy, we may set grafts in them at the point where we wish to make the tree form its branches, and by this means we form a new top, of a variety that is not hardy on its own roots. This tree will be much hardier than by the usual plan. In Michigan, and certain sections of many Northern States, where the trunks of fruit trees are killed and split by cold winters, the plan we advise will prevent the usual winter-kill.

The Farm.

Soil Exhaustion Again.

We are pleased to see that this subject, which was pretty thoroughly discussed in our last issue, has elicited attention, as will be seen in our correspondence column. One writer has no faith in papers contributed by interested parties, and wants to hear from practical farmers. This is not a question which practical farmers can discuss very exhaustively through the light of their own experience alone, and their opinions differ very widely; but there can be no difference of opinion on any vital point when the principles are fully understood. Besides, it makes no difference which side of an issue the writer of a paper takes, the truth being brought out in the discussion, and if he attempts to foment a boom for his own aggrandizement, he will be so severely handled that he will never make another attempt. An endeavor is made to get papers from the best authorities, no matter which side of the question they espouse.

Our Meaford correspondent wants to know in dollars and cents how much fertility is annually abstracted from the soil. This question, if it was discussed, was not reported; it would have been impossible to discuss all the details in one sitting. For the enlightenment of our correspondent and others who may feel interested in the question, we give the money values, which are as follows:

DAIRY FARM.	
Nitrogen.....	713 × 18 = \$128.34
Phosphoric acid.....	289 × 8 = 23.12
Potash.....	224 × 5 = 11.12
Total.....	\$162.66
GRAIN FARM.	
Nitrogen.....	1512 × 18 = \$272.16
Phosphoric acid.....	931½ × 8 = 74.52
Potash.....	445 × 5 = 22.25
Total.....	\$368.93
Subtract.....	162.66

Difference in favor of dairy farm. \$206.27

The quantities of fertility abstracted are those mentioned in Mr. Brodie's paper, given in pounds, and the average commercial prices of these ingredients are about 18 cents per pound for the nitrogen, 8 cents for the phosphoric acid, and 5 cents for the potash, the calculation thus showing that the grain farm takes \$206.27 worth of fertility from the soil more than the stock farm. Now, these figures seem to imply an advantage to the stock farm, but such is really not the case, and here is a point which is worthy of the most attentive consideration. This rash conclusion arises from an error in the customary methods of thinking. The proper standpoint is that farming is nothing more or less than a manufacturing operation, the soil fertility, or the manures, being the raw material from which the finished articles (beef, milk, grain, etc.) are manufactured, and consequently the more articles manufactured the greater the profit, providing the business is in a flourishing condition. No manufacturer in other industries ever thinks of sparing his raw material so long as the business warrants ample profits; and if his own mines do not yield sufficient material, he purchases in the markets—just as the intelligent farmer does when he purchases manures, fertilizers, or food.

The vital question next to be considered is,

Which is the more profitable, dairying or grain growing?—just as the manufacturer now calculates whether it will be more profitable for him to make plows or plowshares. Of course, if there are losses in all these departments, then the manufacturer must sooner or later collapse, his capital or raw material becoming exhausted. He must make profits with which to purchase more raw material.

The reason why grain growing exhausts the soil more rapidly than dairying is that the former is conducted on a more intensive scale. Our system of dairying is far from being intensive—on the contrary, it is doubly extensive; for, firstly, we have a large number of acres supporting a small number of cows; and, secondly, the cows are of a poorer quality than they should be. Let us now see how effectually the stockmen contradict their own statements. They advocate the keeping of good cows and a more intensive system of supporting them—by rich or permanent pastures and by the soiling system. Let us now make both grain growing and dairying as intensive as possible, and compare the results as to soil exhaustion.

It is said that a cow can be kept in summer upon an acre of good, permanent pasture; if so, it will be a liberal allowance to say that half an acre—especially when two crops are raised per season—will keep her under an intensive system of soiling, and if she is an intensive cow she will give in six months say 6,000 lbs. of milk, which represents the following soil exhaustion:

	Lbs.	Value.
Nitrogen.....	32.4	\$5.83
Phosphoric acid.....	12.0	96
Potash.....	10.4	52
	54.8	\$7.31

Thus we see that half an acre of land loses per annum 54.8 lbs. of the constituents of fertility which have commercial value, valued at \$7.31, calculating at the average market prices as before, viz., 18 cents per lb. for the nitrogen, 8 cts. for the phosphoric acid, and 5 cts. for the potash. Comparing this with the maximum yield of wheat per acre, say 40 bushels, or 20 bushels (1,200 lbs.) for the half acre, and we get the following comparative results:

	Lbs.	Value.
Nitrogen.....	24.96	\$1.51
Phosphoric acid.....	9.48	75
Potash.....	6.24	31
	40.68	\$5.57
Subtraction.....	54.80	7.31
Difference.....	14.12	\$1.74

Thus we see that the dairy cow exhausts the soil more rapidly than wheat growing, at the rate of 14.12 lbs. of fertility, representing \$1.74, per half acre per annum, and the profits in dairying should be proportionately greater than grain-growing in order to make up for this loss.

These facts and figures prove a great many things. They prove that our live stock authorities, including the Model Farm Professors, don't know what they are talking about; with their mouth and pen they advocate good stock and good pastures, including the annihilation of "scrub" stock, which are certainly very desirable aims, but when they say that this intensive system tends to maintain or improve the fertility of the soil, they prove that they don't understand the A. B. C. of their profession, and here is a vital point in which Mr. Brodie's paper is misleading. They can prove that dairying may be made superior to the ordinary method of grain

growing as concerns soil exhaustion and fertility; but that such is absolutely the case, they dare not affirm with impunity. It does not belong to this article to consider the enormous extra labor in dairying or the loss of fertility consequent upon the handling of the manure.

Our correspondent, T. H., falls into the usual error when he takes the manure into consideration, saying that his figures are to be reduced by the value of the manure, stubble, etc. This is a matter of debits and credits, and those professors who take this view of the question are bad book-keepers. He makes a good point, however, in his remarks about surface washing. On rich soils which are subject to washing, a lot of soluble matter invisible to the naked eye is carried off, and a crop of rye should be sown immediately after harvest, which would largely avert this calamity.

PRIZE ESSAY.

Root Culture.

BY W. A. HALE, SHERBROOKE, QUE.

It has been said that before a man can grow roses successfully he must first have roses in his heart, and I feel that before we can grow root crops with uniform profit we must be planning for their culture at least a year before the time of sowing the seed.

First of all, let us decide to what uses we shall put the roots when we have grown them, the quantities and kinds most profitable for us to grow, and consider well the qualities of the soils at our disposal as adapted to the successful growing of the different sorts of roots, confining ourselves only to those which are suited to our different localities, and, what is of almost more importance than all the rest, the kinds, properties and conditions of the manures at hand as suited to these soils and crops. For instance, while the mangel wurzel grows remarkably well in parts of England and the north of Ireland, it does not seem suited to the climate of Scotland, and though turnips succeed particularly well in the vicinity of Quebec, they are not a profitable crop on the Island of Montreal. Unless we have already had some practical experience in root growing, we should begin upon a moderate scale, at first governing ourselves by the profitable results of our undertaking.

That root crops generally are not grown in Canada to the extent that they ought to be, or that in the future they will be, I believe there is no doubt. Canada's system of farming seems, roughly speaking, to have been first, wood and lumber, then wheat, then clover and plaster, and now mixed farming with root crops in rotation and artificial manures, in order that the land, impoverished by these drains upon it, may, in a measure, be restored, or at least kept up to a profitable state of fertility. As to ensilage taking the place of root crops, I believe the reverse will be the case, and that it will have the effect of encouraging a more extended culture of roots for winter feeding.

From many years of personal experience in growing root crops, I should decidedly advise the system of manuring in the drill, instead of flat culture with the manure spread broadcast. I am aware that many people are of the opinion that the drill system is more suited to the moist climate of England than it is to ours, but if properly done, there is no danger of incurring any risk from that score, and I have seldom found,

except in gardens, soils sufficiently rich to insure a large crop of roots unless manured in the drill, and I believe the reason is that our seasons are too short to allow the roots to grow to their full extent where they do not find the manures they require sufficiently close at hand.

Commencing with the *potato*, as being the most important root crop of all, I find that the ideal soil for it is a deep, sandy loam, with a well drained or gravelly subsoil. I should avoid grass sod land unless I felt sure that there was no likelihood of its being infested with wire-worms, and if the sod were not sufficiently rotten to allow of easy cultivation by horse power, I should seek a place elsewhere, such as a wheat, barley or oat stubble, or, best of all in my experience, a clover sod turned under deeply in August, and on the bare furrow before winter sets in, spread with a manure spreader the summer's accumulation of cow dung, at the rate of at least ten tons to the acre, for, if only from pasture-fed cattle, it will not be particularly rich stuff. During the winter, or early spring, the manure from the cow stables should be drawn out and piled on the head lands at each end of the field, and if dry swamp muck has been used in the stables as an absorbent, the manure should be just what is wanted for this crop. Mixing one load of horse dung to four of cow, will insure sufficient heat to decompose it, and if turned over once after being drawn out, it may be still further improved. As early in the spring as possible cross plow and harrow in 20 bushels of hard wood ashes to the acre, then, with a double mould board plow (or an ordinary one will answer, though not quite so well), strike out deep drills from 27 to 30 inches apart, and if the sun is bright do not open more drills than can be attended to promptly; then, if the soil is of a loamy nature, run the drill grubber with only three teeth in, and set narrow deeply in the bottom of each drill to loosen the subsoil. Should the land be of a stiffer nature, use a subsoil plow instead. Spread from one-horse carts 15 tons to the acre of the manure above mentioned evenly in the drills. As to the seed, between cutting the seed to two eyes and planting small, sound, whole potatoes, I have not much choice; fifteen bushels of either to the acre should be sufficient, but when the seed is cut, land plaster should be shaken over the sets to stop the bleeding, and the sooner they are in the ground the better. Change the seed from a different soil and locality every year, if possible, and also change the varieties just as soon as they show the least sign of running out. In planting the seed, either by hand or with a horse potato planter, drop the sets from 10 to 12 inches apart upon the dung and cover as soon as possible with the plow; roll heavily once, and in ten days from planting run the subsoil plow deeply in the open furrow between the drills; this will nearly fill them, will take the place of the first cultivating, and will do away with objections of the drills being too dry. When the plants are up from one to three inches, harrow once or twice along the drills with a Thomas smoothing harrow, or a light, straight-toothed one, if no better is to be had; it will do no harm. Keep the weeds down and the soil mellow between the drills with the horse-hoe teeth, or the drill grubber, run very shallow till a moderate earthing up is given, only to insure the potatoes not being sun burnt; after this, pulling any large weeds that may appear by hand should be sufficient. Keep

down the potato beetle with Paris green, as soon as the young are hatched out, using one tablespoonful to 3 gallons of water, applied with a whisk and constantly stirred with the same, lessening the amount of the poison as the sediment accumulates in the pail. Plow out the crop after the haulms have been gathered, using a Scotch plow, and taking at first every alternate drill; when finished, harrow up and across, and few will be left. When storing, either in pits, root-house or cellar, a slight dusting of air-slaked lime will be a wise precaution against rot.

Taking *Swede turnips* next, I would advise the clover sod, if well plowed down in August, but should reserve all the manure for applying in spring, having it well rotted, and not allowing any cow dung from the turnip-fed cattle to be used here; and, as clayey loams contain a large amount of potash, I would not apply ashes for the turnip crop, unless upon sandy loams or peaty soils, and then 25 bushels to the acre spread as early in spring as possible. As to Canadian superphosphates, I have either never had any that were what they ought to be, or else my soils do not require them, for I have never found the use of them anything but a losing investment. Well rotted horse manure, the piles having been turned once after being drawn out, or a mixture of ordinary farmyard dung well fermented and applied at the rate of 30 tons to the acre on land prepared as for potatoes, will give a heavy yield; for remember that it is the *last loads of manure that bring the profits*. Form drills 27 inches apart, and when each one is half covered, apply over the manure fine bone dust at the rate of 400 lbs. to the acre, and then finish the covering. This gives the young plants a vigorous start from the first, and benefits them throughout. Three lbs. of seed per acre, sown $\frac{3}{4}$ of an inch deep either by a single hand drill or when the drills have been evenly made by a 2-row horse machine, some of which sow the bone dust at the same time, followed by a heavy rolling. Then, as soon as the plants appear above ground, if the fly threatens destruction, sow land plaster on the leaves while wet with dew. Run the subsoil plow between the drills deeply, and follow it in a week with the scuffling horse hoe, the bent teeth of which should pare away the earth close to the rows of turnips and cultivate the soil between at the same time. Before the plants are large enough to entangle one another, single out to 10 inches apart, using a square cornered hoe, 7 inches wide, set at right angles to a short handle, and working out the plants by a pushing motion, instead of cutting in the ordinary way. When this art has been acquired one of the main difficulties in the way of profitable root culture has been overcome. Keep the scuffling horse-hoe or drill grubber lightly at work pulverizing till the leaves almost meet across the rows, and hoe out between the roots any weeds that may appear. In "topping and tailing," an old scythe blade cut to suit and set in a wooden handle, can be made to do for either a right or left hand worker, or a common shingler's hatchet works admirably. On pulling the turnip, sever the root with a single blow, and reversing the root by tossing it in the air, treat the top in the same way.

Coming next to *mangel wurzel*, I should still advise the clover sod, as for potatoes, and prepare the land as for the same, but would spread the ashes, bone-dust or superphosphate broadcast while the drills are still open, the plow bringing it nearly all where it will soon be reached by the young plants. I would prefer the long red variety on rich loam or peaty soil, but for general purpose on ordinary land I have found the Yellow Globe the most satisfactory. Single to 12 inches apart, and, in harvesting, simply twist the tops off, and by throwing the roots to where they are to be piled, enough soil will be shaken off to insure their keeping in the pits.

For field *carrots* select a deep, sandy loam, and following a grain stubble, harrow as soon as harvest is over to start the weeds, and run drills in the fall 33 inches apart, using the subsoil plow in the drills the same as for turnips. Spread 25 tons to the acre of what manure can be produced at this season, and cover deeply. In the

spring harrow along the drills, and, if necessary, replace some of the earth with the plow, roll heavily and sow the seed (having soaked it) in double rows on top of each drill 6 inches apart. Run the subsoiler between the drills, and thin the plants to 4 inches apart, using a 3-inch hoe. In this way the rows average 16 $\frac{1}{2}$ inches apart, and the yield I have found to far exceed single rows on narrower drills, and one hoeing almost does two rows at once. In harvesting, as you pull each carrot, cut it from the top at once with a sharp knife, allowing it to remain on the ground to dry. Gather in small heaps before night and cover from frost, taking the covering off each day for a few days before storing to allow the moisture from the sweating to pass off.

Parsnips, though not much grown in this country for stock, are excellent for producing milk and well flavored butter, and should be cultivated as carrots.

Yellow and white turnips are not much grown in Canada for feeding purposes. Cultivate as for swedes, thinning to 8 and 10 inches.

To those who might think that the above suggestions on growing roots—if carried out—would entail too much labor to be profitable, I would say that I have not found it so, and that what is worth doing at all is worth doing well, and that if these operations are attended to in time, and particularly before the weeds get a start, the work entailed will not be so heavy as one would suppose who has not tried any but the haphazard and trust-to-luck methods too often in use.

An Unfair Accusation and Untrue.

Editor Farmer's Advocate:

Sir,—In your April issue is an article headed "Our Government and its Confederates Preach False Doctrines in the Methods of Restoring Fertility of the Soil," and signed by "Subscriber." I believe, sir, you will have the fairness to allow me to reply, as I am distinctly designated.

It is unjust and untrue for "Subscriber" to charge me with being a "confederate" of the Government. It is true that I read a paper on "Robbing the Land" at the Dairy Convention of the County of Huntingdon, P. Q., on Feb. 7th, 1887, going down there all the way expressly for that purpose; but I did so solely on the invitation of the Secretary of the Association. It is therefore unfair and untrue to charge me with being a confederate of the Government, although if it were so I would not be ashamed of the connection.

I am next charged with "preaching false doctrines in the methods of restoring the fertility of the soil." I did say that the fertility of land could be maintained while selling off from it beef only or dairy products, without any additional enrichment other than it will itself provide, if judiciously managed, and so I still believe. I did say that in this way I had doubled the producing power of my own farm in eight years, and can furnish the evidence if necessary. I did not say that the fertility of "exhausted" farms can be restored in this way, but I believe it can, only it will require a longer time. I am willing to argue this point, Mr. Editor, with "Subscriber," or yourself, or any other living man, in the columns of your paper, or on any platform that may be named within a reasonable distance.

I did say, as "Subscriber" represents, that the day for the use of artificial manures is coming, and that it was unwise to buy these while we were allowing our present sources of enrichment to waste, and I have met with nothing since that in any way alters this opinion. All men will not grow beef or dairy products, and when those who do not have first husbanded their home resources of manurial enrichment, it is far better that they should buy artificial manures to supply the lack caused by the selling of the grain.

I did not say that "ashes are better (intrinsically) than phosphates or guano," as "Subscriber" states. I said that ashes allowed to waste on the farm would give a better return for their timely application than *purchased* phosphates or guano. And so I say now.

THOS. SHAW, Hamilton, Ont.

[Our correspondent "Subscriber" did not call you a "confederate" of the Government; no

such word was used in his letter. The heading of the letter contained the indictment, which he did not write. We take the responsibility of this charge, and shall defend ourselves if necessary. We will give you limited space to defend your theories, and we sincerely hope you will succeed, for nothing can give greater profit and satisfaction to our readers than the knowledge of a system of husbandry by which they can maintain and increase the fertility of their soil by returns from its own sources. We welcome short and pointed arguments from all quarters, "Subscriber" included; but woe to him who handles the question in such a manner as to attempt to bamboozle our readers; we shall reserve our most caustic pen for him.—Ed.]

Rust and Blight in Grain and How to Prevent it.

BY THOS. ELMES, PRINCETON, ONT.
(Concluded.)

The Barberry has been violently slandered as being the fruitful cause of rusting grain surrounding it, but after careful microscopic observation, I have arrived at the conclusion that the rust of the Barberry belongs to an entirely different class of fungi, and that it really has no more to do with producing rust on grain than any other shrubs or trees, which only favor rust by the dampness they attract.

I have visited the experimental grounds of the Model Farm the last few years, and took observations there. Two years ago I visited the ground when the spring crop was in full head and in bloom, and never saw such beautiful prospects, it being of rank, dark healthy color, standing perfectly erect and promised an immense yield. However, upon making minute microscopic observation, I found rupture of the sap vessels ready for the attack of the fungus, which very soon followed, and the crop which presented such a magnificent appearance became a blackened and almost useless mass. No doubt the situation of the grounds had considerable to do with it; but the strong fertilizers used had more. We find lime applied to soils inclined to clay (which are more subject to rust) produces an excellent effect, as it destroys the fungus in the soil, does not increase, but rather diminishes the juices of the plant, strengthens and hardens the fibre, and thus resists disease, producing a heavy, plump, bright berry. The time is fast approaching when we must use lime on a great proportion of our soils if we intend to make grain-raising a success, as year after year diseases of the plant are rapidly increasing.

It is not well for grain to come up quickly after being sown. It is far better for some time to elapse to give it time to form root; a low temperature is essentially necessary in the early stages of germination for the future healthfulness of the plant. Certain plants will not flourish without a certain degree of rest; for instance, such as our fall wheat, which remains dormant beneath the snows of our long winters and is awakened from its slumbers by the voice of spring, refreshed by its long repose. Spring wheat is to a great extent of the same nature as fall, and must have a certain degree of rest. The question then arises, how are we to accomplish this? We must have our land thoroughly prepared in the fall, so as to get the seed sown at the earliest possible moment in early spring, so then that the germ may sprout slowly and the kernel be spent in

producing root rather than blade. If spring wheat comes up immediately after being sown, there is no rest nor root given to the plant, and disease is sure to follow either by blight or rust. I substantiated the truth of this statement by repeatedly testing small quantities of certain varieties of wheat early in April, and sowing close beside them varieties of the same kind about the 5th of May. The first sown in every instance was strong, stiff straw, producing good heavy grain, while the last sown was blighted, rusted and grain worthless. It is generally supposed wet, hot weather produces rust, but this is not altogether the fact, although it undoubtedly assists in developing the disease, but the disease of the plant begins in the early stage of its existence, and when a favorable opportunity offers it falls an easy prey to its enemies, blight and rust.

But if, unfortunately, after all precautions have been used, and rust still makes its appearance on the crop (owing to our soils and seed being full of the germs of the disease, by our neglect in the past), we should not allow the crop to stand to ripen or burn up with the rust, but cut while still green, as the sample of grain will be much better than if left to stand. We will thus avoid filling our fields and barnyards with such a large amount of germs of the disease to ruin our future crops.

Rust and blight, like a dark shadow, is spreading rapidly over our country; scarcely any part is free from its ravages, and if we do not use every means and precaution for its extermination, it will ultimately destroy the fair prospects of our Dominion.

Grain raising is really the foundation of all successful agriculture. Then let us be alive to our own interest, and future well-being of those who shall follow in our footsteps. We are told a good man "leaves an inheritance to his children's children," not a ruined and blighted country. But this is sure to follow if we do not use every power within our reach to stay the blighting ravages upon our grain fields, as our very changeable climate is greatly against us.

[Your paper is a very excellent and practical one, but a few comments are required. The experimental field at the Model Farm is a limy soil, and hence should have resisted rust according to your theory. It is a pity that you did not notice what special fertilizers were used on the plots which produced the rustiest wheat. We think you would have found that, where nitrate of soda or other nitrogenous fertilizers, or even large quantities of barnyard manure, was applied, there was the highest percentage of rust, while less would be found on the plots fertilized with phosphates or potash. Nitrogen, when used in excess, appears to produce that condition of straw which is favorable to rust.—Ed.]

Farmers whose orchards are planted on a sunny exposure, may have observed that the early thawing caused the trees to bud too early in the spring, subjecting the buds and blossoms to the damaging influence of late frosts or piercing winds. These effects may be largely prevented by straw or coarse manure around the trees over the snow, and tramping it compactly. This will prevent the snow from thawing too rapidly, will keep the roots cool, and cause the early growth to take place more slowly.

There is a great deal of talk about establishing numerous agricultural experiment stations all over the country for making scientific investigations. Many practical experiments would be of greater service, and until farmers make them for themselves, they will continue to grope in the dark.

Green Manuring.

BY HENRY IVES, BATAVIA, N. Y.

When first taking our lands from the hand of nature, we did not think it necessary to manure them, for, as the pioneer tells us, the virgin soil of the new clearing or breaking (if it chanced to be prairie) was rich enough, was easily worked produced bountiful crops; but, sooner or later, it began to deteriorate under man's treatment, showing, for one thing, that when nature had been for centuries building up a fine fertile soil, man's mistreatment of it can soon impoverish it.

But the farmer who honors his calling, and is master of his business, will not delay to seek a remedy, mostly by manuring, and partly by the proper changing and rotation of crops, so his soil will again improve, and with the best of management become again as good as it ever was. A very desirable end this is, though it does not come about just by the wishing for it, but pluck and skill and management must be brought in to play, and then good generalship will win the day.

To do this, manure must play an important part, and, after an experience of the last twenty years, I should rely most of all upon the plan of green manuring; not because one application will do as much good as can be done by applying a heavy dressing of well rotted manure, but the stock of such manure is always more or less limited, so much so that the farmer usually finds his supply falling far short of demand, and the drawing and spreading of it are attended with such an expense of time and labor that one application of it will cost as much as several crops for green manuring; besides, there is nothing healthier and cleaner for the land than having the soil shaded by being pre-occupied and covered by such green crops as will make the best growth for the purpose desired. This will vary considerably with the different ways of management, owing to the particular circumstances of the case.

As a crop to grow for this purpose, I think that clover will always stand at the head of the list, as being the most valuable, but there are several other crops which the farmer will often find more available, according to the circumstances of the case, and my excuse for writing this is to urge farmers to avail themselves of the many opportunities they will find for greatly improving their land, in the cheap and practical way of green manuring.

In the first place, when my clover seeding fails, as it has often done of late years, I work the stubble by some kind of tillage, sometimes with a drag or spring tooth harrow, sometimes with cultivator or with plow, if it is necessary, though it will not be required to make so fine a seed bed as for a grain crop, and if an inch or two of the surface is stirred, in wheat, oat, rye or barley stubble, it seems all sufficient, there also being usually some shelled grain already on the ground to help seed it, and the uprooted stubble of the previous grain crop makes a good litter of mulch to favor the growth of a green crop. Whatever is sown there, another good chance for obtaining such a crop for green manuring is to sow the seed for it among the growing corn, when a late cultivating will work it well enough into the ground, and its growth pre-occupying the land, to the exclusion of a fall growth of weeds, or any foul growth, and after the corn is removed will cover the field as with a mantle, to protect it through the coming winter, or if sowed to rye would furnish much fall and winter pasture, and then grow in the spring, so as to give a green crop as

big as could be plowed under and early enough for planting with corn or potatoes, and always with good results—so much so that in a very dry season potatoes planted on ground with such a growth of green rye plowed under, yielded best of any in the vicinity, and it was the opinion of those farmers that the green manure helped to hold the moisture and make the crop.

Other good opportunities for following up this practice are given the farmer after early potatoes or peas, or any such crop that has been removed in season so that an after crop might get a fair start before winter (though, always, the earlier the better), and the fact of putting in such a crop works well in other ways than for manuring alone, for such a stroke of tillage, at such a time, well pays for the doing for keeping the soil in a friable condition, and by working it at that time of the season destroys what weeds might otherwise have gone to seed, and if seeded for the proposed green crop, will effectually exclude other weed growth for the season.

I apply what yard manure or fertilizer I wish to when I do the seeding for the green manure crop. I would say that either rye or oats have usually suited me best for this purpose for all kinds of grounds, and from the middle of August till the first of September I find the best time to sow it, though from the first of August to the first of November will answer. For plowing under late in the fall I would use oats, for they will make nearly twice as heavy a growth in the time that rye would, and as first proof of the good such a crop will do his land, let the plowman examine the soil as it is turned up by the deepest furrow, and he will find it filled with little white rootlets of the green crop, which penetrate the soil to quite a depth, so that these, in connection with the tops, will add quite an amount of vegetable matter to the soil, which for all soils, when the vegetable growth has been removed in the shape of crops, seems to be the most appropriate treatment which can be given to renovate the land. Lastly, as proof of the whole plan of green manuring, I would cite the rich prairies of the west, where nature, the best of teachers, has followed up this plan of green manuring for generations, and look at the quality of the soil she now has to show for it.

SECOND PRIZE ESSAY.

Root Culture.

BY JAS. ANDERSON, GUELPH, ONT.

Wherever root culture has been vigorously prosecuted, farmers as a rule have succeeded, and wherever it has been neglected, the opposite has been the case. What has made the leading farmers in the Old Country so successful, and their farms kept up in such good fertility? Principally root culture, and the feeding of these roots to stock, thereby increasing the amount of manure and therefore the greater fertility of the soil. What has made the County of Wellington so famous for first-class stock, and Guelph called the Smithfield of Canada? Again I say emphatically, root culture, as every farmer in that county who owns 100 acres of land has on an average 6 and 8 acres of root crop, and fattens about the same number of cattle annually, returning to the land much valuable plant food from the rich manure made.

In cultivating root crops successfully, the land must be in a good state of tilth, free from weeds,

etc. We will commence with mangels and carrots, which are the first to be sown in the spring. I generally plow in about 20 wagon loads of well decomposed farm-yard dung in the fall, selecting good oat stubble, and get it worked up in the spring as early as the ground is suitable. I use and have used for the last 26 years a double mould-board plow for making the drills, saving a great amount of labor. I also use for mangels a top-dressing of about 300 lbs. of salt to the acre; being originally a marine plant, it is almost necessary for its successful cultivation. A little superphosphate, say 100 lbs. to the acre, will greatly assist the young plant and produce a vigorous growth. I have grown as much as 35 wagon loads to the acre, about 45 bushels to the load, by the foregoing process. Care must be taken in lifting the crop not to cut and bruise them. I generally wrench off the tops by hand instead of cutting them with a knife, and I find they keep much better. Mangels should not be fed too freely to stock early in the season, as they are apt to scour them. They are fine for milk cows when they have newly calved, as they produce a great flow of milk, and do not produce that nasty flavor in the milk which turnips invariably do. They are excellent food for sheep and lambs when cut up and a little meal sprinkled over them; also for young calves, and will keep on until the 1st of June. I have had them as sound and good then as when taken out of the ground; great care must be taken not to let them get frost, as they are very tender and must be covered by the tops if left in the field over night, if the mercury is several degrees below the freezing point.

Every farmer who owns 4 or 5 horses should at least grow an acre of carrots; the advantage of a good crop of carrots can hardly be overestimated. The carrot contains a great amount of starch, sugar and albumen, and is also a diuretic and assists in the digestion of other foods; a few carrots given to a horse daily will keep its coat sleek and healthy during the winter, and especially in spring are they very beneficial. In growing carrots you require a deep, not heavy, well pulverized soil. The White Belgian is the best for stock, but the Altringham contains more saccharine matter and is better for cooking purposes. The land should be well manured in the fall with well decomposed dung, and both mangels and carrots should be sown in spring as early as the land is suitable. I have always had the finest crops of both when I got them in by the middle or the 20th of April; in fact you cannot get them in too early if the ground is dry, as the seeds of both, especially the latter, take a long time to germinate, and if a dry spell should succeed the time of sowing, may not germinate at all until rain comes. Instead of waiting until all the other crops are sown, I generally try to get them in first of all; they are excellent for feeding pigs through the winter, especially breeding sows; they will stand a great deal more frost than mangels and will keep equally as well, if stored away in a dry state; in fact no roots should be stored in a wet state. There is a little more trouble in thinning the carrot than the mangel, but it pays well for the extra labor; by carefully using the hoe and paring the drill on each side with the scuffler, you can get over quarter an acre in a day nicely. The great secret of success in growing either of the above crops, after careful preparation of the soil, is to secure good, pure, fresh seed from some reliable seedsmen, as bad seed is

dear at any price. In harvesting my carrots I generally take the mould board off the plow and run along the drill, plowing the earth away where they can be easily pulled out by hand. I pile them in heaps, putting four rows into one, cover over with tops if left in the field over night and the frost severe; a little superphosphate and salt thrown on the land previous to its being drilled helps to keep the ground moist and assists in the vigorous growth of the young plant; thorough cultivation with the scuffler is necessary for the growth of both mangels and carrots, and once a week is not a bit too often, and will well remunerate the farmer and keep the ground clear of weeds, leaving it in a fine state for seeding down.

The growth of turnips has become so common in Canada that almost every farmer knows all about their culture. Like the previous crops, the land should be manured in the fall, if possible, but we cannot always get as much manure ahead as to do this. What is drawn out to the field should be plowed in immediately after seeding, harrowed well and rolled so as to break up the clods and allow any weed seeds to germinate; cross plow again and thoroughly incorporate the manure with the soil before drilling up. For years after I came to Canada I used the manure in the drill Old Country fashion, but I find this the best for both turnips and after crop of wheat or barley. I also pulled them all by hand for years, but I find they keep just as well by dragging them out, selecting a fine dry day for the purpose. I generally sow 3 lbs. of seed to the acre, as I find by using this much the fly does not injure them so bad. I have never missed a crop in 26 years, and never sow before the 15th to the 20th of June. I find the best seed to be for light soil, Carter's Imperial and the Marquis of Lorne, Sutton's Champion and Scottish Champion for heavy soils. In hoeing turnips we thought in the Old Country we could not bare them too much; I find in this climate it is a great mistake, as the hot sun seems to wilt them so they never recover properly; and by all means avoid scraping the young plant with the hoe, as they never bulb properly and are sure to be misshapen.

I have tried sowing a few turnips along with my carrots, for show purposes, but if they do escape the ravages of the fly, they are invariably stringy and free of the juiciness of the later sown ones. I generally commence topping my turnip crop about the 20th of October, and try to have them all housed by the last of the month; after that the weather cannot be depended on; be sure and store them dry and free from dirt. And at the mouth of the spouts in the root house they will require re-turning, or they will be sure to heat from the accumulation of earth going in with them. The amount of really nutritive food in the turnip is very small, being composed mostly of water; but you cannot raise young stock or fatten old ones successfully without them, and it leaves the land in a fine state of tilth for the succeeding crop. As I said in starting, no man will be a successful farmer without growing at least 5 or 6 acres of root crops for every 100 acres of land he cultivates.

Now that the tendency is in favor of a more intensive system of farming, the question may be asked, Will it pay? The system means more thorough cultivation, more manures and fertilizers, and cleaner fields. The difference between what an acre actually produces and what it should produce is very wide, as has been proved by the market garden style of farming where land brings high prices or rents. Try the experiment in your garden, and if it works, extend your operations over your whole farm.

Garden and Orchard.

"Lion's Tail."

(Leonotus Leonuris.)

Most amateurs and florists are in quest of any new and beautiful plant or flower. We now introduce to your notice one we have not yet seen in Canada, excepting a plant we have imported and are now growing. It has not yet flowered, but hope it will in due time. We extract the following description of it from Peter Henderson's catalogue, from whom we purchased our plant:—

It blooms from September to December, and if successive propagations are made of it late in spring it can be got to bloom during the winter months, and it is a most valuable plant either for the sitting room or conservatory. The drawing conveys but a meagre idea of it, as the spikes are upwards of a foot in length and of a most vivid orange color, which, next to blue, is the rarest color we have among flowers.

Arsenical Poisons for the Codling Moth.

Prof. S. A. Forbes, Entomologist of the Illinois Experiment Station, in a bulletin recently issued on this subject, makes the following allusion to the comparative effects of arsenic and Paris green as remedies for the codling moth:

To determine its value as an insecticide, arsenic in solution was compared with Paris green. The arsenic solution was made by boiling one ounce of arsenic in one quart of water, and adding this solution to 20 gals. of cold water. The Paris green mixture consisted of three-fourths of an oz. of this substance (containing 15.4 per cent. metallic arsenic) stirred in two and one-half gals. water. A fine mist-like spray of the liquid was applied until the leaves began to drip. The number of apples examined on eight trees, two of which were sprayed with the arsenic solution, and six with Paris green, up to Oct. 4 was 38,688. Eight untreated trees were used as checks. During 1885 Paris green was also used as noted above, and 69 per cent. of the fruit which would otherwise have been sacrificed to the codling moth, was saved. In the 1886 experiments, 73 per cent. was saved from falling by a single spraying, 77 per cent. by two, and about 72 per cent. by three sprayings. The benefit to the picked fruit apparent from a single spraying was placed at 47 per cent., from two, 90 per cent., and three, at 77 per cent., or as summarized, spraying in early spring, before the young apples had drooped upon their stems, saved 75 per cent. of the apples exposed to injury from codling moth. The weather conditions prevailing shortly after the poison is applied, will have much to do with its efficacy. The best results from the application of Paris green were secured upon the appearance of the first brood. Experimental facts point to inefficiency as applied to later broods. It is not recommended to poison full grown apples, in fact, spraying after the apples have begun to hang downwards is unquestionably dangerous, and should never be done if the fruit is to be used. In comparing arsenic with Paris green, the experiments show a decided advantage in favor of the latter. Trees sprayed with arsenic scorched the leaves, while Paris green produced no injurious effects. Prof. Forbes finally concludes that at least 70 per cent. of the loss commonly suffered by the fruit grower from the codling moth, may be prevented at a nominal expense, by thoroughly applying Paris green in a spray with water, once or twice in early spring as soon as the fruit is fairly set.

When planting trees or small fruits, give the roots a downward slant to prevent root pruning.

Horticultural Notes.

There are old records which show that the walnut was cultivated in England more than three hundred years ago, says Orchard and Garden. Still the quantity of nuts produced falls far short of the demand, and over one hundred and fifty thousand bushels are annually imported, mostly from France, Belgium, Holland and the Two Sicilies. If the planters of this nut tree have, after three hundred years, failed to raise enough to supply the home demand in England, when are we likely to meet our home demand, with our rapidly increasing population? Not less than one thousand acres of the European walnut should be planted every year in the Atlantic States to meet the local demand.

When nut bearing trees and shrubs are transplanted, pruning should not be omitted any more than with the peach, apple and other similar fruit trees. Anyone who has ever observed the effect of cutting back a hickory tree of small size, cannot fail to see that pruning at the time of trans-



THE LION'S TAIL.

planting is very likely to prove beneficial. No matter how carefully a tree is taken up, some of the roots will be destroyed, and it is well to give them the advantage by reducing the top with the pruning knife. If we had to take our choice between abundance of manure and a pruning knife for insuring the life of a transplanted tree of any kind, we should certainly choose the knife.

The effects of lacerating the roots of vegetable plants, either during the process of transplanting or by other means, on the future development of the plants thus treated, are as yet not fully understood, and the question yet requires definite settlement. We would state, however, that while success in transplanting may be made more certain by a previous laceration of the outer circle of roots, the gardener will hardly be the loser, and may be the gainer, if he avoids transplanting with its incidental root pruning altogether, by sowing the seed right where the vegetables, cabbages, lettuces, etc., are wanted to grow.—[Orchard and Garden.

Stock.

A Chatty Letter from the States.

[From our Chicago Correspondent.]

The large receipts of beef cattle have continued in a way to surprise people. Up to the present time the receipts are as heavy as last year, and for the four months the increase over last year's receipts is quite large. It is confidently expected that the summer supply of beeves will show a falling off in the west, but it will require more of a shortage than is likely to be to offset the overstocked condition of foreign markets. The fact that prices in England have been 1c. lower lately than last year has had rather a depressing effect upon the live cattle export trade.

Some fancy cattle have lately sold in Chicago at \$5.25 @ \$5.60, but exporters have bought their supplies at \$4.65 @ \$5.15. One or two Illinois cattle feeders recently bought some 1,100 to 1,250-lb. steers at \$4 @ \$4.40. It seems strange to have store cattle (of very choice quality and all ready fairly fat, of course) selling within 25c. of what is being paid for cattle good enough to go to England alive. American feeders have a reckless habit of paying extravagant prices for young cattle.

The shortness of the hog crop becomes more apparent, and so prices have been kept up to \$5 @ \$6 per 100 lbs. against the strong protest of buyers, who claim that there has been no money in packing operations at such high prices. Increased receipts are looked for as soon as seeding and early plowing are done. It is customary for States farmers to raise a good many hogs for May and June markets, and, as prices have been on the up grade for four months, we may look for a tolerable crop, as it now takes only about six months to make pigs fairly marketable. No excessive supplies are looked for, however. Corn is scarce and dear, and diseases and low prices have greatly curtailed the number of pigs in the country.

A man who deals in pure bred and grade bulls recently made the remark that breeders of Polled-Angus cattle were stiffly holding up prices, and treated buyers as if they were not at all anxious to sell, while he said the reverse was the tone of Hereford breeders. The reason for this, doubtless, is the fact that one breed of cattle is so much more abundant than the other. But this dealer's assertion would lead one to believe that the Angus breeders were all millionaires who breed merely for pleasure.

There are no great general labor strikes this year. Mr. J. S. Cooper, who has the street cleaning contract, has hard work to get all the shovellers he needs at \$1.50 per day. In other words there are now a million more people employed in the industrial pursuits than a year ago, and employment means ability to buy meat, and it is well known that it is the day laborer, and not Jay Gould, who eats the beef, pork and mutton.

Certain lines of business are dull, but there is a vastly better feeling in all branches than a year ago. There are many croakers, but times are improving gradually and rather rapidly.

There is something of a mania in the west for sawing off the horns of cattle. Nearly everybody admits the worse than uselessness of horns, but it is not everybody who can afford to exchange horned cattle for muleys, and there are many who would give up the horns if it were not

for giving up what they consider to be the superior qualities of the Shorthorn and Hereford. The writer is a believer in and admirer of the naturally hornless breeds, but when it comes to "dehorning," as they call it, is inclined to agree with the Ohio man, who aptly describes it as *deforming*. If a man does not like horns he should breed them off.

The severe drouth in Texas and the southwest has done much damage, though it was checked in time to give stockmen a fighting chance for their business. A good many thin, skinny cattle were forced to market to keep from starving, and sold at \$2.25 @ \$2.50. Some fairly good grass-fed Texas cattle were marketed this month and last at \$3 @ \$3.60. Corn-fed Texas cattle sold at \$3.75 @ \$4.50.

An experiment was made by Dr. Carothers, of San Antonio, with 400 head of cattle, which he fed on sliced prickly pear and cotton-seed meal. The cattle fattened well and sold as well as corn-fed cattle. The meat was bright and tender with a small proportion of fatty waste. As prickly pear and cotton-seed combined contain the essentials of an excellent feed, and are both "at home" in the south, the feeders of that section have doubtless made a rich discovery.

The complete compensation of the universe is nicely illustrated by the pioneer farmer on the western plains who is obliged to irrigate even his kitchen garden in order to raise vegetation. Farming under such conditions seems very hard to those who have farmed in more favored regions, but, after all, the man can draw upon his irrigating ditch at will, while the best farm in Illinois may suffer severely for want of rain just at a critical time, and again be deluged when the harvests should be kept dry.

A New Trade for our Store Cattle.

Mr. George Wilken, Waterside-of-Forbes, Vale of Alford, Scotland, well-known amongst Aberdeen-Angus breeders, writes to us as follows:—

"A Company has just been formed in Aberdeen with a capital of £12,000, or \$60,000, for the purpose of importing from Canada direct to the Port of Aberdeen a number of well-bred two-year-old store cattle. I leave early in April for Canada to arrange to start this business, either by getting the present shippers from Canada to send this class of cattle direct to Aberdeen or to buy the cattle. It is not intended this year to ship cattle direct till about August, when special steamers will be chartered by the Company to convey the cattle direct to Aberdeen.

"The farmers in the northern counties buy a great number of store cattle principally from Orkney and Ireland, and Canadians from Glasgow. As there has been a good deal of disease come with Irish cattle, and as they are mostly landed in Glasgow, the feeder in the north would prefer to have Canadian cattle, if of the right sort, landed at the Port of Aberdeen, where a landing stage has lately been licensed for foreign cattle by the Privy Council.

"It hardly needs to be told that Aberdeen and the northern counties import and feed more cattle than any others in Scotland, and the Canadians will have an opportunity of showing the Scotch farmer what he can do in the way of breeding a good class of cattle. None but well-bred cattle will suit this trade, and if such are to be had in any quantities it will likely develop into a large business, it is to be hoped profitably for the Canadian who breeds and his brother farmer in Scotland who is to finish the feeding process."

This is very encouraging intelligence for our farmers, and we welcome every new trade which may be opened for their benefit. Before embarking in the business, however, they should calculate closely whether it would be more profitable to ship store steers or those well fattened in pasture or stall. This question has already been discussed in our columns.

A Family Racket—Corny as a Dream Interpreter.

DEAR ADVOCATE,—My neighbors call me Corny; I give myself the same name—so does Susie. I want to tell you a tale, but it is very private and confidential, so you mustn't say a word about it to any of your friends or readers, and I send you this letter registered and sealed in order that it can't get into the claws of the postmaster.

My dear Susie is affected with dreams and nightmares, and I pray you to send me a remedy for her. When she eats Xmas beef for supper, her dreams are pleasant; this is the only soothing syrup her doctor has found, but Xmas doesn't come every day. Last night her dream was horrid, and made her scream.

"Unhailed horror," exclaimed I, starting from sleep; "what makes you quake so, Susie dear?" "Unutterable grief," gasped she. "Why, Corny dear, I dreamt I saw a team pulling a log out of your pocket. I'll never put big pockets in your trousers aga-a-ain."

"Tut, tut," said I, "that's altogether too



SUSIE'S DREAM.

absurd for a dream. What kind of a team was it?"

"A scrub bull yoked with a prancing stallion," was the answer.

"Too absurd, too absurd," said I. "If you don't stop such dreams, I'll pinch you."

But I bethought myself a few moments, when I saw the true interpretation, which I related as follows:

"You see, Susie dear, the scrub is to be taxed because he has no pedigree, and the stallion is to be taxed because he has a pedigree; so you see they make a very fitting team for drawing logs. The team was pulling the log because the days of log rolling now belong to the dark ages, and more civilized and enlightened methods of logging have taken their place. The log coming out of my pocket signifies that I have to foot the bill whether the tax is put on the scrub or the stallion, or both."

When Susie found that her dream was a reality, and not a fiction, she calmed herself, fell asleep and slept sound till morning.

Yours affectionately,
CORN Y SPARKINS, Racketax Farm,
Booldeworth, April 22, 1887.

Action.

Next to soundness, and far more desirable than perfect symmetry, is the possession of good action; for without it an otherwise excellent animal is incalculably depreciated in both value and usefulness. Good and true action is very frequently, but not invariably, associated with perfect symmetry; but the possession of it may be accepted

as evidence of fairly equal conformation; for defective or slovenly action can only arise in a sound animal from an unequal distribution of physical power, or from want of stamina or pluck. In many horses, good, bold action is an evidence of power, and the heavier the horse the better he should move in both walk and trot. An educated ear can distinguish a horse possessing good action when the animal is travelling on a hard road, by the regular succession of sonorous thumps made by its feet—one, two, three, four. In a walk, which is essentially the draft horse's pace, each of the four feet should be brought down perfectly flat—the heels, toes, and quarters reaching the ground at the same instant, the fore ones with the toe and heel in a line with the body, neither turned in nor out, the hinder ones perhaps slightly turned out. Straight and full extension of the fore limbs is desirable, rather than excessive elevation of the feet by high knee and shoulder action. The movement of the hind extremities should be free and loose, the feet being carried far under the body by perfect flexion of the hocks, which in advancing should, in turn, have a slightly inward tendency; while the toe, at the same time, should be as slightly turned outwards. Defective and wide hind-leg action, usually arising from malformed hocks possessing only limited mobility, is most especially to be guarded against; horses with round, bowed-hock action always wear unsatisfactorily. Following the extension of each limb in turn, the corresponding foot ought to be boldly and firmly planted upon the ground.—[Fleming's Practical Horsekeeper.]

Blemishes in the Horse.

All scars left from wounds or sores, as well as all unsightly enlargements, whether such be effects of blows, work or sprains, are blemishes.

Some blemishes do and some do not impair the horse's value; thus, while collar marks are considered a disgrace

to a saddle-horse, and lessen his value, in a very superior harness horse they would be altogether overlooked.

Broken knees lessen the market price of all horses. So, also, does the loss of one or both eyes.

Marks on the fetlock show that the horse has at some time or other cut, and therefore requires to be noticed with a view to seeing what probability there is that he will do so again. But if such marks are not the result of any peculiarity in his make, they may be, perchance, of no consequence, as it is possible they may have been produced in him when, as a colt, he was being broken, or when subsequently he was laboring under severe illness, fatigue, or want of condition.—[Howden on the Horse.]

Now that service season is at hand, caution should be observed that no mistakes are made in breeding. A mistake made now will be marked in your future herd, and cannot be bred out for years. We shall give precautionary details in our next issue. Consider whether you want a dairy or beef herd, and don't produce a mixture. Don't consider that the best boomed breeds possess the greatest merits; the information which you have received has not been obtained by honest and reliable tests, but from parties whose aplacency and whims are mainly controlling elements. We have always advocated honest and trustworthy tests, from which a true basis for calculation can only be made.

The Suffolk Breed of Horses.

This breed is beginning to attract more attention than usual, it being considered a lighter draft than the Clyde or the Shire, and is therefore capable of producing a class of horses which is more in demand now than for some years past. Many individuals of the breed have attained great size and weight, but the average is lower than of the drafts just mentioned. It has been the practice of the champions of heavy drafts to boast of great size and weight, and this tendency has produced unfavorable results, the extra weight being occasioned by an undesirable accumulation of fat, and is not to be attributed to the natural weight inherent in the breed. But the coming tendency will undoubtedly be in the opposite direction.

The Suffolk Punch is one of the oldest established of British breeds of horses, and is recognized in England as an agricultural horse of great value. It is known to have been a distinct breed a century ago. At the close of the present century it was divided into several strains or tribes, all of which were shortly afterwards more or less intermingled. Its origin, like that of all our other distinguished breeds, is involved in obscurity. Youatt suggests a cross between the Normandy stallion and the Suffolk mare. Much speculation is indulged in with reference to its early history and development. The breed is described to be of a chestnut or sorrel color, of which there are various shades, notably red and dark, and an intermixture of silver hairs are not considered amiss. The height is 15½ h. to 16½ h., and the girth behind the shoulders about 8 feet. The legs are short, flat and clean, with short, strong pasterns, free from much long hair, and the bone is of compact quality. The eyes and ears are small, the crest is arched, tapering gracefully from the shoulders to the setting on of the head. The shoulders are muscular, and the ribs well rounded, giving a compact appearance to the body. The constitution is sound, the endurance and longevity great, the outline graceful, and the breed seems to flourish in all climates. It being adapted to a great variety of purposes, it is found almost everywhere, and is used on the continent of Europe for artillery purposes. Objections have often been raised against the foot of the Suffolk, but in recent years it has greatly improved in this particular.

The Apiary.

Bee Farming Notes.

Farmers who keep bees in box hives should not delay, but when the fruit bloom appears they should transfer the bees and combs into movable comb hives.

In setting bees out of the cellar in spring do not be in a hurry; it is better to leave them in till settled warm weather. Choose a nice day with the thermometer ranging from 60° to 75°, with a southerly wind. Place the hives where you wish them to remain for the season.

Toads are a great nuisance about the bee yard, and may be noticed in the evening at the entrances licking up the bees as they appear. So place the hives high enough to avoid toads.

Weak colonies are often robbed in the spring, and when the bees get fairly started, it is sometimes very difficult to control them. A writer in the Bienen Zeitung says: "After trying the usual methods to stop it, when, owing to extracting, robbing had been going on rather extensively, and these remedies failed, he succeeded in putting an end to it in a very simple manner. He placed a piece of window-glass, about 8x5 inches, in front of the flight hole, the top resting against the hive, and the lower end about 1½ inches from the entrance, so as to enable the bees of the hive to go in and out at the sides. The

next morning the robbers made an attack on the hive in great numbers, but going straight at the entrance were stopped by the glass. They swarmed in front of the glass, but could not find the entrance at the sides, and very soon returned in disgust. To effectually put a stop to further robbing, the glass should be allowed to remain for several days, until the robbers forget the spot."

Comb foundation should be used plentifully when hiving swarms, unless you have plenty of old combs. The manufacture of wax is costly, and takes the time of the bees which should be given to gathering honey. It is economy to give them comb foundation: it saves time and labor, and prevents the loss of the honey-flow, which often is passed and gone by the time a swarm has built out the comb to receive it.—[American Bee Journal.

If you have empty combs, be careful that the bee moth does not get at them. A good way to protect them is to get one of those small balls containing spider's eggs (which you will likely find hanging in the wood shed) and place in the hive with the empty combs. The spiders, as they hatch will protect the combs from moths and not hurt them.

The use of comb foundation is increasing very rapidly in both Canada and the United States. One firm in the neighboring Republic has sold during the last four years an average of over 32,000 pounds per year.

Bee-keepers who wish to work their bees for comb honey in sections, do so, with few exceptions, by the use of a very thin foundation. The cost is insignificant. When you wish to use a full sheet for the section, the cost only amounts to about ¼c. per pound.

Watch closely for any signs of spring robbing, and should there be any signs, contract the entrances so that but one bee can pass at a time.

Future Bee-Keeping.

Seasons like the one just past tend to discourage those of limited experience; and at present many are asking if it will pay to continue in the business. Let me say first that if one is to discontinue the business he should not do so at such a time as this. It would be far better to do so at the close of an extremely good season, for at such a time we are very liable to find the next season an unfavorable one; while after a season like the one just past we may expect an extremely good one. Let me advise those of moderate experience to bend every energy to a preparation for taking advantage of the favorable season.

The great need of the time in connection with our pursuit is the practice of closest economy. In our enthusiasm in the past we have been by far too extravagant in our own expenditures. I do not mean by this that we must not secure all needed fixtures and advantages, but we must secure all in the most economical way. What we need is to educate many away from the erroneous conclusion so often formed that bee-keeping is a calling through which we may secure great gains with little application and labor. This is certainly a mistaken idea. I know of no business where such close application and extreme promptness are required to insure success as does this branch of agriculture. If we are to see the bee-keeping of the future made a successful calling, it must be with those who will give it earnest attention, and conduct it with the most rigid economy.—[L. C. Root, in Canadian Honey Producer.

Persons wishing to start bee-keeping should make their choice and purchase during May. Buy near home, if possible, and in hives like you have decided to use. Never buy a light colony to start with. I would say, if you can buy pure bred Italians as cheap as any other kind, buy Italians every time, as they are considered the best kind.

Poultry.

Edited by J. W. Bartlett.

Lice on Chicks.

Lice kill more chicks than all other troubles or enemies with which they have to contend; scarcely a chick dies from two weeks to two months old that lice are not the primary cause. Sometimes death results directly from their continued and persistent sucking of the life fluid from their veins; at other times they weaken the constitution to such an extent that they become an easy victim to roup, gapes, and the numerous diseases to which chickenhood is subject. Cures, or rather applications to destroy lice, are numerous and very effective, but none but the practised eye will discern the symptoms until the chicks begin to drop off, and although it may be in time to save the majority of their lives, yet the trouble of making an application to a large flock is great, and they are also stunted for all time, and all the care and feeding that can be bestowed will never atone for lost time in early life (as well as with unfeathered bipeds). But, fortunately, there are preventive measures, which, if employed in time, will keep the chicks free from these annoying pests. If the hen has been cared for as recommended in the March number of this journal, by sprinkling the nest plentifully with sulphur when set, and repeating the application at the end of the second week, the chicks will come from the nest much more free from them than is usually the case. Yet many writers, some of whom are practical poultrymen, claim that no chick ever left the maternal nest without more or less embryo lice on it. These usually, when developed, fasten themselves to the back of the chicken's head, and remain there until either the chick or themselves die. Where the number is great the chances are vastly in favor of the lice, especially if the quarters are limited and filthy; but if the above precautions have been observed, and the birds have clean quarters and plenty of range, the chances are decidedly in favor of the chicks. But in any case there is a sure cure for lice, and easily utilized: Take the hen when the chicks are say five days old (a day or two either way will not matter); take a large sponge, saturate thoroughly with coal oil, and squeeze as dry as possible with the hand, then sponge the lower feathers of the hen, thoroughly rubbing against the lay of the feathers. Do this about sundown or a little before, and the next morning there will be no lice. It is as well to repeat this again in two or three weeks, and the probabilities are that you will raise the whole flock. Care must be taken not to use too much of the kerosene, as it will blister the skin of the hen and blind the eyes of the chick, but if the sponge be dried by squeezing with the hand it still contains enough to accomplish the desired end. Chicks raised in brooders, if hatched by incubators, will be comparatively free from this trouble; but if hatched by hens, as is quite customary at present, they must have a very small amount of blue ointment (*angintum*) applied to the back of the head at three weeks old, if the kerosene has been neglected.

If a hen has rough, whitish scales on her legs, she should have them thoroughly washed with coal oil before using her for setting, as it is caused by parasites, and the chicks will be affected the same way if raised by such a mother.

Keep the young chicks growing from the day they break the shell, or rather the day after, as they do not require feed for the first twenty-four hours.

Is a Cock Necessary?

It is a fact not generally known that eggs keep better when not fertilized. Take for instance the eggs put under a hen for incubation: At the end of two weeks they will be quite clear, and if broken do not emit the foul odor, as is the case with a fertile egg, in which incubation has ceased. This gives information even to the novice who buys eggs for the purpose of incubation. If the eggs were not fertilized they will not be decomposed even at the end of the time in which incubation should take place. Thus, if the eggs are clear and not foul, he may know that the seller has imposed on him, but if on the contrary, the eggs are all decomposed and emit an offensive odor, they have been fertilized, and the chances are that the fault has been with the hen. This shows that where there is no cock kept the eggs will keep longer than where they are impregnated, and as hens do not lay any better for the attentions of the cock, it is much better not to keep one where chicks are not required, and unless there are at least half-a-dozen hens and pullets in a flock, the cock is a positive nuisance, as his attentions, especially if young and vigorous, interfere seriously with their productiveness, and we have had valuable hens seriously injured in this way; one we had to kill to put her out of misery.

How Long does Impregnation Last.

This is a much vexed question, and as might be expected in such a case, there are many fallacious theories existing. Now the simple fact of the matter is, under different circumstances the time varies; for instance, when we sold our game fowls some years ago, there was one hen the buyer did not fancy, consequently did not buy. We had no place for her, but to put her in with the breeding yard of Dark Brahmas; she was laying at the time, and we decided to set some of her eggs and see the results. She laid six eggs in as many days. Out of these six eggs came three chicks, all of which had feathered legs, thus showing their parentage, and if we assume that the first three eggs were the ones that did not hatch, we still have *prima facie* evidence that impregnation does not last four days. Now on the other hand, one of our Wyandotte hens stole away and laid eleven eggs after the Wyandottes, Plymouth Rocks and Brahmas had been running together. To be definite, the birds were turned together first of July, and the hen hatched September 10th, eight chicks, all pure Wyandottes. There is nothing assumed about these cases, and no guess work; both occurred with our own fowls, and what makes the question more abstruse, the Game hen was laying when placed in the Brahma pen, while the Wyandotte was not laying when turned out with the other males.

As the Game hen is the embodiment of pluck, and will fight to the death in the defence of her progeny, she is generally recommended as the best of mothers. This is a great mistake; she is too nervous and excitable to be a really successful mother, and will trample more to death dancing around an imaginary enemy, than a Plymouth Rock or Brahma will lose for want of courage and pluck.

A gentleman tells us of a Game hen he had that actually flew at a hawk and made it drop her chick after it was four feet from the ground with it; but we do not care to task the credulity of our readers enough to ask them to believe it. But for our own flocks we very much prefer using brooders to allowing any hen the guardianship.

Veterinary.

Veterinary Notes.

(From Howden on the Horse)

CONTRACTED FEET.

Having already considered the general formation of the feet, we now take up the near fore one, to see whether it is in any way diseased, or whether there are symptoms of its having formerly been so.

To describe what should be the width of heel, and other peculiarities which form a perfect foot for each horse, would be indeed superfluous; such knowledge can be acquired only by study and practice. To point out the result of each defect when ascertained, so that the initiated may judge for themselves, is all that can be attempted. The thorough horseman is the only one who will appreciate a more elaborate description. This assertion may perhaps appear over-confident; but, if blame attach to it, I hope those who have urged me on will lighten the burden. Thorough horsemen are comparatively few, but the incompetent are numerous. This work, it is to be hoped, will be the means of adding to the former by decreasing the latter.

It is a matter of dispute whether contraction of the foot renders the horse unsound or not. All will agree, where the climate is exceedingly hot and the horse goes sound, that this is a much better wearing foot, and more likely to keep free from lameness, than the expanded soft hoof, which, from being wide, and predisposed in the sole to concavity, is, *par excellence*, pronounced sound; yet, in fact, while the narrow foot will stand equally well on wet, and on hard, dry soil, on the latter the wide-spread flat foot will quickly give way on account of its proneness to injury from its softness.

As feet of this description are adapted only for the work such horses are required to perform in their native country, it may perhaps be right enough to call them sound, prior to receiving injury. It is for the buyer to judge whether or not they are adapted to the work he requires.

Still, why this weakly foot should be allowed to pass as sound, to the prejudice of the other, I have always been at a loss to know. The colt foaled with certain sized feet—the effect of the soil on which it was bred—although it has never been afflicted with lameness or disease of any kind, is said to have contracted feet, and is condemned as unsound, because it is imagined that its hoofs are narrower than Fancy's prescribed limits. "He is unsound," says one; "I am doubtful," says another, "whether, according to law, it is unsoundness; he seems to go very well at present. He might have been better had they been a little more open."

Why should this be? In the human being, not only in different nations, but in the same country, we see people with feet of various sizes, but they are all equally capable of walking and of common exertion. I never knew a fast runner or a great walker amongst bipeds who had an extremely large foot; on the contrary, the feet of pedestrians, properly so called, are mostly, if not of the moderate size, rather under it. "Yes," some will say, "but the human foot is not confined within a box of horn, capable of yielding but slightly." Most true; but nature fits the horn to the foot, and not the foot to the horn.

Horses, therefore, which have naturally small feet, but not so small as to cause them inconvenience, may without doubt be pronounced sound.

Should the various reasons stated in this and previous articles not be convincing, I may say that some of the best veterinary surgeons are of opinion that, where contraction is not attended by inconvenience to the animal, it ought not to be deemed an unsoundness, although in England it was legally decided as such many years ago. Some persons, however, pronounce it consistent with soundness, in spite of that decision. Professor Coleman once remarked, that he "cared not what had been decided, no jury, after such evidence as would now be brought into court, could decide in favor of so absurd a law."

The statutes respecting soundness have altered, and must continue to be altered, with the advance of time and improved veterinary knowledge. In Xenophon's time, when horses were not shod, the hardest hoof was considered the best and soundest, because it wore the longest, although it was upright and contracted. When instructing his soldiers how to choose horses, he describes these feet; but at the same time shows that he was aware of the evils of contraction brought on by disease, and he gives directions how it may be avoided. I shall here only add that extreme developments are as bad as malformations produced by disease or work.

ARTIFICIAL CONTRACTION.

Artificial contraction, which must most always be the result of disease, let the disease arise from bad management, bad shoeing, neglect, or whatever cause, may bring on inflammation. The horny sole will not contract upon its contents, until either in action, or in the stable, the horse ceases to rest some of his weight upon his heels. This resting contracts the internal foot; the heat contracts the horn to it, and alters the secretion, so that the horn either gets thicker and stronger, or so thin and tender as to become what is called a shelly hoof. This shows that naturally small and narrow feet are very different from artificial contraction, which can be cured only at the earliest stage of the disease. It may subsequently be sometimes relieved; but rarely, after an inflammation of a few weeks' standing, without a powerful remedy being applied, will there be so decided a cure effected as that the horse may be pronounced sound. If the contraction arose from a disease that had been cured, and the horse had been doing the work of horses of his class for six weeks without inconvenience or extraordinary care, then he is sound.

Lameness from contraction is preferable to the lameness consequent upon convex or pumice sole; the latter unfitting the horse for any but slow or moderate work.

In order that I may not be misunderstood in treating of artificial contraction, I should mention the exception to the rule, though I do not think that contraction which comes on gradually, and without an injury from a secondary natural cause, should be considered artificial. For instance, if from want of exercise the frog receives no pressure, the inside of the foot has less work to perform, and gradually shrinks or wastes, and the horn contracts. When this takes place gradually, without inflammation, and without causing lameness or inconvenience, the horse is sound.

Save your ashes for experimental work on your farm.

Entomology.

Notes on Various Insects.

THE TURNIP-FLY.—This insect is also called "Jumping Jack" in some sections; attacks cabbages, radishes, and turnips. A good remedy is found in dusting the plants with lime as soon as the seeds begin to sprout.

THE STRIPED CUCUMBER BEETLE.—This insect attacks squashes, cucumbers, melons, and other plants. If squashes and cucumbers are not planted until about the second week in June, they will usually escape the ravages of this insect. Their attacks are prevented by sprinkling the plants with plaster of Paris or slaked lime as soon as they begin to sprout. The application is made in the middle of the day. Another remedy consists in covering the plants with coarse millinet or lace. Squash bugs may be destroyed by laying shingles on the ground around the vines; the destroyers collect under the shingles, and can easily be picked up early in the mornings.

THE CABBAGE MAGGOT.—This grub attacks the roots of cabbages and cauliflowers, causing a condition known as "club-root." This insect is most destructive on soils in which large quantities of farm-yard manure have been applied. A good dressing of lime or bone dust well worked into the soil in autumn is a favorite preventative amongst market gardeners. Gas-lime, if prudently used, has also proved to be a good preventive. Slow progress is made with destructive remedies, which consist in digging a hole close to each plant and dropping in 9 or 10 drops of bisulphide of carbon, closing the holes again. Another remedy consists in removing the soil around the stems and sprinkling a small quantity of lime around them.

THE CABBAGE CATERPILLAR.—Attacks the leaves of the cabbages. It is produced by a small white butterfly. Like the remedy for most insects which take up their winter quarters in the ground, the best is thorough and frequent cultivation, with a plentiful supply of such fertilizers as bone dust, lime, ashes, etc. As a special remedy for the cabbage caterpillar, the veteran gardener, Mr. Peter Henderson, recommends the catching of the insect with an insect catching net as soon as they make their appearance—in May or June. This being neglected, he advises the destruction of the caterpillar by a dusting of white hellebore on the cabbage leaves, which must be done by the time the plants are half grown, for this insecticide is too poisonous to apply when the cabbage heads are matured.

THE CURRANT WORM.—This is one of the most ravenous insects that appear in the early spring. The adult is a small fly, about the size of our ordinary house fly, of a black appearance, with yellow spots. These insects may be seen flying about the bushes just after the leaves have unfolded out. The female, a little stouter and yellower than the male, lays her eggs on the under surface of the leaf along the central rib. Here they are hatched out and remain for a short time, until they have eaten through the leaf, before they are seen by the casual observer. This accounts for their apparent sudden appearance on the bushes they infest, viz., the currant and gooseberry. The best remedy known for this pest is hellebore, applied in either a dry state or in a solution. In the former state it must be applied when the dew is still on the plant; the latter may be used at any time and is prepared by dissolving one ounce of white hellebore in a gallon of water. The bushes should be carefully watched for several weeks to discover any subsequent brood that may appear, which should be instantly destroyed. If the plants are stripped of their foliage one season, the next season's fruit will be materially diminished.

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.

Lambs for the Butcher.—I wish to have your opinion whether it would pay or not to buy lambs in the fall and feed them through the winter (till the spring) for the Toronto market, and what would be a profitable ration per day? I can buy them from \$2 to \$2.50 a piece. I live about 150 miles north of Toronto.—SUBSCRIBER, Ziska, Ont.

[It would be impossible for us to decide this question, as much depends upon your ability to manage the business—the quality of the lambs, management, prices of mutton, wool, etc. There are some farmers who make the business pay on the whole, but meet with losses some seasons. Your best plan is to try on a small scale, and work up by degrees. No fixed ration can be set, and any given ration should be changed occasionally. Hay (or pea straw) bran, pea meal, oat meal, roots, and oil cake are the usual foods, and your profit would also depend largely upon the prices of these foods.]

Uses of the Roller.—I would like to hear your opinion on rolling. When is the proper time to do rolling—as soon as the grain is harrowed in or after it is up? If after it is up, how high? People here are rolling both ways. Some of my land is quite heavy clay, but most of it is a clay loam. Is it proper to roll? What condition would land be in to need rolling?—W. S., Wooler, Ont.

[The uses of the roller depend upon the soil, the season, the manner of planting, and the kind of seed. The object in rolling clay land is merely to crush the lumps, and no rolling should be done when the land is wet, it being under any condition too liable to bake. Rolling such soil gives a better seed bed, and the land should usually be harrowed after rolling. The object in rolling a light soil is to give the seed a firm bed. In a medium or loamy soil, the rolling depends more upon the seed than the land. Grass seeds, or other small seeds, which should have a very slight covering of earth, may be rolled instead of harrowed in; but on a heavy soil a brush or light harrow should be used for small seeds, for the roller might make the bed too firm. When the soil needs firming, the roller may be used after the crop is up, and for this reason a rolling in spring is often beneficial to fall wheat. The height to which the grain has grown depends upon the kind of crop. So long as the stem is friable, no injury to the crop need be feared.]

Worms in Colts.—1. What would you advise me to give a colt that is troubled with worms, or seems to be, as I saw it pass some. I fed it liberally all winter on good hay, with 4 quarts of oats and some bran (half of the oats were boiled daily), but it is not thriving well. It is rising two years. 2. Would the same treatment be injurious to a mare with foal?—J. E. G., Dutton, Ont.

[1. Give 1 pint linseed oil mixed with 1½ oz. turpentine, follow by 2 drs. sulphate of iron daily in feed for about 3 days. 2. It is not advisable to apply this treatment to mares in foal.]

Packing Butter—The Old Times Ahead of the Period.—Now that the Canadian dairymen can make a first class article, and as the loose cover tub is certainly a failure, so far as keeping it good for any length of time is concerned, why not adopt the old style again, that of kegs or firkins? A way back in the '60's almost the only butter to be had here was "Isthmus," called by that name because it came that way from New York. You may think that this butter, coming as it did through the tropics, consuming on an average about 3 months, would not be good for much. On the contrary, a better article was never made than that "gilt edge" that came here in those days. And how was it packed? In hard wood kegs well made with galvanized iron hoops (so there was no rust to permeate the butter) packed solid full, the little vacancy at head end being filled with the strongest brine. This has been kept two years, and when opened was as good as ever. Another style in which it is imported here from California, viz.: Made into 2-lb. rolls, a piece of butter cloth, i. e., thin cotton without starch, placed around each one as a protection (the ends are not covered), placed on their ends tightly as possible without deforming them, in hard wood barrels and half barrels, well made, with galvanized hoops (wood hoops won't do, they can't be driven without danger of breaking), lined with unstarched cotton, the vacancy filled up with the strongest brine made with boiled or distilled water. In this way, as well as the other, it will keep any length of time, so long as the packages are kept full of brine. The butter is put up almost as fresh as that made and used daily.—R. S., Victoria, B. C.

Robbing the Soil.—I was very much impressed with the statements (on page 101 of April No. of the ADVOCATE) on exhaustion of soils, from the pen of Mr. Robert Brodie, of Montreal. While giving the approximate quantities of nitrogen, phosphoric acid and potash annually sold off the farm under the different modes of farming, it is a pity you did not give the approximate values of the three articles mentioned above. I have seen their commercial values stated, but I forget the figures, so for my own calculation I assume their average value at 10 cents per pound. This would give under the first statement, \$122.60, and under the second, \$288.90, as the annual value abstracted from the soil, less what may be returned in the form of manure, droppings, and vegetable matter in the form of weeds, grass, stubble, turnip tops, etc., plowed into the soil. Now if we add to the above amounts say \$3 per family, it will make in the first instance, \$152.60, and in the second case, \$318.90, as the amount of fertility abstracted, unless credit be given for the excreta of said family, which in too many cases may be said to be dead loss. Nor is this all. There is the annual loss of fertility from surface washing, which in many cases is a very serious loss on fall plowed lands and rolling surfaces. The humus carried off into creeks and ditches is something serious, as I know from sad experience, having just come in from a tour of inspection round the farm and it is sad to see the amount of surface soil washed down into the various water-courses, amounting to many tons per annum, despite all my endeavors to arrest it. I merely mention these things to elicit further discussion of this subject, as it cannot become too widely known or too seriously entertained. It is quite time the farmers of Ontario realized what it costs them to raise a crop, and how best to husband their resources, as we have little left of our virgin soils to fall back on when our old worn-out farms fail to yield us a living.—T. H., Meaford, Ont.

Parturition Troubles.—I had a cow which calved her seventh calf on Monday afternoon, 4th inst. She seemed to do well until next day, when she appeared dull and didn't eat so well. After dinner she began to show signs of weakness in her hind legs. She moaned and ground her teeth, laid down and got up again; had two severe chills, and had two passages. We gave a clearing drink, also salts and sweet nitre, and applied hot cloths to her back. We took about six quarts of blood from her, which was very dark; her head was cold. She milked freely and had been kept sparingly for a month before she was a heavy milker.—R. T. N., Norval.

[These symptoms sometimes follow parturition. Your treatment was all right.]

Italian Bees—Milk Troubles in the Mare.—1. I wrote you 22nd Feb., asking for the address of some beekeeper that I could get the Italian bee from, or if I could get a colony shipped without injuring the swarm. I live one hundred and fifty miles north of Toronto. 2. I have a mare six years old that lost her colt when two days old, in last May. The milk went through her and she came near dying. Since then the hair runs in streaks.—ASHDOWN.

[1. Your letter must have been mislaid, for we answer all reasonable correspondents who comply with our conditions, but many don't do this. Sometimes it is impossible for us to answer all the letters we receive, as they would almost fill our paper, in which case we select those which are of the most practical importance to our readers. We cannot undertake to answer questions when the same information is given over and over again in our columns. You can easily see that your proper course, if you want to get Italian bees, is to write to beekeepers who advertise in the papers, as the leading ones either keep them in stock or can get them for

you. Write to W. H. Weston, London, Ont., or any other leading bee-keeper. 2. Give her a purgative, about 1½ pints of linseed oil; follow by a tonic composed of gentian 2 drs., sulphate of iron 2 drs., given in feed twice a day for about a week, when relief should be afforded.]

Peritonitis.—1. Some time ago we lost a six months steer as follows: One afternoon he was found in his stall lying down and evidently in great pain, and the rectum protruding very much. We gave him an ounce bottle of castor oil, and about seven in the evening gave an injection of warm soap water, and another the next morning, which after a little time worked him well. He then rallied for a few days, and took sick again and died. We opened him and fully two buckets of water came out of him. There were no indications of inflammation, and his bowels seemed quite empty. Do you not think the second trouble was with the urinary organs? Please say what you think should have been done. What percent are creameries paying upon invested capital in Ontario?—H. J. M., Richmond, Que.

[1. If water came out, the ailment was peritonitis (inflammation of the lining of the abdomen). Such cases are treated as follows: Give a laxative (say ½ lb. of epsom salts), followed by 1½ oz. tincture of opium twice a day, mixed with 10 drops of Fleming's tincture of aconite; continue the drench until relief is found. Keep the animal in a warm place and apply hot bandages to the abdomen.]

Rations for Stock.—What rations would be required to feed and keep up a stock of 50 head of cattle, divided into 10 cows, 13 three-year-old steers, 13 two-year-olds and 13 yearlings, and one bull. I want to be able to keep the above stock, selling each year 13 three-year-olds for beef and raising each year 13 calves; that is, beefing the extra number of calves more than the cows produce. The feed I raise on the farm consists of timothy, turnips and enough grain to have chopped up. I want to get an idea how much per diem would be required for each animal, so as to plan my work. I would like you to tell me how much of each variety of food I ought to feed out, so as to get best results. My stock is Polled Angus Grades?—MATT LAND.

[Using only the foods mentioned you cannot feed economically. You could profitably feed some oat straw with your ration, mixing it with the hay, especially for your two-year-olds, as they don't need such concentrated food as younger stock or animals fed for the block. It is advisable to change the ration occasionally, and if you feed peas, bran, or oil-cake, give them in smaller quantities and with more coarser food, as they are richer and more concentrated. The following is a good standard to guide you, both as to the ration and the cost, for you can vary the ration without necessarily increasing or diminishing the cost. For fattening three-year-olds: hay, 12 lbs; roots, 35 lbs; grain (mixture of equal parts of oats and peas), 9 lbs. The same ration will do for cows giving milk. For two-year-olds: hay, 5 lbs; oat straw, 8 lbs; roots, 20 lbs; grain, 5 lbs. Yearlings: hay, 8 lbs; roots, 15 lbs; grain, 5 lbs; oil-cake, ½ lb. The above are the rations per head per day. Oil-cake and bran are the most valuable food for young stock.]

Best Varieties of Corn.—Please give me some information about what kind of corn would be best for me to plant this year. We have not been in the practice of raising corn in this quarter. I thought of planting two or three acres. Perhaps you know a good kind you could recommend.—M. C., Annan, Ont.

[The Mammoth Southern is the best early corn for fodder purposes. The 100 Day Corn is also becoming very popular as an early variety. For later varieties, the Longfellow and the Canada Yellow Flint are very popular. There are also other good varieties which you can procure from any reliable seedsman who advertises in the ADVOCATE.]

Cows Eating Horse Manure.—Can you tell me how to stop cows eating bedding that is thrown from the horse stable. They will leave the best hay and eat it. They are well cared for and get plenty of salt. It is a filthy habit and very common. I have often thought our dairymen would speak about it when they say so much about cleanliness with cows.—J. B., Plympton.

[There is no special cure for this filthy practice, and one animal is apt to learn it from another. Perhaps you could enclose your horse manure heap with hurdles until the habit is broken off.]

Heating Milk.—After the milk is strained fresh from the cow, is it beneficial to either cream or butter to put it in pans that are then placed on a hot stove and allowed to stand there until the milk becomes quite warm?—J. H.

[You can't improve the quality of the cream or butter in the way you mention; all extremes of temperature should be avoided. However, some people like Devonshire cream, which is made by heating the milk almost to boiling point for several hours. To us the natural flavor is the most delicious.]

Values of Bran and Corn-starch Refuse—Rotting Apple Trees.—1. What are the relative values of wheat bran for stock and the refuse from the corn-starch factory? This feed is largely used in this neighborhood for milch cows. 2. I have a young orchard and quite a number of the trees are turning a dark color on the bark of the trunk, and the branches break off easily and appear to be rotten to the heart. Could you inform me what has been the cause?—J. R., Carluke.

[1. The value of the refuse from corn-starch factories varies materially, according to the percentage of water it contains, it sometimes being more or less pressed. Calculating 72 percent as the average percentage of water, wheat bran being worth \$12 per ton, starch refuse would be worth about \$2.50 per ton. Bran only contains 11 or 12 percent of water. 2. It would not be safe for us to say what is the matter with your trees without knowing your system of managing your orchard, the kind of soil, and other particulars. Examine whether the disease commences in the roots, stem or branches. Most of such diseases have their origin in starvation of the trees; but they are sometimes caused by a fungus. Try a liberal dressing of ashes and bone dust to the trees which are not too far gone; cut down the others and burn them up.]

Bran as a Fertilizer—Losses in Feeding 3-year-old Steers—Profit in Eggs.—Many thanks for answering my last questions, and I want to ask a few more. I have read Mr. Brodie's paper on fertilizers in the April number of the ADVOCATE, but as the sale of fertilizers is money in his pocket, I would rather have the experience of some farmer. Is there not a firm in London who make them, although I don't see their ad. in the ADVOCATE? Mr. Brodie's, at Smith's Falls, is a long distance to ship them. 1. What is the value of the manure made from a ton of bran, taking at the same rate at which fertilizers are sold? Bran is worth \$10 per ton here. 2. What proportion of a steer 18 months old that makes 500 lbs. of dressed beef, is bone? 3. If I can grow a steer that makes 1,200 at two years, and get 45c. per lb., is it not more profitable to sell at that age than to keep another year, even if I get 55c. and he weighs 1,500? 4. Is there any profit in hens when eggs only average 2c. per dozen? 5. Are White Leghorns as good as any other breed for eggs?—T. W. L., Bruce Co., Ont.

[The experience of farmers who have used fertilizers differs very widely, and their opinions are correspondingly wide apart. This clashing arises chiefly from a lack of knowledge in using them. No fertilizer manufacturer, or any other man, is allowed to boom his goods in the ADVOCATE. There is no firm manufacturing fertilizers in London, Ontario, this year. 1. Fertilizers are now cheaper than the average prices for the past few years, and may be quoted at 17c. per lb. for organic nitrogen; 6c. for phosphoric acid, and 4½c. for potash. According to those figures, bran is worth about \$13 per ton as a fertilizer, and the value would be the same if fed to animals which are not increasing in weight or giving milk. But if fed to a cow which gives say an average of 16 lbs. of milk per day, then the value of the manure would be about \$1.25 less from a ton of bran. 2. About one-sixth of an average carcass is bone. 3. It will require a daily ration per head of about 12 lbs. hay, 35 lbs. roots, and 9 lbs. grain, or their equivalent in other foods, to keep your steers through the winter, and counting these at \$10 per ton for hay, 10c. per bushel for roots, 1c. per lb. for grain, and \$1 per month for pasture for the remaining 6 months, you will find that you will lose \$16 per head by keeping the stock over, unless you find a profit in the manure over and above the labor, interest, risks, etc. If you have good grade steers, the above ration should produce a greater gain in weight. 4. All depends upon your management. If your hens are at large and consume much waste material, you should have a large profit at 12c. per dozen. 5. They are considered as good as any breed for eggs.]

Lobster Bodies as a Fertilizer.—I have a field which has been too heavily manured with lobster bodies, and for the past two years has produced very little. What I mean by lobster bodies is the tails and claws after the meat has been extracted, and the remainder of the shell with the meat, etc., all in it. What had I better do to bring it into a healthy condition? I wish to grow wheat on it this coming season. It is a sandy soil.—S. C. SCRIBNER.

[We cannot say definitely without knowing your system of rotation and other particulars. We would suggest that you try ashes or some other potash fertilizer.]

A Good Plan for Restoring Worn Out Soils.—In a recent issue of your excellent periodical, several volumes of which are before me, I see the question has been introduced, How to restore worn out lands? If the city sewerage was collected and drawn away to some convenient spot outside the city limits, it might then be drawn away by the farmers and applied with great advantage to their land, as is done in the cities and towns in Europe. There, proper water-tight receptacles are provided to each dwelling, and these are emptied, from time to time, by farmers, and without expense or inconvenience to the inhabitants.—G. R., Arva, Ont.

[There is also waste material of other descriptions found in cities, which could be utilized as fertilizers, and even market gardeners do not know their value. Farmers who allow their ashes to be given away or sold for nominal prices should not be the first to complain of the waste refuse stored up in cities.]

Amalgamation of Ayrshire Herd Books.—The meeting of the two associations was held in Ottawa on the 27th April. The revising committee reported but few clerical and typographical errors could be found in the "Canadian Ayrshire Herd Record," published in Montreal, by Messrs. John Lovell & Son, but a large number of incorrect and some false pedigrees were found in the "Dominion Ayrshire Herd Book," published in Toronto. It was found that a part of the incorrect pedigrees could be made right, but several cannot be corrected; therefore it was unanimously resolved to adopt the Canadian Ayrshire Herd Record as the foundation of future herd books, taking from the Dominion book only those that were good, and give them new numbers in the continuation of the Canada A. H. Record. The two associations were unanimously amalgamated, having in future but one herd book. The previous books of record will be delivered to me for revision, with the assistance of Mr. Wade. Till the revision and completion of the work of preparing the new volumes as second volume of the Canadian Record, the pedigrees offering for entry may, as heretofore, go through the Toronto and Montreal offices and be sent to my office at Plantagenet, for being included in the new work, if correct. I was elected President, Mr. L. Drummond and Mr. Drummond, Vice-Presidents, and Mr. H. Wade, Secretary-Treasurer. A new list of fees was adopted. The joint associations will meet on Thursday of exhibition week, in Ottawa, and transact current business offering.—W. RODDEN, Plantagenet, Ont.

Lime and Gravel for Barn Foundation.—Please let me know in your next issue if common lime and gravel built in a wall seven feet above ground will support a large barn; if so, how thick should the wall be? If common lime won't do, what proportion of water-lime to gravel? How thick should the wall be?—D. B., Culloden, Ont.

[Lime and gravel are only used for underground work; but coarse gravel with water-lime will make a substantial wall 7 feet high for a barn foundation. Portland cement dries quicker than Akron, but costs \$4.25 per bbl. here, against \$2.50, the price of the latter per bbl. Either of these cements will suit your purpose; but Canadian cement is useless. The proportions used for such purposes is one part water-lime to three of gravel. The wall should be 24 to 30 inches thick, according to the weight of the timber it has to support. Where stone is plentiful, a cheaper wall can be built in the ordinary way.]

Mammoth Clover.—Is there such a clover as the mammoth or pea-vine clover? Would it be better for poorer soil than the common red clover? How much seed will an average crop yield to the acre?—G. K., Glenallan, Ont.

[Mammoth or pea-vine clover is chiefly used for green manuring. It resembles red clover, but is a ranker grower, with large deep roots, which qualifies it for green manuring, either for poor or rich soil, but it is too coarse for feeding purposes. The yield of seed doesn't differ much from that of ordinary red clover, and the quantity is largely governed by the season—say from 1 to 7 bushels per acre.]

Uses of Tanbark and Sawdust.—Will you please answer the following questions in the ADVOCATE? 1. Would tanbark make a good mulch for the manure? 2. Would sawdust used for bedding injure the manure? 3. Would tanbark used for bedding injure the manure?—L. N., Lakeville, N. S.

[1. Tanbark makes a good mulch for trees if it is allowed to remain on the surface; but, if plowed under, would injure the texture of a light soil. 2. No. 3. Tanbark would not injure the manure, but, unless it is finely pulverized, it may injure the texture of your soil.]

Minnie May's Dep't.

MY DEAR NIECES.—I was surprised and shocked recently by hearing a pretty, attractive girl speak in a most unbecoming manner when addressing her aged grandparent. After that, her merry chatter and girlish laughter sounded shrill to my ear; her beauty and grace vanished. I saw only a young creature devoid of the innate delicacy and kindness of heart essential to true womanhood, not likely to be a blessing to anyone. How lovable does a girl appear to every right-minded beholder, when treating elderly people with good humored courtesy.

Two young lady callers were taking leave of a family; one had a smile and pleasant word for each, without in the least noticing an aged man who was present. The frankly out-stretched hand, and cordial "goodbye, Mr. D—, I am glad to see you looking so well" of the other, brought the old gentleman instantly to his feet, with his best bow, and he appeared brighter all evening afterward. In speaking of those girls weeks later, I heard him remark, "What a pleasant girl that Mary B—is." I knew why he thought her pleasant; she had not treated him as though he were a piece of furniture. All hearts warm to girls like Mary B—. If any of my nieces have aged relatives beneath their roof, I pray you endeavor to make their lives not only bearable, but enjoyable.

An aged relative sitting uncared for, like an unwelcomed guest, a stranger in the home circle, at once tells the story of the family; even if possessed of ample means, money cannot buy the many thoughtful acts of kindness in your power to bestow; see that they are promptly waited on at table; snatch a moment from your round of duty to prepare a dainty dish to tempt the failing appetite. Plan little surprises; a bunch of flowers beside grandpa's plate on the birthday which he had well nigh forgotten. Take a kindly interest in the little ailments which old people are fond of complaining about—and sometimes loth to part with. Many times it is a childish stratagem to obtain a little sympathy, and sympathy is contagious. Other members of the family will be influenced by your good example, and your own moral nature will be deepened and widened by the exercise of your benevolence. Divert their attention away from themselves by pleasantly recounting the happenings of the neighborhood, or the public events of the day; bring your fancy work or drawing for inspection. If they have ill bestowed their youth, so much the more need have they of sympathy, and don't be impatient of their old-fashioned criticism of your dress, mode of wearing the hair and so on. The girls of their youth are more real to them than those of the present generation. Truly the aged may be said to live in the past; in recollection only can they be young and ambitious, or necessary to anyone's happiness. The present is full of weakness and weariness. Companions of youth and friends of middle life are dead or scattered, and the future time stretches before like a wintry landscape, shrouded in chilling mist, where the trees will never bear fruit and where no flowers of hope ever blossom; and in the near distance is the cemetery—the silent city to which every weary step brings them nearer, and which they often vainly would reach when borne down with coldness and neglect. Oh, be kind to the aged; truly they are God's "little ones" in their weak dependence, and loving kindness shown them for His sake will not go unrewarded.

MINNIE MAY.

MY DEAR NIECES.—The time is up for reviewing and judging the last competitions on "the Sayings of the Wise on Conduct and Character." I am very pleased with the result of the last papers; there are a great many, and most of them are neat and the selections very good, so that it was difficult to decide which ought to be given the prizes; but after a most careful study we have decided the 1st prize of \$3.00 is due to Miss Jessie J. Lambert, Jocelyn P. O., St. Joseph's Island, Algoma, Ont., and the 2nd prize of \$2.00 to Miss Emma E. Townsend, Aldershot, Ont. The quotations are so good and instructive I intend publishing a list from time to time under the different headings. I'm sure I have enough to fill the whole paper. Even by giving a few at a time, as space will allow, they will last a long time.

I now offer a prize of \$1.00 for the best essay on Cheerfulness; competitions must be in by the 25th of May.

MINNIE MAY.

Work Basket.**HOW TO MAKE A DOWN QUILT.**

Any one having enjoyed the light, luxurious warmth of a down quilt, will I am sure be at some pains to make one. At each time of plucking the geese, and again at killing time, put all the down and fluffy feathers by themselves; a couple of pillow cases lightly filled will be sufficient (I don't know the exact weight). Too much will make the quilt rather stiff, and inclined to slip off the bed. As this will be a valuable and much prized quilt, select a pretty piece of cretonne or chintz of close texture; make the lining and cover exactly the same size; run all round on the machine, forming a bag, leave an opening, pour in the down, and sew up, baste into the frame, stretch out, and with the hand or a light stick pat and scatter the down evenly; proceed to quilt, in rows, a little more than a hand breadth apart; soap your thread with a bit of hard soap, as without taking this precaution the down will pull through, and the work be impossible. These quilts retail at from nine to ten dollars each, and just as good can be made at home.

A **PRETTY PENWIPER** is made by cutting little strips of cloth and tying them together with a leather strap so as to look like a bundle of shawls.

PRETTY FRINGE for edging bed-room lambrequins and other cretonne decorations can be made by ravelling strips of coarse linen, and at short intervals sewing in a strand of colored worsted. A heading is made by turning down the top of the wrong side, leaving a plain piece half an inch wide, which is covered with coarse herring-bone stitch in crewel or wool.

JAPANESE EMBROIDERIES of all kinds, even articles of dress, are displayed as drapery for mantel valances and pianos or over the backs of sofas. Large fans are spread on and fixed above doors, and still larger ones are placed against the wall, over the mantel shelf, where there are no mirrors. A silken scarf is sometimes gracefully arranged over the edge at one side.

LINEN CHEST.—Take a common packing trunk, line the inside with unbleached muslin, and cover the lid on the top quite loosely, and then between the wood and the covering stuff a sufficient quantity of curled hair to make the top rise and have a good shape; then cover the whole with cretonne or rep, laying round the lid and side a wide band of some other goods to correspond, bordering the edge of the band with cord, and a deep worsted fringe and two cords and tassels on the front. At each corner and in the center or sides of cover glue on large transfer flowers, to be procured at any fancy store where worsteds are kept. This chest is convenient to lay dresses in and will keep them in better order than hanging in a closet.

Recipes.

FRENCH PANCAKES.—Beat together six eggs and a half-pound of flour. Melt a quarter of a pound of butter, and add it to the batter, with one ounce of sugar and half a pint of milk, and beat till smooth. Put by the tablespoonful into a hot frying-pan, slightly greased, running the batter evenly over the surface of the pan by tipping it about. Fry the pancakes a light brown, spread each one with jelly, roll it up, dust with powdered sugar, and serve.

GOOD COFFEE—EASY TO MAKE.—Miss Corson, in a lecture, says: "It is one of the simplest things in the world to make a cup of good coffee, and this can easily be accomplished by applying a little common sense. If you put boiling water on coffee, and do not let it boil, you have all the good qualities preserved. One reason dyspeptics cannot drink coffee is because it is boiled. The style of coffee is just a matter of fancy. I have made as good coffee in an old tomato can as I have ever sipped from the finest French coffee urn. We should take lessons in this matter from the Turks and Arabians, who grind their coffee to a fine powder. When the coffee is ground as fine as possible, put it in a little bag of unbleached muslin, which should be tied tightly enough to prevent the escape of the grounds. If you use a cupful of unground coffee you can make a quart of very strong, black coffee. In making coffee many people sacrifice flavor for strength. Bitterness comes from boiling. When boiling water is placed on the bag of ground coffee it should stand at least three minutes before serving. Remember, the longer it stands the stronger it becomes."

TO CLEAN A WOOLEN CARPET.—Obtain from the butcher a fresh beef gall, break it into a pan, pour one-half into a bucket and nearly fill it with lukewarm water; take a cloth, having brushed the carpet well, rub it hard with the cloth, thoroughly wet with the gall water; do a small piece at a time, having ready a dry, coarse cloth and rub the carpet dry. So proceed until the whole carpet is clean. You can get a bottle or barrel of oil of any carpet or woolen stuff by applying dry buckwheat plentifully and faithfully. Never put water to such a grease spot or liquid of any kind.

Household Hints.

Moths will not eat through paper.

Stains on cups and saucers may be removed by rubbing with ashes.

If the oven is too hot when baking, place a small dish of cold water in it.

Milk, if put in an earthen jar, or even in a tin can, will keep sweet for a long time if well wrapped in a wet cloth.

If the wall above the stove has been smoked by the stove, cover the black patches with gum shellac, and they will not strike through either paint or kalsomine.

Home.

There is a spot of land supremely blest,
A dearer, sweeter spot than all the rest,
Where man, creation's tyrant, casts aside
His sword and sceptre, pageantry and pride;
While in his softened looks benignly bend
The sire, the son, the husband, brother, friend,
Here woman reigns; the mother, daughter, wife,
Strews with fresh flowers the narrow path of life!
In the clear heaven of her delightful eye
An angel-guard of loves and graces lie;
Around her knees domestic duties meet,
And fireside pleasures gambol at her feet,
Here shall that land, that spot of hearth be found?
Art thou a man? a patriot? look around,
And thou shalt find, how'er thy footsteps roam,
That land thy country, and that spot thy home;

Ironing Shirts.

"Ironing my husband's shirts," said she,
With a motion of easy grace,
As over the linen the metal flew,
While the love-light swept her face.

Little she thought how those simple words
Stirred within me the loves of old,
How the pain shot through me to think of
them
So long in their graves so cold.

That bosom so white, that earnest care,
That never a crease or seam
Should mar the linen to her so fair,
Was to me like an old-time dream.

Ah! many's the time in days gone by,
As with weary hands I strove,
I wished there were not so many to call
For a wife's or mother's love.

And often I said, as the sun sank low,
"Oh, I'm glad my work is done;
So many, so many!" Alas, poor hands,
They have not now even one.

Ah, wives be patient, and mothers be strong,
For the toil that comes to day;
'Tis easier far for the heart to bear
Than to have them far away!

Fashion Notes.

The most fashionable fabrics for spring wear are of cotton.

Surah is extensively used in combination with wool goods for demi-toilets.

Plain skirts are the rule this season, with very long and full draperies in the overdress.

Satin shows fewer flower designs than last year, conventional patterns being substituted.

Pattern dresses in woollens are very stylish and generally popular, and are in great variety.

White gingham with bars and stripes of color set wide apart, are the novelty for wash dresses.

Colored Brussels net still takes the place of white ruching for neck and sleeves of dressy costumes.

Herring-bone camel-hair fabrics are soft and pliable, and in all the desirable shades both dark and light.

Geneva point is a lace much used on washable dresses, as it is very durable and at the same time attractive.

Palm leaves form a very elegant and favorite design in trimmings this season, both in braid and passementerie.

All the new modes have the effect of being "made-over" costumes, as they are composed of two distinct fabrics.

Several small combs are worn in the hair instead of one good sized one, and they are tucked in apparently at random.

The skirts of almost all walking-dresses are made quite plain, or with very narrow pleating set underneath the edge.

Skirtings of bayadere stripes are particularly stylish this season. They come in beautiful Persian color, rich and deep.

Frise stripes, with plain fabric between, are seen in some light shades, and lighten a plain cloth suit very successfully.

The satin striped gossamer silks are worn by bridesmaids this season, and these silks are found in all delicate shades.

The cotton frise cloths, so very stylish last season, are seen again this year among the new goods. Stripes are very stylish.

The old-fashioned lavender and buff gingham are once more seen, but are known as "heliotrope and primrose" gingham.

Silk and wool frise goods, when of rich quality, are very much used in the new models for walking dresses for spring wear.

Puzzled.

You ask me whether I'm High Church,
You ask me whether I'm Low;
I wish you'd tell the difference,
For I'm sure that I don't know.
I'm just a plain old body,
And my brain works pretty slow;
So I don't know whether I'm High Church,
And I don't know whether I'm Low.

I'm trying to be a Christian
In the plain old-fashioned way
Laid down in mother's Bible,
And I read it every day;
Our blessed Lord's life in the Gospels,
Or a comforting Psalm of old,
Or a bit from the Revelation
Of the city whose streets are gold.

Then I pray, why, I'm generally praying,
Though I don't always kneel or speak out,
But I ask the dear Lord, and keep asking
Till I fear He is all tired out.
A piece of the Litany sometimes,
The Collect, perhaps, for the day,
Or a scrap of a paper that my mother
So long ago learned me to say.

But now my poor memory's failing,
And often and often I find
That never a prayer from the Prayer Book
Will seem to come into my mind.
But I know what I want and I ask it,
And I make up the words as I go;
Do you think now, that shows I ain't High Church?
Do you think it means I am Low?

My blessed old husband has left me,
'Tis years since God took him away;
I know he is safe, well, and happy,
And yet when I kneel down to pray—
Perhaps it is wrong, but I never
Leave the old man's name out of my prayer,
But I ask the Lord to do for him
What I would if I was there.

Of course he can do it much better;
But he knows, and he surely won't mind
The worry about her husband
Of the old woman left here behind.
So I pray, and I pray for the old man,
And I am sure that I shall till I die,
So maybe that proves that I ain't Low Church,
And maybe it shows I am High.

My old father was never a Churchman.

But a Scotch Presbyterian saint;

Still his white head is shining in Heaven,

I don't care who says that it ain't;

To one of our blessed Lord's mansions

That old man was certain to go.

And now do you think I am High Church,

Are you sure that I ain't pretty Low?

I tell you it's all just a muddle,

Too much for a body like me,

I'll wait till I join my old husband,

And then we shall see what we'll see.

Don't ask me again if you please, sir;

For really it worries me so,

And I don't care whether I'm High Church,

And I don't care whether I'm Low.

For Husbands Only.

Tom Brown was always in a fret

Because, somehow, he kept in debt.

Yet he imagined he was wise

And knew how to economise.

He earned enough to live with pride,

And lay a little up beside.

Although he nothing spent for sport,

He borrowed and was always short.

"Oh, Tom," his wife would say, "a man

'an't manage like a woman can.

Do try me once, and soon you'll be

From horrid debts and worries free."

Tom only laughed; "No woman can

Handle finances like a man."

At length his debts and worries grew

So big he knew not what to do;

Then he in time to save his life,

Gave all his earnings to his wife.

"Now, wife," he groaned in woe complete,

"See if you can make both ends meet."

Bright years now passed; Tom, freed from care,

Waxed fat upon his wife's good fare.

His debts were paid, and laid away

Was something for a rainy day.

What had Tom's burden been in life

Was pleasure to his careful wife.

MORAL.

Man's forte is earning gold alone;

In spending is his weakness shown.

A woman's forte, by nature meant,

Is taking care of every cent;

And he who lets his wife do this

Is always rich and lives in bliss.

—[York (Pa.) Gazette.

KNOWING OLD LADY.—An aged Forfarshire lady, knowing the habits of her old and spoiled servant, when she wished a note taken without loss of time, held it open and read it over to him, saying: "There noo, Andrew, ye ken a' that's in it; noo dinna stop to open it, but jist send it off."

The Baltimore Oriole.

Icterus Baltimore, Daudin.

One of the most beautiful and most useful of our North American birds is the Baltimore Oriole, a plate of which is given in this number. Its bright colors, seen flashing amid the tender green of the budding leaves in spring, and its clear, mellow whistle, sounded as it moves along the branches of some tall tree in its search for food, make it a conspicuous and beautiful feature of the loveliest season of the year. Formerly the Oriole was one of the most abundant of our Eastern birds, but its very beauty has led to its destruction. Its brilliant plumage makes it very desirable to the hat bird collector, while its sweet notes catch his ear as its colors do his eye. It is often the case that all the male birds in a district are exterminated within a short time after their arrival from the South.

In different localities the Oriole is known by different names, such as Fire-bird, Golden Robin, Fire-hang-nest, Hang-nest and Baltimore-bird, or Baltimore Oriole. These names refer either to its gorgeous plumage or else to its habit of building a curious hanging nest, which swings in the air below the twig to which it is attached. Orange and black were the colors of Lord Baltimore, for whom the bird was named by the great Swedish naturalist Linnaeus, and this is the name by which it is most widely known.

The Baltimore Oriole comes to us from the South in early spring. It passes the winter in Mexico, Central America and Cuba, and enters the United States in March. Audubon tells us that in Louisiana he has seen the young of the first brood early in May. The journey northward is performed rather slowly, and usually it is the 9th or 10th of May before the Orioles are seen in southern New York and Connecticut. They are extremely regular in the time of their arrival, and year after year appear at any point at about the same date. The male birds are the first to arrive, and the females usually make their appearance a day or two later.

The first notice we have of the Baltimore's presence is his sweet whistle heard in the early morning. If we look for him we shall find him high up among the branches of an oak or elm or sycamore or cherry tree, busily looking for food, and if we take a little time to watch him, may see how systematically he goes to work to secure his breakfast. He will very likely alight on some large branch near the trunk of the tree, and thence work outward towards the smaller branches, going carefully over almost every twig, and always flying back to the main branch to begin his examination of a smaller one. He peers into each crevice in the bark; looks under each leaf; and takes out from each blossom the insects which have gathered there to feed on the sweet honey. The little bunches of eggs hidden last autumn in the crannies and nooks where the mother beetle or moth thought they would be safe, do not escape his keen sight and his strong, sharp-pointed bill; the caterpillar, just hatched out and beginning to feed on the tender leaves, is far too slow to get away if the Oriole once spies him; and the insect which is about to lay its eggs in the fruit which is just now forming will have to be very quick and cunning if it is to avoid the sharp eyes of Lord Baltimore. All through the spring and summer this is the Oriole's work, performed day after day, constantly, carefully, faithfully. No one can know how much good he does

by his unceasing warfare against the insects; no one can know how many trees he saves, how many barrels of fruit he gives to the farmer, fruit which but for him would be eaten up by the grubs, or having been stung by insects, would drop off from the trees before ripening.

Soon after the Orioles reach the place which they have chosen for their summer home, they select their mates. Sometimes sharp battles take place between two male birds for the favor of a female, and the rivals chase one another here and there with shrill cries of anger, while the female looks on with interest to see which of her admirers will be the conqueror in the fight. As soon as the birds have paired, each couple begins to

look about for a suitable place for the nest. This is built usually in an elm or sycamore tree, though sometimes in a cherry or pear, or as in the illustration, in a tulip tree. It is a structure of wonderful skill and ingenuity, a neatly woven purse or pouch-shaped bag of varying depth, constructed of long string, sometimes of the fibre of the milk-weed, or of horse-hair, or of the threads of the Spanish moss of the South, the whole forming, as Nuttall remarks, "a sort of coarse cloth." The nest is usually placed at the forking of two twigs, one side of it being attached to either of them, but sometimes it is fastened to one twig by one side only. We have seen one nest, built in a pear tree, which was formed entirely of black and brown horse-hairs, without any other material whatever.

The work of building the nest is taken part in by both birds. Sometimes the female does almost all the weaving and the male brings the materials to her, and at others the male is the architect. It is a busy time for both of them, and no doubt the days seem all too short for the work that has to be done. When the swinging nest is completed the eggs are laid. They are four or five in number, white marked with dots and curious curving lines and streaks, as if some one had been scratching on them with a pen and very black ink.

Now the female begins to sit upon her eggs and the male is kept very busy. He has to bring food to his mate, and also keep a sharp lookout for his enemies who may be suspected of having designs against his family. The presence of a strange dog or cat in the vicinity of his nest will bring him down to the lower branches of the tree or to the top of a fence post with a sharp rolling cry of anger and warning. The Baltimore Oriole is not afraid of anything that flies, and will attack most courageously any bird that may attempt to alight in the tree where his nest is built. We have seen one administer such a severe thrashing to a marauding bluejay who was prowling about his home, that the rascal went off quite

crestfallen and hid himself in a cedar tree, where he stayed half an hour before he dared to venture out from its sheltering branches.

For two weeks the tender mother sits upon her eggs, rocked by the soft breezes and cheered by the love song of the devoted mate. Then the shells begin to crack, and the blind, naked, helpless young appear. The mother carefully throws out of the nest every particle of eggshell that might scratch their tender bodies, and soon feeds them with the soft insect food that she has prepared for them. From this time on both parents are busily at work providing food for the young, which grow hungrier and hungrier as they increase in size. In the course of a couple of weeks they are pretty well feathered, and now they begin to make excursions to the door of the nest,

Seal-Skin Sacques.

Considered merely as a business investment, the purchase of Alaska was a wise proceeding on the part of Secretary Seward. The Territory cost us altogether, counting all charges, the sum of seven million five hundred thousand dollars, and on this amount the Government receives a return of three hundred and seventeen thousand five hundred dollars, equivalent to a fraction over four percent on the total money originally expended. When the purchase of "Russian America," as Alaska was then called, was urged in 1867, considerable stress was laid upon the fact that the country was particularly valuable for its fish, minerals, and timber. But the import-

ance of two little islands belonging to Alaska, and situated in Behring's Sea, was entirely overlooked, when, in fact, it is from these two islands that the revenue is received which pays the interest noted above. The islands are named St. Paul and St. George, and are mere points of rock rising only a few feet above the level of the sea, and hidden a great part of the time behind heavy layers of fog.

Ever since they were first discovered by a Russian navigator, St. Paul and St. George have been favorite resorts for the fur seal, whose skins make the seal-skin sacques we see worn on the streets; and to-day Government leases the islands to a corporation known as the Alaska Commercial Company, for a yearly rental of fifty-five thousand dollars. The lease was for twenty years, and does not expire until 1890. The company are all taxed two dollars and sixty-two and one-half cents for each seal taken during the season, and as one hundred thousand seals are killed each year, the Government receives two hundred and sixty-two thousand five hundred dollars, in addition to the fifty-five thousand dollars for rent, the total sum returning the more than fair interest on the

seven million five hundred thousand dollars.

The killing of seals is a cruelty. The work of slaughtering the animals is done by native Indians, who live on the islands. The men go down to the rookeries when the killing season begins, station themselves along the shore between the seals and the water, and at a given signal, spring up and make as much noise as possible.

The frightened victims, who are quietly sleeping on the sands, hear the unusual noise, and in their fright stampede as fast as they can up the beach. A seal never makes for the water if anything frightens him, but pushes inland.

The men rush into the midst of the herd, and singling out certain of the seals, knock them over the head with stout clubs. After being made insensible, the seals are stabbed and their skins taken quickly off the still warm bodies.



THE BALTIMORE ORIOLE.

so they can peep out into the world about them and see what is going on there. The sides of the nest are straight up and down, and the young birds climb up the walls as a woodpecker climbs up a tree. Soon after they venture on this feat their wings become strong enough to support them, and at length the boldest of them all ventures to tumble off his perch and takes a short flight; and soon the nest is deserted.

Wondrous is the strength of cheerfulness, altogether past calculation is its powers of endurance. Efforts, to be permanently useful, must be uniformly joyous—a spirit all sunshine, graceful from very gladness, beautiful because so bright. —[Carlyle.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES.—

March winds and April showers
Bring May flowers.

So May, with its beauty and its blossoms, has come to us again. You barefooted youngsters, rambling in the woods, gathering bouquets of wild flowers, how I envy you, at times. There is no enjoyment of childhood which I remember with more pleasure than the gathering of "sweet violets," and sometimes when I read any sentiment delicately expressed and beautiful in conception, in imagination I feel stealing over me the sweet, faint fragrance of the flowers we used to gather when children. Some one has called them "thoughts of God," while Longfellow calls them "stars of earth." I was just thinking how much some flowers are like some of the nieces and nephews with whom I am personally acquainted. I know a maiden who is always smiling and ready to do a good turn for everybody. She rocks the cradle to keep baby sleeping; she is very kind to her other brothers and sisters, and when asked to run on a message neither frowns nor pouts, but cheerfully and willingly gets ready. You have seen those pretty blue violets, so innocent and so bright looking—I used to find them in some sheltered nook under the pines—well, she just reminds me of one of them, and if her name wasn't Aggie, I think her friends might call her Violet. She does not know Uncle Tom has been watching her so closely, and if she reads this, it would not occur to her that she was the niece I meant, for, like a violet, she is very modest. Then I know some girls who are lilies—lilies in the beautiful sense of the word; girls whose lips are never soiled by an impure word, and whose influence makes life purer and better; girls who teach boys respect for their sex, and who give abundant promise of developing into chaste and holy womanhood. There are pansies, too. Girls who are always merry, and bright and blooming, and who, gayer than the lily, are needed to relieve the fascinating bouquets of girlhood. And roses; who does not know one or two, whose faces are lovely to look at, and whose lives emanate the fragrant perfume of genuine worth? In some quiet nook almost unseen, and very retiring, I know some blossoms of sweet alyssum; one is apt to pass over this unassuming flower, but once known, we would miss its presence.

It is an old saying that every rose has its thorn, and so even in flower-gathering there are unpleasant experiences. I know a girl who reminds me of the flower-gathering of my bare-footed days in the following respect: You know spring flowers are generally found with a broad, spotted, green leaf—I don't know the proper name of the leaf, but we used to call the leaves I mean "adder-tongues." Well, when we saw these "adder-tongues" we were pretty sure of finding flowers, but it sometimes happened that what we thought were flower leaflets turned out to be leeks, and you know how disagreeable they are. Well, this girl I know reminds me of a leek. Poor girl! I feel sorry for her, and I wouldn't tell you her name lest she should read these columns and get in a rage, for she would be sure to say that Uncle Tom had a "spite" at her. She is as good-looking as other girls; at first glance you cannot tell the "adder-tongue" from the leek, and you think you are going to get a

flower, but no flower is there, unless we say, significantly, "She's a daisy," and I would not like to do that, because slang is one of the modern accomplishments in which Uncle Tom hopes his nieces and nephews are not educated. This poor girl is always being insulted, others are always treating her "real mean;" her friends prove faithless, and her enemies are always telling things about her. If you know of any such girl, whisper in her ear for me, "I always find others just the same to me as I am to them."

I think I hear some of my boys say in disgust, "Ugh, Uncle Tom is writing all about girls; that has nothing to do with us." Hasn't it, you young rogues? When you come to be four or five and twenty, you just take care you don't get a leek. Let me tell you, if there's one thing more than another of human agency that "shapes the destiny" of the average man, it's the wife he gets. So, my boy, its pretty serious business. Perhaps, sometime, you may hear more of this matter from

UNCLE TOM.

Puzzles.

1—ILLUSTRATED REBUS.



2—TRANSPPOSITION.
I untoc stih hitgn ot eb dlygarn retu,
Hatt a lenob dede si a ptes wotrad Gdo,
Fright eit osul ormf het moomon leod,
Ot a rpreu ira nad a roadber ewiw.—Dhollar.
EULALIA FARLINGER.
No. 3.

As I stand I am part of a ship, change my vowel
and I become a man's name, change again and I am
a harbor, again and I am a water fowl.
ADOLPHUS B. PICKETT.

4—DROP VOWEL PUZZLE.

Th h-ghts be gr-t m-n r-ch-d -nd k-pt
W-r-n-t -tt-n-d-b- s-dd-n fl-ght,
B-t thy wh-l th-r c-mp-n-ns sl-pt
W-r-t-l-ng -pw-rd-n th- n-ght.
HELEN CONNELL.

5—CROSS.

*** An inclosure.
*** A short poem.
*** A kind of spirits.
*** In name only.
*** A town in Scotland.
*** Dissemination.
*** A period of time.
*** A lifetime.
*** A pronoun.
HELEN CONNELL.

6—HATCHET PUZZLE.

***** Cunning.
***** Loveliness.
***** To retreat.
***** Vapor.
***** Gayer.
***** Estimation.
***** Public exposure.
***** ADA ARMAND.

7—RHYMED ENIGMA.

A weary 1, 2, 7, 5, 4, in a foreign land,
Wandering alone upon the ocean strand,
Thus mused: "How hard my 3, 9, 8, 6, 6 to bear,
Debarred from home and friends so dear!
Could I but win a place in fame,
Then might I seek my home again.
Then far away despondence flee,
TOTAL'er shall my motto be;
Nor shall I rest until I gain
That honor I so longed to attain."
ADA ARMAND.

8—CHARADE.

Charlie had a little pony,
After it he used to ride,
And he had a little FIRST
That he kept by his side.
Only when his SECOND DAG
Travelled rather slow,
Then he used it freely
For to make him go.
If you read this over,
It third tell to you
How late Charlie was returning,
For falling was the dew.
As homeward he returned,
The moon was shining bright,
And the TOTAL was singing,
For it was late at night.
LOUISA F. REDMOND.

9—HIDDEN ANIMALS.

1—Little Tommy was sitting in a chair at auntie's,
2—I fear he shall be a rambling boy.
3—Marco, will you please pare my apple.
4—To do good and fear not," was his motto.
5—He was rather harsh, or seemed hard to please.
6—That pop I got of you flowed all over.
7—That bad Gerty ate baby's cake.
LOUISA F. REDMOND.

10—TRANSPPOSITION.

A lelw erteh si ni hte setw enturoy,
Nda a reclear neo vrene asw enes;
Rehet si otn a eifw ni teh swet tuorycn
Tbu sha daehr fo hte lwle fo ts eyKen.
HENRY ROOT.

11—DROP VOWEL PUZZLE.

S-r-n- w-l-l b--r d-ys -nd br-ght
-nd h-ppy w-l-l -r-n-t-r-b-
Wh-n l-v- s-n-n-vy-ng l-ght,
-nd j-y -ts -wn s-c-r-ty.—W-rdsw-rth.
HENRY REEVE.

Answers to April Puzzles.

1—Honor and fame from no conditions rise;
Act well thy part, there all the honor lies.

2—
W a n t
r a s h
w a s h
h a s h
g a i n
a n t s
G a s h
a T o m
g r o w
m o a n
c a i n
a R m s
V a l e
d i m e
f a n g
Washington Irving.

3—
P L Y
D I N
E V E
G A T H E R I N G
L I V E R P O O L
F I R E P L A C E
F O X
D O N
O L D

4—If you wish to be miserable you must think
about yourself, about what you want, what you
like, what respect people ought to pay you, what
people think of you, and then to you nothing will
be pure.

5—Abel, Theodore, Amos, Lionel, Norman, Mar-
tin, Richard, Seth.

6—Let not ambition mock their useful toil,
Their homely joys and destiny observe;
Nor grandeur hear with a disdainful smile
The short but simple annals of the poor.

7—
Gog
Level
Eye
Noon. } Glen.

8—True worth is in being—not seeming,
In doing each day as goes by
Some little good—not in dreaming
Of great things to do by and by.

9—Notice.

10—A good word is an easy obligation, but not to
speak ill requires only our silence, which costs
nothing.

The best answer received to Ada Armand's riddle

is:
A man with one hand the letter did write,
Dictated by Mr. Dumb;
A man with one eye read it aright,
And Mr. Deaf heard it done.

Names of Those who Sent Correct Answers to April Puzzles.

Henry Wilson, Drusilla A. Fairbrother, Libbie Denike, Russell Boys, John R. Webb, Hugh Barrett, Ada Armand, Emma Dennee, A. C. Whitteker, Wm. H. Whitteker, Henry Reeve, Lizzie C. Watt, Louisa F. Redmond, Austin E. Smuck, Tillie Herrett, Annie M. Lackie, Stillman Root, Minnie Stafford, W. B. Anderson, Addie Smith, E. Eulalia Farlinger, Emma Hodgeson, Katie A. McFavish, Amos Hawkins, Maggie Canfield, Olive E. Carruthers, Mary Morrison, Helen Connell, Robert Wilson, Adolphus B. Pickett, Annie C. Rothwell.

Giving the Teacher Something.

A certain young teacher in one of the public schools suffers all the pleasures and inconveniences of being idolized by her boys. The children demonstrate their affections in various ways, and one of their greatest pleasures is "giving teacher something." The other morning a little chap slid up to the desk with a box in his little red paw, and, pressing it into his teacher's hand, said in a whisper:

"There, I've brought 'em for you."

"What is it, dear?" said the teacher.

"Oh, you look!" with a grin of satisfaction.

Untying the string, she opened the box, and behold, there was a set of false teeth!

"They are mamma's," exclaimed the child in a delightful tone; "they're much prettier than yours, and I brought 'em to you."—Boston Herald.

Tribute to a Mother.

A writer says: Children, look in those eyes, listen to that dear voice, notice the feeling of even a single touch that is bestowed upon you by that gentle hand! Make much of it while 'yet you have that most precious of all gifts, a loving mother. Read the unfathomable love of those eyes, the kind anxiety of that tone and look, however slight the pain. In after life you may have friends, fond, dear friends; but never will you have again the inexpressible love and gentleness lavished upon you which none but a mother bestows. Often do I sigh in my struggles with the dark, unearthy world, for the sweet, deep-secrecy I felt when, of an evening, nestling in her bosom, I listened to some quiet tale suitable to my age, read in her tender and intiring voice; never can I forget her sweet glances cast upon me when I appeared asleep; never her kiss of peace at night. Years have passed away since we laid her beside my father in the old church yard; and still her voice whispers from the grave and her eye watches over me, as I visit spots long since hallowed to the memory of my mother. [Taken from an English Journal.

BE FIRM AND MILD.—Firmness without mildness is harsh and forbidding; mildness without firmness becomes weak and contemptible; both united make a character respectable and amiable.

THE AMERICAN MAGAZINE.—We have been much pleased to see the Audubon Magazine, a new publication, published by Chas. F. Amery, New York, in the interest of the Audubon Society for the protection of birds. It is named Audubon, after James Audubon, the greatest of American ornithologists, who was born in the West Indies, but spent most of his life in Louisiana and the Southern States, giving his whole life to the care and study of birds, insects, stones, etc., etc. This Audubon Society has a roll of more than 20,000 members scattered among more than 100 towns in the United States. Its purpose is the protection of American birds not used for food, the destruction of noxious birds, the taking or destruction of the eggs or nests of any wild birds; the preservation of bird feathers in ladies' bonnets, etc., etc.

The Highway Cow.

The hue of her hide was a dusky brown, Her body was lean and her neck was slim, One horn turned up and the other down, She was keen of vision and long of limb; With a Roman nose and a short stump tail, And ribs like the hoops on a home-made pail. Many a mark did her body bear: She had been a target for a I things known; On many a scar the dusky hair Would grow no more where it once had grown; Many a passionate, parting shout Had left upon her a lasting spot. Many and many a well-aimed stone, Many a brickbat of goodly size, And many a cudgel, swiftly thrown, Had brought the tears to her bovine eyes; Or had bounded off from her bony back, With a noise like the sound of a rifle crack. Many a day had she passed in the pound, For helping herself to her neighbor's corn; Many a cowardly ear and bound Had been transfixed on her crumpled horn; Many a teapot and old tin pail Had the farmer boys tied to her time-worn tail. Old Deacon Gray was a pious man, Though sometimes tempted to be profane, When many a weary mile he ran To drive her out of the growing grain. Sharp were the panks she used to play To get her fill and to get away. She knew when the Deacon went to town; She wisely watched him when he went by; He never passed her without a frown And an evil gleam in each angry eye; He would crack his whip in a surly way, And drive along in his "one-hoss shay." Then at his homestead she loved to call, Lifting his bars with crumpled horn; Nimbly scaling his garden wall, Helping herself to his standing corn; Eating his cabbages, one by one, Hurrying home when her work was done. Often the Deacon homeward came, Humming a hymn from the house of prayer, His hopeful heart in a tranquil frame, His soul as calm as the evening air; His forehead smooth as a well-worn plow, To find in his garden that highway cow. His human passions were quick to rise, And striding forth with a savage cry, With fury blazing from both his eyes, As lightnings flash in a summer sky, Redder and redder his face would glow, And after that creature he would go. Over the garden, round and round, Breaking his pear and apple trees; Trampling his melons into the ground, Overturning his hives of bees; Leaving him angry and badly stung, Wishing the old cow's neck was wrung. The mosses grew on the garden wall; The years went by with their work and play; The boys of the village grew strong and tall, And the gray-haired farmers passed away; One by one, as the red leaves fall, But the highway cow outlived them all. All earthly creatures must have their day, And some must have their months and years, Some in dying will long delay; There is a climax to all careers; And the highway cow at last was slain In running a race with a railway train. All into pieces at once she went, Just like the savings banks when they fail; Out of the world she was swiftly sent; Little was left but her old stump tail. The farmers' cornfields and garden now Are haunted no more by the highway cow, —[EUGENE J. HAYS, in Can. Agriculturist.

Notices.

We call attention to the advertisement in another column of the auction sale on June 7, of pure-bred Shorthorn cattle, to be held by Frank R. Shore & Bros., White Oak, five miles south of London. The offering will be chiefly cows and heifers descended from recently imported cows topped with the best imported Crickshank bulls.

THE AMERICAN MAGAZINE.—We have received in ably written work on this subject by Stephen Powers, and published by Orange Judd & Co., 751 Broadway, New York. The book contains 215 pages, is neatly bound and well illustrated. The author is a popular and practical writer on agricultural questions.

We desire to call the attention of our readers to the advertisement of wire leading, manufactured by Mr. E. C. Jones, of Hamilton. In this issue will be displayed a cut of one of his styles of ornamental fencing, erected with his patent posts; it is claimed that these posts will not rot with the frost, which is a very important consideration, especially to those on clay land, another point of merit in connection with Mr. Jones' posts is their small mesh at the bottom of the posts, which prevents loads of mud from falling through, and so prevents the soil from becoming hard.

NEW ADVERTISEMENTS.

ADVERTISING RATES.

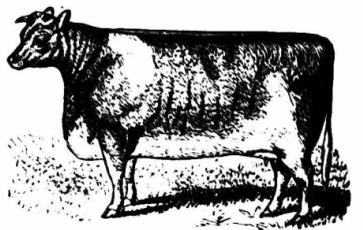
The regular rate for ordinary advertisements is 25c. per line, nonpariel, or \$3 per inch. No advertisement inserted for less than \$1. Special contracts for definite time and space made on application. Advertisements unaccompanied by specific instructions inserted until ordered out, and charged at regular rates. The FARMER'S ADVOCATE is the unrivalled advertising medium to reach the farmers of Canada, exceeding in circulation the combined issues of all the other agricultural publications in the Dominion. Send for an advertising circular and an estimate.

SPECIAL NOTICE.

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

IMPORTANT PUBLIC SALE

HIGH-CLASS SHORTHORNS

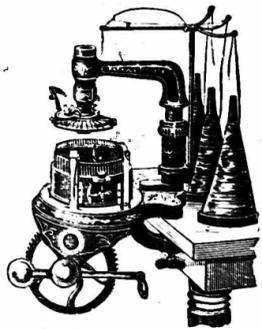


TUESDAY, JUNE 7th, 1887.

We will sell at Public Auction, at our farm, Thornville, five miles south of London, Ont., 30 HEAD OF FIRST-CLASS SHORTHORN CATTLE. 25 Cows and Heifers and 5 Bulls, of the popular Scotch sorts, represented by Crickshank, Campbell, Mare and other strains, mostly topped out with the highest class of Crickshank Bulls. Most of the cows will be sold with calves at foot, which will go with their dams, and all of sufficient age will be in calf to the imported Crickshank bull Vermillion 34852. This splendid bull will also be sold, together with a few high-class young bulls of the same breeding, and in form good enough for show animals. TERMS: Six months credit on approved notes, or discount at the rate of seven per cent. per annum for cash. Catalogues ready by the first of May.

FRANK R. SHORE & BROS., White Oak, Ont. E. A. M. GIBSON, Auctioneer. 257-a

THE WORLD'S STAR KNITTING MACHINE



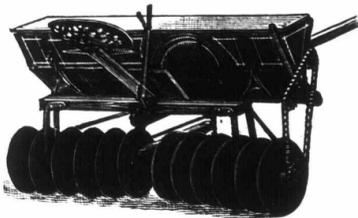
CIRRELEAN BROS., GEORGETOWN, ONTARIO.

NO HOME COMPLETE WITHOUT ONE. First prizes at all the leading fairs. First prize at all leading exhibitions. Beautiful full fashioned goods of all descriptions, coarse or fine for the home or fancy work. First prize at all leading exhibitions. 2500 machines sold at the Colonial Exhibition, London, England. Send for circular.

PORT OF ABERDEEN, SCOTLAND
To Cattle Dealers and Agriculturists

The Aberdeen Harbor Commissioners beg to invite the attention of Cattle Dealers and Agriculturists to the advantages which the Port of Aberdeen presents as a Landing-place for Canadian Store Cattle.
Aberdeen has now been licensed by H. M. Privy Council as a landing-place for Foreign Cattle not subject to slaughter or quarantine, and a wharf for the purpose has been provided by the Harbor Commissioners, with sheds capable of accommodating 300 head of Cattle.
The number of Store Cattle at present required in the North-eastern Counties of Scotland, for which Aberdeen is naturally the place of import, is believed to be about 30,000 annually; and the opening of Aberdeen as a port of debarkation offers undoubted facilities and advantages, and cannot fail to enhance the demand in the district for Canadian Cattle for feeding purposes.
Further information may be obtained, on application, from the Minister of Agriculture, Ottawa, or from A. F. Riddell, 22 St. John Street, Montreal.
W. GORDON,
Clerk to the Aberdeen Harbor Commissioners.
Aberdeen, 15th February, 1887.

THE
Corbin Disk Harrow, with Seeder Attachment.



(Patented in the U. S. and Canada.)

This Harrow stands unrivalled for lightness of draft, convenience in operation, durability, and general utility. Its success is causing imitations to spring up, but as the Corbin has "walked rough shod over all competitors" either in Tooth or Disk Harrows, both in the United States and Canada, we urge our agents everywhere to challenge competing machines to field trials, and let every machine speak for itself. Every farmer wants the best, and there is no better way than this to expose humbugs and prove your claims.

THE "NEW MODEL" WHIPPED.

Since the above was put in type, we have received the following from our representative at Oshawa, Ontario.

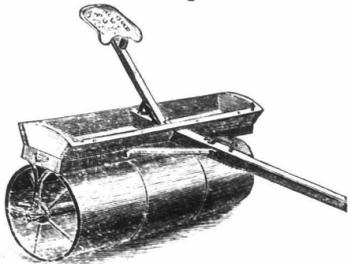
April 25th, 1887.

Messrs. St. Lawrence Mfg. Co., Prescott, Ont.

Sirs.—The Morrisburg agent came to my nearest neighbor, and sold him his New Model Harrow on trial. He tried it and did not keep it. I then got him to try your Corbin and left it with him to finish an eight acre field, and he liked it much better, and bought it, to be paid for this fall. It was a bad beat for the Morrisburg; they would not have kept it at any price. I expect to sell the roller every day.

J. W. SMITH.

The Corbin Wrought Iron Roller.



Bearings are finished, boxes are rabbitted, weight box enables the driver to load so as to exert any crushing force desired; every roller will take a Grass-seeder. It is cheap, durable, silent running, strong and flexible to a slight extent. Our sales this season are already nearly double those of last year, and altogether in sections where introduced last year.

The St. Lawrence Mfg. Co. of Ont., (Ld.) Prescott, Ont.
Mention this paper.

WE WANT ONE HUNDRED GOOD MEN

at once to sell for the Fonthill Nurseries, (largest in Canada, over 465 acres). Steady employment and no lost time; liberal commission or salary; best advantages; splendid outfit furnished free. Any pushing man can succeed. Apply for terms to

STONE & WELLINGTON,
TORONTO, ONT.

THE WARRIOR MOWER.



REASONS WHY IT IS THE BEST.

The great many years it has been in successful use in the field has proved it to be superior in mechanical construction, lightness of draft, ease of management, durability and capacity to do good work under all circumstances. In claiming a superiority for the Warrior Mower over others, we would call special attention to the following points:—

Our Guards are nearer together than those of any other machine, being only 2 1/2 inches from centre to centre, which is a very desirable feature for the following reasons: 1st. It is almost impossible to stone the knives. 2nd. It renders the guards less liable to break. 3rd. It takes less power to do the work, because the grass is more evenly divided, is collected in smaller bunches, and consequently cuts easier; and because narrow sections require less throw to the crank, which is shortened and the work brought near the power applied. 4th. The finger bar has a wabbling or rolling motion in its length, allowing the points of the guards to rise or fall, and to rise out of the dead furrows or run over the cradle-knolls with ease. 5th. The driving wheels are eight inches further apart than in most other machines, which allows them to run in the track made for them by the track clearer, and thus avoid running over the cut crop. 6th. The frame is iron, so arranged and balanced that it brings no weight on the horses' necks, and entirely prevents all side drafts. 7th. We have made a small change in the Warrior since we commenced its manufacture, making the main brace longer, thereby doing away with the possibility of the horse walking in the grass. 8th. Every machine is run and thoroughly tested before leaving our factory, and guaranteed to be made of the very best material, and to do good work. Write for circular and prices.

J. F. MILLAR & SON,
MORRISBURG, ONT.

BEE-KEEPERS.



THE CANADIAN HONEY PRODUCER

ONLY 40c. A YEAR.

Full of practical information on Bee-keeping, also the latest items of interest from all parts of the world. Send for sample copy free.

Also manufacturers of and dealers in all kinds of Bee-keepers' supplies:

- HONEY EXTRACTORS, HONEY KNIVES,
- HONEY CANS (ROSS AND SCREW TOP),
- SECTION CRATES, FOUNDATION MILLS,
- BEE-BOOKS, LANGSTROTH HIVES,
- CHAPMAN HONEY PLANT SEED,
- INVERTIBLE HIVES, SMOKERS,
- SECTIONS, WAX EXTRACTORS,
- COMB FOUNDATION, HONEY LABELS.

Price List free. Address,

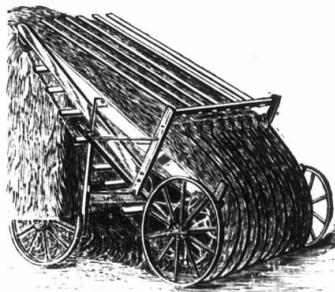
E. L. GOULD & CO.,
BRANTFORD, CANADA.

M. WILSON & CO.,
HAMILTON, ONT.,

Manufacturers of all kinds of

HAY TOOLS.

- FOUST'S PATENT HAY LOADER.
- ANDERSON'S PATENT RAKE ATTACHMENT.
- GRAND RAPIDS HAY TEDDER. WISCONSIN
- DEAD LOCK HAY CARRIER AND FORK.



The above cut shows the Foust's Hay Loader with Anderson's Patent Rake Attachment. It will take up grain with short straw. It will take up grain as clean out of the furrow as on the ridge, without the necessity of using the horse rake. In hay it can be used after the Tedder, and will take it from the swarth without using a horse rake.

DR. CHASE'S
New Receipt Book!



DR. CHASE'S
NEW AND COMPLETE RECEIPT BOOK
AND HOUSEHOLD PHYSICIAN.

The "Memorial Edition" contains over 800 pages. It is the LAST and CROWNING WORK of the Old Doctor's Life. The demand for this work is simply enormous. AGENTS WANTED.

F. B. DICKERSON & CO.,
Windsor, Ont.

MENTION THIS PAPER.

EUREKA

the best Post-hole Digger in the world. Any size or depth of hole in loose sand, loam, gravel or clay. Can lift out a large stone, or cut off good sized root with it.

Price, \$2 50.

If not kept by your hardware merchant, we will deliver one at your nearest station in Ontario free on receipt of price.

OTTERVILLE M'G. CO.,
OTTERVILLE, ONT.

1869 - SUCCESS - 1887
AS USUAL ATTENDS THE PROGRESS
OF THE BUSINESS OF THE OLD

London Mutual Fire Insurance Company
OF CANADA,

As is shown in their 27th Annual Report.
JAMES GRANT, Pres. W. R. VINING, Treas.
C. G. CODY, Inspector.
D. C. MACDONALD, Secretary and Manager.

FINANCIAL STATEMENT, JANUARY 1ST, 1887

ASSETS.	
Assets—December 31, 1886—	
Amount available on premium notes	\$271,467 17
Amount due on Assessment No. 24	\$ 2,241 13
Amount due on Assessment No. 25, in course of collection	13,581 62
Balances due by agents (secured by agents' bonds and members' due bills)	15,822 75
Bills receivable	9,729 36
Mortgages	629 95
Office Furniture	400 00
Municipal debentures, deposited with Receiver-General for security of policy-holders, city of Hamilton—par value \$10,000, market value	787 66
City of St. Thomas—par value \$2,600, market value	12,558 00
Town of Tilsonburg—par value \$6,500, market value	24,860 00
Accrued interest on debentures	7,483 12
Cash in Federal Bank of Canada	44,901 12
Cash in Treasurer's hands (post-age stamps)	49,310 19
	358 80
	1,376 80
	50,686 99
	\$394,783 80
LIABILITIES.	
Losses adjusted during 1886, not falling due until 1887	833 60
	\$393,950 20

The "London Mutual" confines its business to the insurance of Farm Property, Private Residences and their Contents, Churches and School-houses, and does the largest business in Canada.

INTENDING INSURERS WILL OBSERVE:

- 1.—That this Company is purely MUTUAL, and only insures ONE class of property, by which means protection is afforded cheaply—at just what it costs, no money being paid in dividends, as in the case of stock companies.
 - 2.—The conditions of its policies are most liberal, extending to its patrons the benefit of insurance of animals in the fields, on the public highways and other places, when in charge of the insured or his help; also on the road to and from market.
 - 3.—Liberal provisions for use of steam threshers.
- INSURE WITH THE GOOD OLD FARMERS' COMPANY**
Address a card to the Manager, or apply to any of the Agents

BARTLETT PEAR TREES, GRAPE VINES and BERRY PLANTS in variety, New and Choice ROSES and DAHLIAS.

I will send the following collections of Grape Vines and Plants, packed in a most perfect manner, postage paid, and warranted to reach the purchaser in good order, to any address in Canada or the United States, on receipt of price. All plants select—the finest grown: Grape Vines, two-year plants, 1 Empire State, 1 Niagara, white; 1 Brighton, 1 Vergennes, red; 1 Moore's Early, 1 Early Victor, black, for \$3.25. Strawberries—12 Jessie, 12 Belmont, 12 Jewell, 12 Parry for \$5.00, or 6 of each for \$2.75. Send for priced Catalogue free.
A. G. HULL, Central Fruit Gardens,
256-b ST. CATHARINES, ONT.

OLIVER CHILLED PLOW and UNION AGRICULTURAL WORKS.

Merner, Killer & Co., Props WATERLOO, ONT.

MANUFACTURERS OF
MOWERS, TWINE BINDERS,
PITT'S HORSE-POWERS,
Mounted and Unmounted.
STRAW CUTTERS, ROOT CUTTERS,
CHOPPING MILLS, GANG PLOWS,
SCUFFLERS, LAND ROLLERS,
SPRING-TOOTH CULTIVATORS,

AND THE GRAIN THRESHER KNOWN AS THE
WATERLOO CHIEF,

OF WHICH WE MAKE A SPECIALTY,
It being the greatest Grain Saver of the age, cleans the grain fit for the market, saves all kinds of Seeds such as timothy, etc., and separates them from the market grain.

The superiority of this machine over all others is its ease of draft, running fully two horses lighter than any other machine of same capacity—owing to the way the machine is geared. Any check given to the cylinder by bad feeding has only a very slight effect upon the motion of the other parts. Simplicity, avoiding continuous delay and stoppage, only four belts being used, the widest only two inches. Any farmer, even without experience, will have less difficulty and less breakage than the most experienced thresher with other machines. The cylinder journals have eight inch bearing, all other journals are in proportion. Will thresh all kinds of grain equally well, and as a Pea Thresher is second to none. Before you give your order for any of the above implements, send for catalogue and prices. Address

MERNER, KILLER & CO.,
WATERLOO, ONT.

FENCE! FENCE!! FENCE!!!

You will lose money if you build a rod of Fence before sending for our price list of fencing. Address,
The Toronto Picket Wire Fence Co.,
256-b 151 River Street, Toronto, Ont.

PATENT AUTOMATIC SWING AND HAMMOCK CHAIR,



The best chair ever offered for solid comfort and best suitable for the camp, porch, verandah, tree or house, etc. When not in use can be folded up into a space of four inches; frame is of oak, and strong heavy striped canvas for the seat; will carry a person weighing 300 pounds. Price \$3.00. Agents wanted where not represented.

SOLE MANUFACTURERS.

C. J. DANIELS & CO.,
257 151 River St., TORONTO.

ONTARIO PUMP Co.

(LIMITED)

TORONTO, ONTARIO,



MANUFACTURERS OF

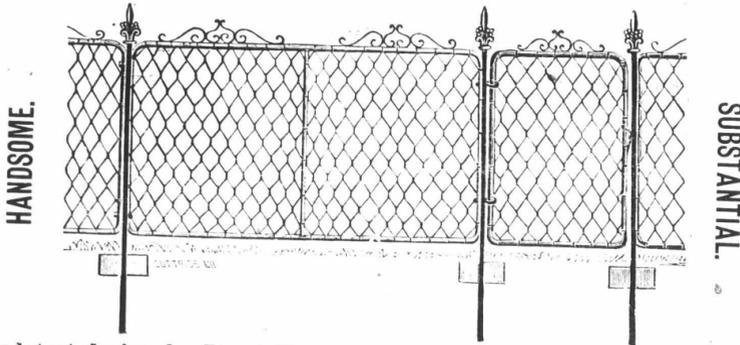
WIND MILLS, FEED GRINDERS, HAYING TOOLS, IRON & WOOD PUMPS,

AND A FULL LINE OF
Railway, Town, Farm and Ornamental Water Supply Materials.

Geared Windmills for driving machinery, pumping water, &c., from 1 to 40 horsepower. Send for Descriptive Catalogue. 255-y

NORWAY SPRUCE in large quantities. Also Roses, Climatis, Climbers, Shrubs, Dahlias, Herbaceous Plants. Send for price list. A. GILCHRIST, Guelph P.O., Ont. 255-c

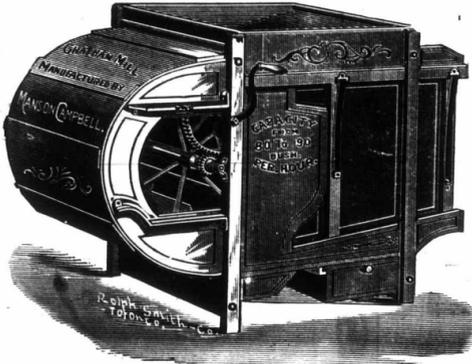
JONES' PATENT FENCING



My latest design for Front Fences. It has a gas pipe frame round each panel, and is very easily put together. Any person sending a diagram of their ground can have it shipped to them and put it up themselves; or if within a reasonable distance of Hamilton I will send men to do it.

I have fences at all prices, from 50 cts per rod upwards.

For further particulars address,
E. C. JONES,
17 King William Street, HAMILTON, ONT.



THE Chatham Fanning Mill

Over 15,000 now in use.
Over 2,000 sold in 1886.
FARMERS, BUY THIS MILL AND HAVE NO
OTHER. IT CANNOT BE SURPASSED
IN AMERICA.

The most reliable Fanning Mill in Can-
ada for all kinds of grain. Sold on liberal
terms, and delivered, freight paid, to any
station in Canada. Be sure and see
1887 Improvements before buying.
Send for circulars and prices. Address

MANSON CAMPBELL, CHATHAM, Ont.
256-g MESSRS. VAN ALLEN & AGUR, Winnipeg, Agents for Manitoba and the N. W. T.

WANTED.

Partner (silent or active) with capital of \$2,000, to
invest in brood mares in the Northwest. Address,
"G. B.," care FARMER'S ADVOCATE, London. 255-c

COCKLE'S ANTIBILIOUS PILLS

THE GREAT ENGLISH MEDICINE
of purely Vegetable Ingredients, and without mer-
cury. Used by the English people for over 120
years. Sold by all druggists.

WHOLESALE AGENTS
EVANS SONS & MASON, Ltd.,
256-y MONTREAL.



THE "DIAMOND POINT" Corn and Root Single Horse Cultivator

Over 6000 sold, proving it to be the best. Teeth
and attachments for all styles of cultivation.

INFRINGEMENTS RIGIDLY PROSECUTED

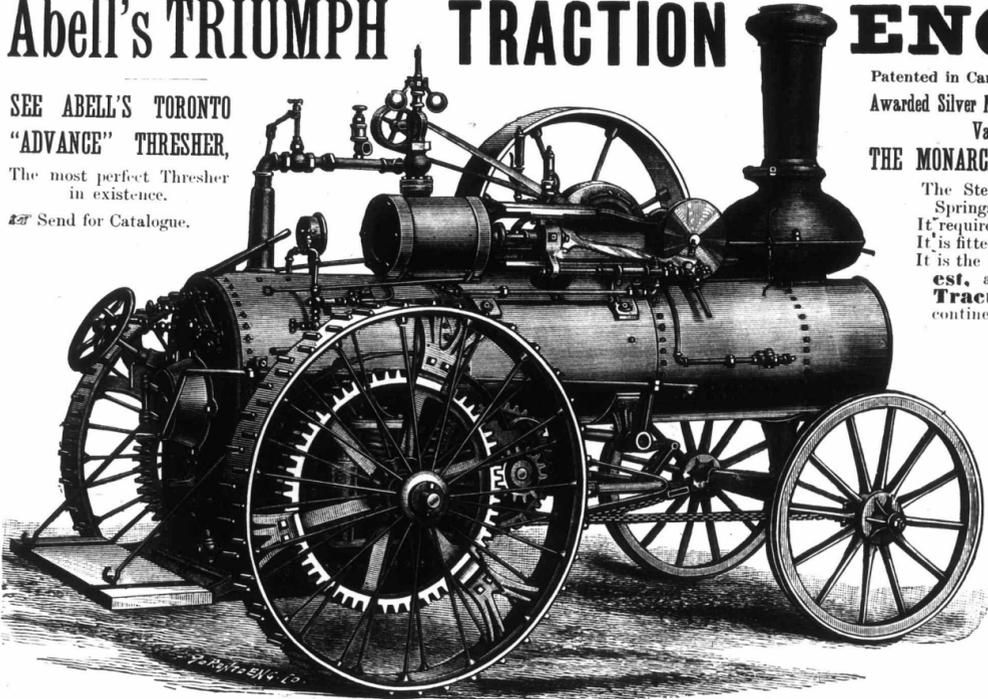
Send for our Descriptive Pamphlets to

**Cockshutt
Plow Co. Limited**
BRANTFORD, ONT., CANADA.

See Feb., March and April Nos. of
ADVOCATE.

Abell's TRIUMPH TRACTION ENGINE

SEE ABELL'S TORONTO
"ADVANCE" THRESHER,
The most perfect Thresher
in existence.
Send for Catalogue.



Patented in Canada and United States, 1886
Awarded Silver Medal and Diploma, 1886.

Valuable Improvements for 1887.
THE MONARCH OF ALL TRACTION!

The Steel Boiler is mounted on
Springs.
It requires no horses to steer it.
It is fitted with two Speeds.
It is the **lightest, the strongest,**
and most powerful
Traction Engine on the
continent.

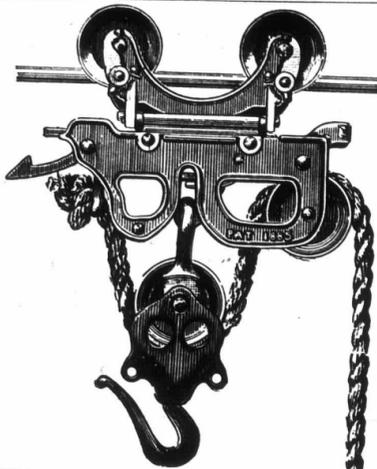
For further particulars
send for catalogue.

MANUFACTURED ONLY
AT THE

**JOHN ABELL
ENGINE AND MACHINE
WORKS,
TORONTO, ONT.**

HEADQUARTERS FOR
COMPLETE

THRESHING OUTFITS
all sizes, both Steam
and Horse-power.



HALL'S IMPROVED HAY CARRIER AND FORK.—This engraving represents my New Reversing Carrier. By pulling down on draft rope it can be changed in a few minutes to pitch hay into opposite mow. It is made from best refined Malleable Iron and Steel, and guaranteed to give satisfaction if properly erected. Hundreds are in operation in all parts of the Dominion, and are giving universal satisfaction. I also make a Carrier for wood track, which is as good, if not better, than any in the market. It is also made from Malleable Iron, and warranted to give satisfaction; can be changed by simply changing end pulley. This is easily accomplished by using my Patent Pulley Hoister. The pulley can be placed in position in peak of barn without climbing, also lowered again, saving all the trouble of going aloft to change pulleys and Carrier, one set of pulleys being sufficient; no pulling of rope or changing ends, always using one end to draw by. This is a new feature in Hay Carriers. The Common Sense Sheaf Lifter can be furnished if required.

Liberal discounts to good agents—no others need apply, as we will not deal with any but good, responsible men. Send for circulars and prices.

Address—**THOS. HALL,**
IROQUOIS, ONT.

LATEST INVENTION!—THE ROSS KNIFE SHARPENER—Patented May 7th, 1886.



This machine was awarded Diplomas at Provincial Exhibition, Guelph; Western Fair, London; and Northern Exhibition, Walkerton, in 1886, and was shown against the Dutton Knife Grinder (the latest invented machine in the States), and Straith's King Knife Sharpener, and came out victorious, with the above results.

We claim this machine to be the best invented, and we challenge anything to equal it.

Any person can work it. It grinds two sections at a time, or one if required. It will grind the point without the heel, or the heel without the point, or a gap out. It will grind any length of a section from point to heel without any change after you set it for the length of section you want to grind. You can give different lengths of stroke for different lengths of knives. If worked according to directions, we warrant it to give satisfaction every time, or money refunded. Price, only \$8.00 in Ontario or Quebec, freight paid; \$10.00 in other Provinces. See what the November number of the "Farmer's Advocate" of 1886 says about it. Send for circular giving full description of machine. Order early. All orders by mail promptly attended to.

JOHN H. ROSS, Manufacturer & Patentee,
BLYTH, ONTARIO.
P. S.—Township and County rights for sale reasonable.



BELL ORGANS

AT THE COLONIAL EXHIBITION

were patronized by the following distinguished persons:

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

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

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

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



PLANT NOW!
TORONTO NURSERIES

FULL LINES OF NURSERY STOCK OF ALL SIZES. SPECIALTIES:

Plum Trees on hardy Canadian stock, including Moore's Arctic, Goderich and Evans'; Fay's Prolific Currant; Industry Gooseberry; Niagara, Empire State and other new Grapes; Mariboro', Nemaha and other new Raspberries; Jewell and other new Strawberries; Clematis; Evergreens, especially Norway Spruce, one to four feet high, transplanted.

We pack our stock to carry safely anywhere. Descriptive priced Catalogue mailed free to all applicants.
GEO. LESLIE & SON,
Toronto Nurseries, LESLIE P. O., ONT.



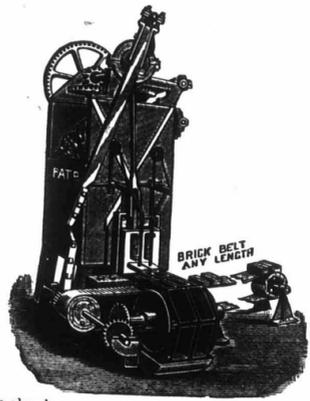
ASHTON'S FACTORY-FILLED SALT

is the best and purest of all the salts that are made. The only salt that can be used with safety in making butter and cheese. It enhances the value of butter from two to ten cents per pound, and in keeping quality it has no rival. Its perfect solubility makes it a profitable salt for dairymen to use, so much so that Ashton's would be cheap at its present price even if other kinds were given for nothing. There is an actual gain of from one to four percent from using Ashton's; in other words, a clear profit of from \$9 to \$36 for every sack used. We do not ask you to take our word for this. Upon application we will furnish testimonials from well known dairymen. If you read them carefully you will try the salt, and if you try it you will use it and use no other.

FRANCIS D. MOULTON & CO., NEW YORK,
General Agents for United States and Canada.

FOR SALE BY
JOHN S. PEARCE & CO.,
119 Dundas Street and 9 Market Square,
LONDON, ONTARIO.

DARVILL & CO. S
NEW
PATENT PRESS BRICK MACHINE



The clay is prepared in the usual way, and used much stiffer than in a stock Brick Machine. Will work either strong or quick-sand clay; can be driven either by horse or steam power. The clay is pressed in the moulds, which are connected together, forming a revolving chain of moulds, lubricated with either oil, water or sand—the moulds passing through a tank or trough, which thoroughly lubricates them, so that the bricks leave the moulds perfect and smooth, being pressed on the revolving carrier, which extends any length on the yard. The brick is equal to any re-pressed brick. The bricks are taken from the carrier and put on the achs, requiring no man to sand the moulds, striker-off, or setting on the barrows, and the wheelers,—which is a saving of three or four men. Capacity: No. 1, 8,000; No. 2, 16,000; No. 3 24,000 per day, making a perfect pressed brick, superior to either stock or wire cut brick, which are apt to warp, and are difficult to cut

SEND FOR CIRCULAR.
MANUFACTURED BY
D. DARVILL & CO.
COR. KING AND THAMES STS.,
LONDON, ONTARIO.

SUCCESS IN GARDENING
Depends on the Quality of the Seed Sown.

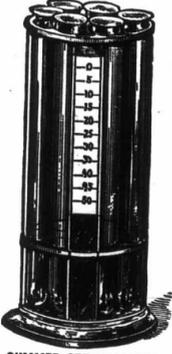
IF YOU SOW
WILLIAM EVANS' SEEDS

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

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

ALWAYS ON HAND.
WM. EVANS,
Established 1855. 255-c MONTREAL.

DAIRY SUPPLIES



SUMMER CREAM TESTER.

- LACTOSCOPES, PISCOPES,
- THERMOMETERS,
- LACTOMETERS,
- ANNATTO, RENNETS,
- RENNET EXTRACT,
- RENNET TABLETS,
- DAIRY SALT, CHURNS,
- BUTTER WORKERS,
- OIL TEST CHURNS,
- Agents for the celebrated
- DeLAVAL**
- HAND SEPARATORS.**

Send for our Illustrated Catalogue,
JOHN S. PEARCE & CO.,
LONDON, ONTARIO. 256-c

**MITCHELL'S COMBINED
HAND WEEDER AND CULTIVATOR**

Saves three-fourths of the expense of cultivating Vegetables and Small Fruits. **Cheap! Durable!** Sure to give satisfaction. Descriptive circular free. 256-b
S. H. MITCHELL, St. Marys, Ont.

—1887—
BUY NOW

FOR IMMEDIATE SHIPMENT.

The Oshawa Mowers.

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

New Model Threshers.

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

Portable Engines.

No better agricultural engines are made.

Hall Threshing Machines.

The best in the market for horse-powers.

Champion Reapers

of well-established repute. Only a few remaining.

WOODBURY, OR DINGEE, IMPROVED HORSE-POWERS,

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

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

of established repute.

REPAIRS ON HAND FOR EVERY MACHINE MADE.

JOHN LIVINGSTONE, Trustee,

JOSEPH HALL MACHINE WORKS.

255-c

CHOICE MANITOBA FARMS

FOR SALE:

Having been called to Ontario to assist my father in connection with the FARMER'S ADVOCATE, I now offer my homestead and other Manitoba property for sale, either for cash in payments to suit the purchaser, or would exchange for property near this city:

East 1/4 Sec. 4, Tp. 18, Range 8 (320 acres.) This 1/4 section is in the Qu'Appelle Valley, 4 1/2 miles from Summerbury Station on the main line of the C.P.R. On it there is a good log house, stable and well; 45 acres under cultivation; very deep black loam, clay subsoil; every foot of this 1/4 section can be cultivated.

Also, south-east 1/4 of Sec. 15, Tp. 7, Range 15, west of the 1st principal meridian, Glenboro P. O., a few miles from R. R. station on C. P. R. (160 acres), 80 of which have been cultivated and well fenced. This is a very choice 1/4 section, very rich soil, with excellent water from 10 to 15 feet from surface; a few beautiful groves of trees upon the land.

Also, 120 acres of Sec. 17, Tp. 6, Range 2, east of the principal meridian, St. Agatha P. O., Man., about 4 miles from station on C. P. R., between Winnipeg and Gretna. Dominion Land Field Notes: "High and dry and land of first quality."

For further particulars address

JOHN WELD, London, Ont.

Brockville Chemical & Superphosphate Co

(Limited)

BRACKVILLE, ONT.,

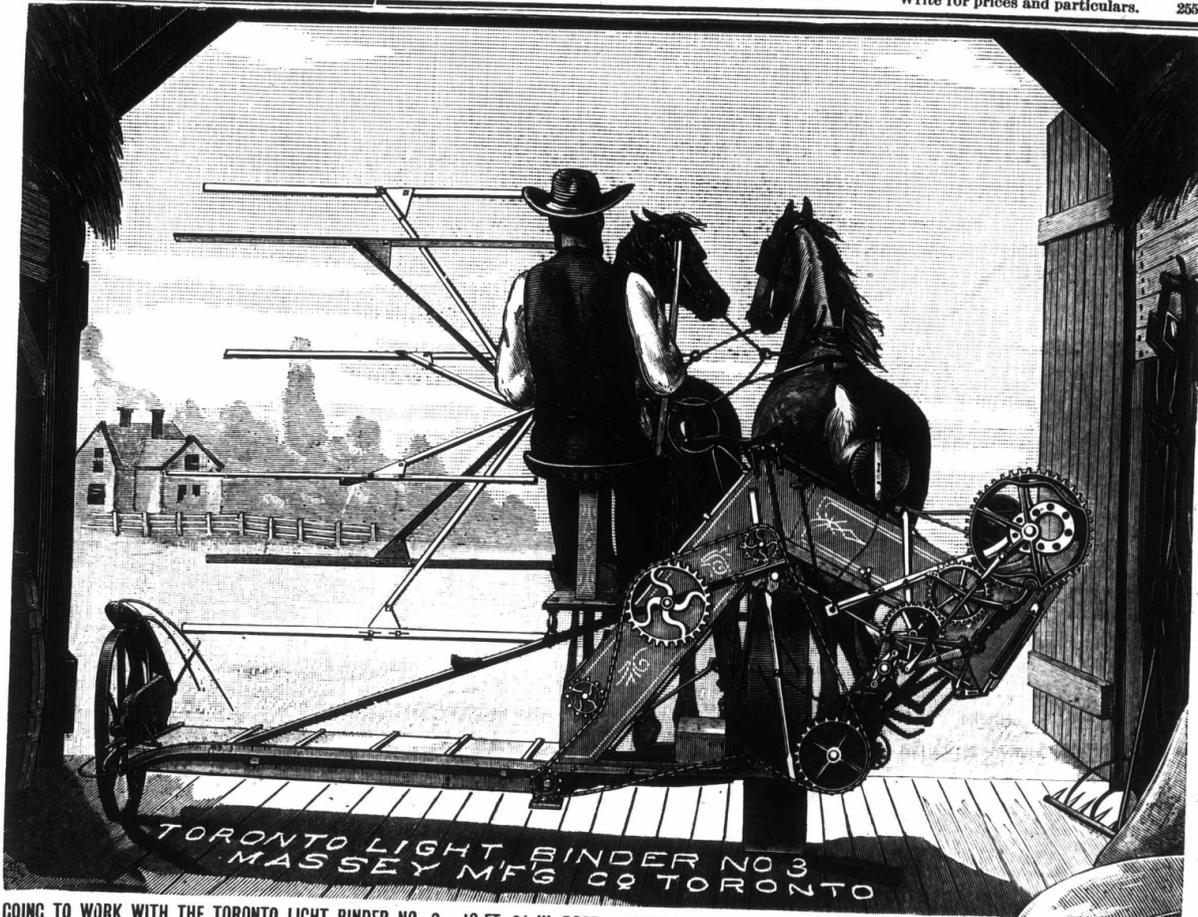
MANUFACTURERS OF

SUPERPHOSPHATES

and Artificial Manures,

Oil of Vitriol, Muriatic and Nitric Acids

Write for prices and particulars. 255-c



TORONTO LIGHT BINDER NO 3
MASSEY MFG CO TORONTO

GOING TO WORK WITH THE TORONTO LIGHT BINDER NO. 3. 10 FT. 9 1/2 IN. DOOR. FIRST AND ONLY THOROUGHLY TRIED STEEL AND MALLEABLE IRON BINDER

CHEAP PLUM TREES

All the leading kinds; nice young trees, straight stems, averaging over 4 feet in height, but lighter than first-size trees as usually sent out. All on hardy Canadian stocks. Price, \$3 per dozen; \$10 per 50; \$15 per 100; \$140 per 1000.

GEO. LESLIE & SON,

Toronto Nurseries, LESLIE P. O., ONT.



THE DAISY CHURN

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

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

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

TO RENT FOR THE SEASON

130 acres of excellent pasture land, near Goderich, well watered and fenced, with sufficient shade.

Apply to **H. MONTGOMERY,**

Ridgewood Farm, GODERICH, ONT.

FERTILIZERS

For Grain, Vegetables and Roots, Fruit Trees and Small Fruits,

MANUFACTURED BY

The Standard Fertilizer and Chemical Co.

(LIMITED.)

SMITH'S FALLS, ONT.

The HIGHEST RECOMMENDATIONS from practical men. Awarded THREE SILVER MEDALS, at Toronto and Guelph Exhibitions.

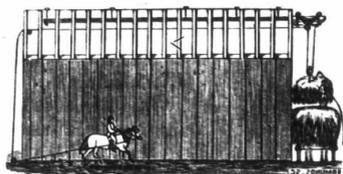
Descriptive Pamphlet free on application.

Address orders to **H. J. BRODIE, Manager,**

Or **BRODIE & HARVIE,** Smith's Falls, Montreal.

BUCHANAN'S

Improved, Double-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.

"L.D.S." ENGINES

WOOD, COAL AND STRAW BURNERS, PLAIN AND TRACTION.



"Grain Saver" AND "Peerless"

SEPARATORS.

"Pitts" Sweep-Powers, for 2, 4, 6, 8, 10 and 12 Horses.

Tread Powers, for 1, 2 and 3 Horses.

"ECLIPSE" LIGHT SEPARATORS.

Send for Illustrated Catalogue and Price List for 1887.

L. D. SAWYER & CO.,

CAMILTON, ONT.



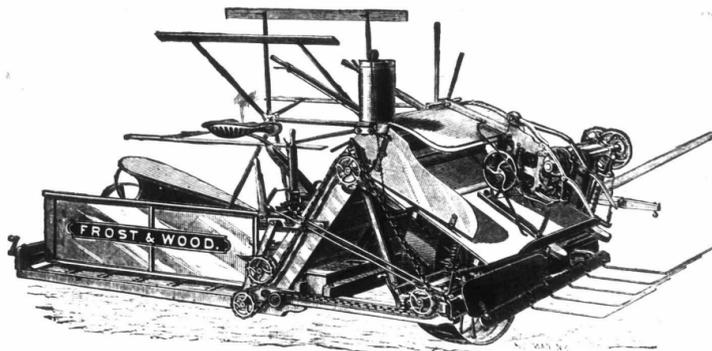
You Will Not Find in my catalogue "store" seed, venerable with years,

and greater travellers than Stanley; seed saved from the odds and ends of various crops; seed raised from unsalable onions, headless cabbages, sprangling carrots, or refuse beets. (I am always happy to show my seed stock.) But if you want Northern seed, honestly raised, home grown (not more than two other catalogues contain as many), seed warranted (see the cover), valuable novelties, some of which are to be found in no other, send for my vegetable and flower-seed catalogue for 1887, FREE to all. It contains 60 varieties of Beans, 43 of Peas, 41 of Cabbages, 53 of Melons, 44 of Corn, etc., etc., besides a large and choice variety of flower seed.

JAMES J. H. GREGORY, Marblehead, Mass.

NEW LIGHT Steel-Wheel Harvester and Binder

BUNDLE CARRIER ATTACHED.



BUCKEYE MOWERS, "DAISY" LIGHT REAPERS,
"Tiger" Self-Dump and "Ithaca" Horse Hay Rakes.

The most complete line of Harvesting Machines offered by any manufacturers in the Dominion, and adapted to the wants of all classes of farmers. Especial attention is invited to our

LIGHT HARVESTER AND BINDER

With Steel Driving Wheel (strongest and lightest in use), Steel Bundle Carrier, its Knot-tying Mechanism, its Vibrating Sheaf-buttor, easy and ample Tilt Movement, adjustability of Reel, and other valuable features. We also manufacture **STEEL PLOWS** in large variety. Send for Circular.

FROST & WOOD,

SMITH'S FALLS, ONT.



THE COMMON-SENSE SHEAF LIFTER

Works in connection with the Hay Carrier, and is the most complete apparatus ever offered to the public for unloading sheaves. No tearing the sheaves apart nor musing the load; leaves the sheaves on the mow in as nice a shape as they lay on the load. Price of Sheaf Lifter, \$5.00. Satisfaction guaranteed.

M. T. BUCHANAN

Manufacturer, Ingersoll.

BRICK AND TILE MACHINERY

AND **CLAY CRUSHERS, THE BEST IN THE WORLD**



Address **J.W. PENFIELD & SON, Willoughby, O., P. O. BOX 7.**

Hamilton Business College

Corner of King and James Street's, HAMILTON, ONT.

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

255-y

Send for circulars.

BATTRAY & GEIGER.

EVERYTHING THAT IS
NEW SEEDS IN RARE PLANTS



is offered and described in our
CATALOGUE No. 535, which this year we send out in an illuminated cover. The Catalogue is replete with new engravings of the choicest flowers and vegetables, many of which can only be obtained from us; and contains, besides, 2 beautiful colored plates, and very full instructions on all garden work. Altogether it is the best ever offered by us, and we believe, is the most complete publication of its kind ever issued. Mailed on receipt of 10 cents (in stamps), which may be deducted from first order. Please be sure to order Catalogue by the number.

PETER HENDERSON & CO. 35 & 37 Cortlandt St.,
NEW YORK.



BAIN WAGON CO.'S FARM TRUCK

This cut represents the most convenient Wagon ever put on a farm, because it is suitable for all kinds of work, and always ready, no changes being necessary. This Wagon was invented and first introduced in Michigan, U. S., and is now very extensively used by leading farmers in the United States.

And every Wagon made and sold by us in Canada is giving entire satisfaction. For further particulars and prices

255-d

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

COGENT REASONS WHY

— THE —



Adopted by the Government of the Dominion of Canada as the **STANDARD 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 **Skeins** used, made only by us, are superior to any skeins made or used in Canada, and are constructed specially to receive our **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 the 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

249-y

CHATHAM MFG. CO. (Limited).

R. McDougall & Co., Galt

We are the only manufacturers in Canada of the now well-known

SCIENTIFIC

ALL IRON

WIND MILLS



Adapted for Cutting, Pumping and Grinding, and all general power purposes. The late very severe storms have demonstrated the need of a mill practically storm-proof, and the results given by our mill have been entirely satisfactory; not a mill has been damaged without the derrick blowing over or breaking. Intending purchasers bear this in mind and write us for prices.

R. McDougall & Co.
GALT, ONT. 250-y

ATTEND THE BEST

Get the education that pays. The **St. Catharines Business College and Phonographic Institute**, established last January, has met with almost unprecedented success in both departments. The College Rooms are large, beautiful, light, and well furnished, and embrace the entire third story of Ontario Block. The course is eminently practical, and the instruction thorough. The Commercial Law alone is worth more than is charged for the whole course. It employs a larger staff of experienced teachers than will be found in any other Commercial College in Canada. It gives a Diploma in Shorthand as well as for the Business course. Gold and Silver Medals are also given in Shorthand. This College unquestionably stands at the head of Canadian Business Colleges. Send for Catalogue. **W. H. ANGER, B.A.,** Principal, St. Catharines, Ont. 249-y

W. Stahlschmidt & Co., Preston, Ont

— MANUFACTURERS OF —

OFFICE, SCHOOL, CHURCH & LODGE FURNITURE.



THE "MARVEL" SCHOOL DESK. Patented Jan. 14th, 1886. Send for circulars and price lists. Name this paper. 253-y

379 FRUIT TREES
VARIETIES Vines, Plants, etc.
Apple, Pear, Peach, Cherry, Plum, Quince, Strawberry, Raspberry, Blackberry, Currants, Grapes, Gooseberries, &c. Send for Catalogue **J. S. COLLINS, Moorestown, N. J.**

THE BENNET FURNISHING CO.
London, Canada.



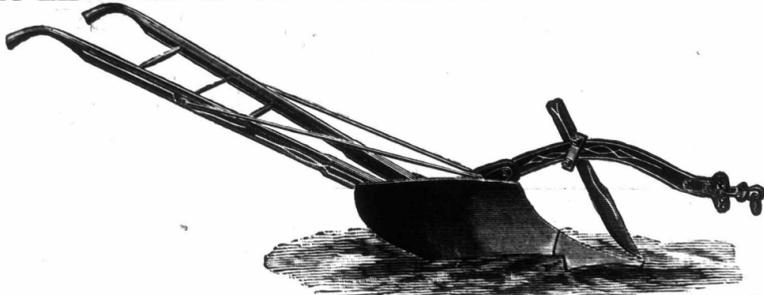
— MANUFACTURERS OF —

SCHOOL, CHURCH, HALL & LODGE FURNITURE.

Send for illustrated catalogue and price list. 254-y

\$5 to \$8 a Day. Samples and duty FREE. Lines not under the horses' feet. Address **BREWSTER'S SAFETY REIN HOLDER, HOLLY, MIC**

NARROW PLOW No. 13.

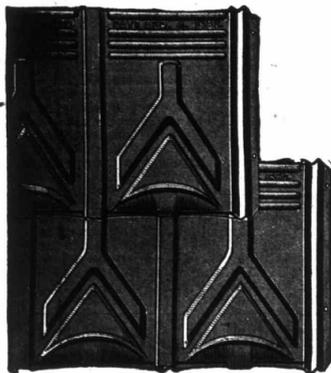


This is a cut of our Light General Purpose Narrow Plow No. 13. It is suitable for either heavy or light land. The mouldboard is of best Pittsburgh Soft Centre Steel, and is of such a shape and so hard a temper that it will clean in very sticky land where very many other plows will not.

See March and other back numbers of ADVOCATE, and write us for a list of our many plows of various styles.

256-a **J. FLEURY'S SONS, Aurora, Ont.**

WALTERS' Patent METALLIC SHINGLES



A good roof is as important as a good foundation.

The prime requisites are durability, reasonable cost, neat appearance, and ease of application.

By using Walters' Patent Metallic Shingles you lessen your insurance.

STORM PROOF! FIRE PROOF!

Send for circulars and prices,

MCDONALD, KEMP & CO.,

255-f **Gerrard and River Sts., Toronto.**

PULVERIZING HARROW, CLOD



AGENTS WANTED.

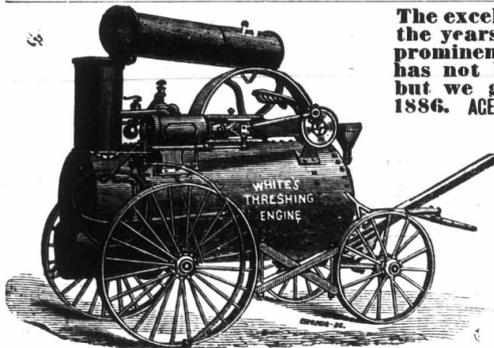


Crusher and Leveler.

Best Selling Tool on Earth.

Subjects the soil to the action of a Steel Crusher and Leveller, and to the Crushing, Cutting, Lifting, Turning Process of Double Gangs of Cast Steel Coulters. Cutting power is immense. 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 forty-eight States and Territories.

DUANE H. NASH, Manufactory and Principal Office, MILLINGTON, MORRIS CO., NEW JERSEY.
N. B.—"TILLAGE IS MANURE" and other essays sent free to parties who NAME THIS PAPER.



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**

H. B. WHITE, Supt. of Machinist Dept.
A. W. WHITE, Supt. of Erecting Dept.
H. J. WHITE, Secretary-Treasurer.
F. J. WHITE, Assistant-Secretary.
The engines may be seen at Van Tassal's foot bridge warehouse, Belleville. 255-y



7,000 CHALLENGE WIND MILLS IN USE IN THE U. S. AND CANADA.

For Power & Pumping Purposes.

Have been made 15 years, and have never blown down without tower breaking, a record no other mill can show. Write us, stating nature of work to be done, and we will give contract figures for the job. Send for Catalogue to 247-1/2 St. Catharines Pump & Wind Mill Works.



DRS. ANDERSON AND BATES—Eye and Ear Surgeons, 34 James Street, Hamilton, Ont. Exclusive attention given to the treatment of the various diseases of the EYE and EAR.

256-y **CROSS EYES STRAIGHTENED**



DEDERICK'S HAY PRESSES.

are sent anywhere on trial to operate against all other presses. the customer keeping the one that suits best.



Manufactory at 90 College Street, Montreal, P. Q.
Address for circulars P. K. DEBERICK & CO., Albany, N. Y.

W. & F. P. CURRIE & CO.

100 Gray Nun St., Montreal,

MANUFACTURERS OF

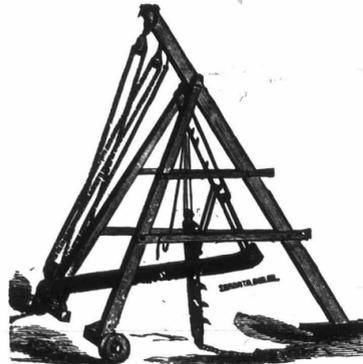
SOFA, CHAIR AND BED SPRINGS.

A LARGE STOCK ALWAYS ON HAND.

IMPORTERS OF

Drain Pipes, Vent Linings, Flue Covers, Fire Bricks, Fire Clay, Portland Cement, Roman Cement, Water Lime, Plaster of Paris, Borax, Whiting, China, Clay, etc.

253-y **PROUCE THE BEST.**



THE WHITFIELD STUMP EXTRACTOR

The superiority of this machine consists in the rapidity and ease in which it can take out the largest stumps; its great strength and durability; its easy operation by man or beast.

It leaves no holes to fill up, or any stumps or snags in the ground. Send for circular of testimonials and particulars about it before purchasing an inferior machine.

All purchasers ordering direct from me will save agent's commission. Address

8-1/2 **JOHN WHITFIELD,** Dominion Chain Works, 146 Front-St. East, Toronto.

ADVERTISE IN THE ADVOCATE. IT WILL PAY YOU TO DO SO.