

# FARMER'S ADVOCATE

AND HOME MAGAZINE

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## THE FARMER'S ADVOCATE —AND— HOME MAGAZINE.

WILLIAM WELD, Editor and Proprietor.

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Our engravings, "The Offer" and "The Accepted," by Thos. Faed, R. A., and the colored lithograph, "Life's Voyage," have been described in our Dec. No., 1876; Jan., 1877, and April, 1878, respectively, and after a most careful examination of hundreds of valuable engravings, we have not been able to find any more pleasing or suitable. They are without doubt unrivalled premiums.

In April No., "Homeward, or The Curfew," by Joseph Johns, was described, and a cut but faintly suggested the merit and beauty of the large engraving, 22 x 28 inches in size, now offered; and in this issue a small wood-cut of the chromo, "Balmoral Castle," is given. This engraving, 24 x 30 inches in size, is of elegant finish and design. The last two mentioned were published at Two Dollars each under copyright.

"Lorne and Louise" was fully described in our Dec. No., 1879, and but a few copies remain in our hands.

### OUR RULES.

The name sent in must be a new one and the subscription for one year (\$1.00) must be enclosed.

The prize is for the old subscriber who sends in the new name, and not to the new subscriber.  
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To any subscriber, to any member of a subscriber's family (boys and girls), to all postmasters and school teachers, who send in new subscribers, these prizes will be mailed, postage paid.

### On the Wing.

As our feathered tribe just begin to arrive, we seem to desire a flight also, and take the cars of the L. H. & B. R. R. and proceed northward. At Exeter Mr. H. Snell, the Huron stockman, stepped on the cars; he had been to judge the stock at the Exeter Spring Show. This show did not amount to much, five heavy draft stallions being the principal exhibit. Spring shows seldom draw much attention. Mr. Snell has now engaged Mr. J. Johnston, that well known herdsman who formerly had charge of Mr. John Snell's sons' herd when their name figured conspicuously in the prize lists, and their stock was admired by all at our exhibitions. We expect our Huron Snell will soon have animals that will astonish the natives.

At Clinton we met Cyrus Andrews and others. Mr. Andrews we have previously introduced to our readers as the oldest settler we have met; he is now hearty and stronger apparently than many half his age; and is full of life and energy, despite his having been the only man we have met that lived on browse or twigs, as he did in the spring of the year 1805. The old gent was the first to introduce the raising of sorghum into Huron, and has compiled a neat little book on amber sugar cane, its origin, culture, &c.

### MANITOBA.

In the conversation Mr. A. said: "I want you to tell your readers in Manitoba to be sure and not wheat their land too much; I have been to the western and northern States several times, and I was so much pleased with the fine crops growing in Illinois that I was almost tempted to settle there, as I had friends there and many spoke of the great crops and the inexhaustible fertility of the land; but the results are now that not one farmer in fifty in that locality raises a bushel of wheat. They run the land out from 30 to 20, then 10, then 5 bushels per acre, so they now depend on corn and hogs. We shall not be able to raise corn in our country, therefore let them look out in time, and if we manage right we shall have yet a better country than they have in the States, even if we can't grow cotton and oranges." We promised we would give his views about it, and we feel satisfied that he is about right.

### OUR WINTER WHEAT.

The wheat within about 50 miles of Lake Erie appears rather better than that further north; it appears to have rather more life in it. It had not made a large growth before the winter set in. Some fields appear to have quite sufficient blade to make a good crop, but there are many fields that are looking very bad: some having very large black spots. Although many of these fields look so bad now, there is such a wonderful vitality about fall wheat that if only a small blade is seen here and there, it tillers or stools out so as to make a good crop. We have often been agreeably surprised to see how astonishingly a fall wheat field

has recovered itself, and equally astonished to see many a fine, promising looking field of spring wheat not worth cutting at harvest time.

### GODERICH.

April 22.—Here Lake Huron is covered with a sheet of ice as far as the eye can see. We are informed that the ice only extends six miles from shore, and that it only requires an east wind and it would all be blown into the lake in a few hours. It is now so rotten that it would soon break up and be of no hindrance to navigation, but the continued westerly winds have kept it as yet on this shore.

### SALT.

This is, or ought to be, the great salt market of Canada, having the best port for shipping. The great salt beds lie below the surface, and extend some 40 miles south. We need be under no apprehension of any lack of salt, for the rock beds vary in thickness from a few feet to over 100 feet. The depth at which the salt beds lie is rather over 1,000 feet below the surface. The salt is dissolved in the bed or rock by letting water into it; the water or brine is then pumped up, and the water evaporated by means of large heating pans, and the salt is being continually raked from the bottom of the boiling pans by means of large, long-handled wooden hoes. There are numerous salt works in operation in this place, but from what we could ascertain, by far the most important to this Dominion is

### THE NORTH AMERICAN CO.'S CHEMICAL SALT WORKS.

These works are owned by a company of which the principal proprietors live in Montreal. Mr. G. Rice, a chemist of Montreal, P. Q., and Managing Director of this Company, has for over ten years been practicing and testing salt, and trying to perfect a process to cleanse it; and the success he has attained was perfectly astonishing to us. We were shown a large pool of lightish colored mud; this dirty slush occupied a space of about twenty feet in diameter and was about five inches deep, and had just been emptied out before we arrived. All this filth had been taken out of about 500 barrels of salt; this refuse consisted of lime, salts and magnesia. It had a bitterish taste on being placed on the tongue. Now the filth contained in the salt in general use is about 2½ per cent; the impurities from the salt produced at these works are extracted in the following manner: A chemical change is produced on the brine in the tanks before boiling; then after the salt is made it is all cleansed, and the nasty bitter sediment that we saw is the result of this cleansing. Not only is this purifying done here, but the best machinery for drying the salt is also found here, being the inventions or plans of the chemist in other salt drying and grinding establishments.

The salt is poured into a revolving boiler or long iron tube, like the smoke-stack of a steamer;



this is heated and hung at such an angle that the salt will by frequent revolutions discharge itself at the lower end of the tube. But in the Chemical Works the salt is not allowed to come in contact with iron. The salt dryers are a series of wooden revolving sieves, cloth being used instead of iron. The salt produced at these works has been taken by Montreal men and used in Quebec for dairy purposes with excellent results; considerable was sent to the Western States last year. The first prize butter from Illinois was preserved with this purified salt. The expense of clarifying this salt makes it more expensive than the common salt, but it can be clarified and sold at as cheap a rate as imported salt can be sold. We consider this should cause those really interested in the prosperity of Canada to look properly into this salt question. There has been much discussion about salt, but, strange to say, we have not noticed anything about this clarified salt.

It is well known to dealers that our Ontario butter will not keep as well as the butter made in the Eastern townships, or any part east of Belleville. The cause of this, in a great measure, is attributable to the large amount of lime to be found in the water taken by the cows. Lime when added to butter in salt tends to give the butter a bitter flavor and prevents it from keeping. We may have been wrong in condemning our dairymaids when the fault has been with the men who should read and ascertain all they can about the ingredients that are allowed to be used in the dairy. Many, by far too many, will still continue to use the common cattle salt to preserve their butter. Such butter cannot at first be detected by the unskilled store clerk, and is mixed with good butter, and like yeast in batter, as it lightens the whole, so a bad lump of butter will often spoil many firkins. The loss that we are sustaining from selling bad butter instead of good is enormous; and it is our impression that impure salt has much to do with the cause of this loss. We speak from our own observation, with which theorists may differ.

This company consists of R. G. Stark, President; Alexander Murray, Vice-President; Dr. Clark, Robt. Hope and Walter Roach, Directors. G. Rice is Managing Director, and H. A. Stark, Secretary.

What is remarkable is that most of this salt is taken up by American packers, who have found out its superiority. The Americans will have the best when they know it, and they have found that Canadian salt is superior to their own.

From Goderich we went to Seaforth. This is the main point from which most of the salt used in Ontario is supplied, Messrs. Grey, Young & Sparling being the greatest salt producers; this firm own the largest evaporator in Canada; it is situated at Blyth. Thus they have works on the G. W. and G. T. roads, and the large quantities they supply is astonishing.

T. Gowanlock & Son are also large producers here Mr. Coleman manufacturers for table use. He informs us that the great force used to put Liverpool salt on the Canadian market tends to the injury of Canadian business. He says vessels will bring it as ballast to our sea-board, and that the railroads carry it at exceedingly low rates. For instance, he says that they will carry a car load from Halifax for \$20 to most parts of Ontario, or for \$10 from Montreal.

Well, if this is so, it does not appear that farmers and merchants in other commodities should be charged four times as much for a car load of stuff, but still they have to pay even more than four times that rate.

April 25.—At London; writing this account; swallows, bluebirds and robins are chattering round; yet there is a large lump of ice lying on the shady side of the fence in front of our window not yet thawed; it may last another day or two, perhaps until May. It is our impression that we never saw ice continue so long as it has this year. But a late spring by no means betokens a bad harvest. In fact, we always imagine that late springs generally result in most profitable harvests.

### English Letter, No. 25.

[FROM OUR OWN CORRESPONDENT.

Liverpool, April 4th.

A bright sunny morning; but a wind keen enough to cut one in two, and an inch of ice on the pools! Such is our weather this fourth day of April, so I don't think you have much cause to envy us in that respect. We have now had nearly six months of unmitigated winter, and I cannot imagine that Canada, or any other habitable country, could have a longer spell of more utterly abominable weather. The past ten days have been dry, though frosty, and farmers have been able to get their previously sodden and unworkable land into something like order, and plowing and sowing have been going on briskly.

Since my last letter was despatched, considerable excitement has been occasioned both in Canada and here by the arrival from the States of several cargoes of diseased cattle. Others too are continuing to arrive, for only last week the Palestine, of the Warren line, sailing from Boston, and chartered by a Toronto firm, brought one of the worst cargoes of disease ever landed on this port from America.

I notice from files of Canadian papers recently received here, that the gentlemen who are debating on the subject in the Canadian Parliament, or at least many, if not all of them, are evidently in a fog over the matter. Canadian cattle have never been slaughtered at the port of Liverpool, but the present restrictions, which it is hoped will be removed ere this letter reaches you, place Canadian cattle landing here upon exactly the same footing as British stock, that is, they are only permitted to be exposed for sale in one public market, and then to be removed to whatever part of Great Britain the purchaser likes, where they must then be slaughtered within six days. There is no special hardship in this, as no doubt the public markets have been the chief distributing points of Foot and Mouth and other contagious diseases. Canadian cattle upon landing may be all right, but, after having once passed through a market or lairage which are infected, there can be no difference between them and British-bred cattle in the danger of their spreading disease. This is conclusively proved by the case of the "City of London" steamer, which conveyed a cargo of diseased cattle from New York to London, and then proceeded to New York for a cargo of grain. She also entered into a charter with Canadian shippers for a consignment of cattle to be put on board at Halifax. She arrived at the port of Halifax, I understand, a few days before the 30 days now prescribed had expired, and was to be off the harbour at the expiration of the 30 days; the Canadian cattle were placed on board, but, when they arrived in the Thames, were found to be suffering from the disease in a malignant form. It is clear, therefore, that an interval of 30 days is not sufficient to secure safety. The "Lake Manitoba," of the Canada Shipping Company, is, so far as can yet be ascertained, the only vessel that has carried infected cattle which will sail to the St. Lawrence for the season's traffic, and in the interest of the whole trade it is to be hoped that the Canadian Government will prevent her from carrying Canadian stock for a period substantially greater than the 30 days. A single indiscretion in this respect may do immense, and possibly irretrievable, injury to the trade. Your journal has done more than probably any other in Canada in pointing out the necessity for strict supervision over shipments from and through the Dominion, and it is to be hoped that these fresh outbreaks of disease in consignments from Chicago and Buffalo, via. both

Portland and Boston, will have the effect of inciting the authorities to increased watchfulness at all Canadian ports.

The Hon. Mr. Cochrane's expensive investments in English prize stock have created immense interest and excitement amongst agricultural circles here. Last Thursday the Dominion steamer "Texas" took out the bulk of Mr. Cochrane's purchases, including about 60 Hereford bulls, and 45 of the Polled Aberdeen bulls, some Jersey and Guernsey stock, and some very fine Shropshire and Oxford Down sheep. Mr. Simon Beattie and the Hon. J. C. Abbott, of Montreal, also sent out consignments of stock. I understand that Mr. Cochrane's purchases of Hereford and Polled Aberdeen bulls are intended for his new and vast cattle rancho at Belle River, near the Rocky Mountains, on Canadian Territory.

They will proceed via Collingwood to Duluth, thence to Bismark, and then take the Missouri steamboats to Fort Benton, from which point they will travel to their destination across the plains. As your readers will observe, they have a formidable journey before them.

A few Canadian horses have again arrived from Hamilton, and such of these as were of good quality commanded ready sales at high figures. The trade, which has been very much depressed during the last three or four years, with the advent of spring and more prosperous trade is opening up brighter than ever. The increase in the value of stocks, and the return to prosperity, has induced many of our rich merchants and others to go in again for show and valuable horseflesh. But it must be remembered that no second raters will do for the best markets here, though it may pay to breed them. I note that a number of English thorough-breds have been shipped by the Anglo-American Horse Company to New York for sale; but, in looking down the list, I find that the majority of them are what are termed here "weeds." The class of horse required in Canada to get stock suitable for the English market is big-boned, sound, up-standing, hearty thorough-breds, or good Cleveland Bays, against which the importers of Clydesdales to your country appear to have such an unaccountable prejudice. I was in a Liverpool office the other day, when I heard a conversation on horses between two gentlemen connected with Canadian interests. One of them said: "I have had a man travelling in England and Ireland the last three months, at my expense, endeavoring to pick me up a pair of carriage horses, but in vain. I myself went to Yorkshire last week, and I am going to Manchester to-morrow, but with little hope of success. I don't mind what I pay, if I get what I want. The class of horse I require is half to three-quarters thorough-bred, 16 hands high, dark brown in color, and with good action and five or six years old." The other gentleman, who is noted for having some of the finest carriage horses in England, thereupon remarked, "I wish you may get them. I am prepared to buy 100 pairs of the same stamp as you describe for friends of mine, and will give 500 guineas (\$2,625) a pair for them.

Now, many of your readers are under the impression that any colour will do, but the fashion here is dark browns or liver colored chestnuts, and fashion in this respect is as exacting as it is in that of ladies' attire. Good bays with black points, but no white, are also in favour, but sorrels would not be purchased at any price, and I regret to hear that there is a large proportion of that color in Canada.

The travelling season for sires in your country will commence, I suppose, on the first of May, and I do most earnestly advise those who have likely brood mares to be cautious what they do



The demand for heavy draught horses, for carriage, and for ride and drive horses, both in the States and in this country, is bound to increase, and a really good animal in any of these classes is sure of a profitable market. No economy can be more short sighted, then, than that which for the sake of saving a few dollars at the outset, engages the services of an inferior sire. A saving of \$5 at the outset may mean a difference of \$500 when the time comes to sell. Above all, let your readers be shy of "imported" horses and flash pedigrees. The fact is, the bringing over to Canada of half a dozen or more cheap cast-offs from second or third class studs, and sending them around as imported! stallions, has been a very promising speculation; whereas, if justice to the country had been done, they would all have been shot the moment they were landed. One of the principal defects of these "culls" is flat and shaly feet. Color should also be considered; avoid a horse with white fore feet; it is said "a good horse can never be a bad color," but if he was of a good color he would be a better horse. Your farmers should not allow another season to go by without making a resolute effort to reform their policy in this respect. The remedy is in their own hands. When they insist upon having a thoroughly good horse, in return, of course, for a fair fee, and are no longer content with the first "cheap and nasty" animals that are brought to their gates, the supply of better material will speedily be forthcoming.

**Cultivation of Potatoes.**

Last month we gave our readers particulars concerning the leading varieties of potatoes, and now give you some of the modes of cultivation which have proved successful. The soil considered best for potatoes is a rich sandy loam, which is neither too wet nor too dry. A cool moist soil has been found to produce large potatoes; but there is less risk from excessive moisture in a lighter soil; maturity is reached earlier and the quality is better in a warm light soil than in one which is heavier. A calcareous formation generally yields a sure crop; wet land produces a wet unpalatable crop of little value; old sod well turned under in the fall, or clover sod, is excellent, but in any case it should be well rotted, and the land well and deeply worked before the potatoes are planted; when the land is not rich, a top-dressing of some sort should be applied; if stable manure it should be old and well rotted. At the time of planting, bone-dust, ashes, plaster, marl and like fertilizers can be used to great advantage, as they are of a dry and absorbent nature. On wet soils they are especially beneficial; on a warm light dry soil muck compost may be advantageously used; decayed leaves are also highly recommended. In seasons when this crop has been affected by disease, fields where ashes has been used have suffered much less from the rot.

Potatoes are planted in hills or drills; the latter is in most favor in Ontario. The drills are usually three feet apart and the potatoes dropped twelve to fifteen inches apart in the drills. The method which we have found most economical is, after the ground has been well prepared, and when plowing the last time, to drop the sets in every third furrow. With a careful and good plowman they will be very regular and straight; the drills will be about three feet apart. Care should be taken not to plow too deeply; the proper depth is four inches in light soils, not so deep in heavy lands. When the plowing is done harrow the ground; also harrow again as soon as weeds appear. When the potato is too large to allow of harrowing use the horse hoe; do not let the weeds get a start.

Some still plant in hills, three feet each way being the usual distance. Some varieties need more room than others; when planting in the latter method, the cultivator should be careful to have the hills in rows each way of the field; the horse-hoe can then be used both ways. The harrow cannot be used with safety as a general thing when planted by the hoe in hills; each time you hoe or cultivate draw the earth toward the hills or drills, when flat cultivation is not practiced. Some excellent authorities on the subject say cultivation should cease when the blossoms appear; but should there be any weeds go over the fields pull them all by hand; on no account should any be allowed to grow and go to seed. The plan of planting five eyes to the hill is condemned by some who have paid much attention to this subject, and who say, "potatoes cut carefully to a single eye, and planted a little closer, will yield a larger crop than by the careless method of throwing in seed by the wholesale. The effect of close growth or crowding in the turnip, mangold, carrot or parsnip field is known to be a great disadvantage, and we consider the rule holds good in the potato family. Two large eyes to the hill, with a proper proportion of flesh to each, will produce a far larger crop of merchantable tubers than two whole potatoes, besides effecting a saving of seed." The time of planting varies much, according to the different localities. Some prefer to plant as early in the spring as possible, others do not until the last of May or first of June. The varieties which do best in your respective localities should be depended on; but we think a small plot should be used to test new varieties.

For many years there has been a variety of opinions concerning large and small seed; some maintain large seed is preferable, while others grow good crops from small tubers. The main points is, we think, to obtain healthy fecund eyes, whether from large or small tubers. The fact is, we call the tubers seed when they are not seed, but roots similar to the roots of other plants from which we take cuttings. When taking a cutting from any plant, our object is to get strong and healthy eyes, whether it be from a large or small plant, and if all do this the result from a small plant will be as satisfactory as from a large one.

The following figures show the results of experiments made in growing potatoes at the Experimental Farm of Cornell University, New York:

The Early Rose variety was planted on May 10th; the soil a sandy loam, unmanured, and only moderately fertile. Each plot consisted of a single row 50 feet in length. The rows were four feet apart, and the seed was dropped 18 inches apart in the row. Below is the yield in pounds:

Plot No.	Yield		Total
	Large	Small	
1. Small potatoes used as seed.....	30	55	85
2. Medium-sized whole potatoes.....	85	38	123
3. Same size cut in halves, one piece per hill.....	93	26	119
4. Same size cut to two eyes per piece, one piece per hill.....	84	19	103
5. Cut as No. 4, two pieces per hill.....	96	24	120
6. Seed end of potato planted.....	86	30	116
7. Stem end planted.....	88	25	113
8. Middle of potato planted.....	23	41	64
9. Seed planted two inches deep.....	76	46	122
10. Seed planted four inches deep.....	93	33	131
11. Cultivated flat.....	94	31	125
12. Cultivated in ridges.....	89	29	118

Potatoes less than an average-sized hen's egg were classed as small. It appears that medium-sized potatoes, cut to two eyes, and two pieces to the hill, gave the best results; that deep planting and flat culture did the best. These experiments, if they do nothing more, at least point out to the readers the advantage of such trials, and we hope there will grow among farmers a disposition to make annually similar tests in the culture of any and every farm crop. Much can be gained in this way.

The effort made by the potato plant to produce flowers and seed balls is claimed by some English authorities to be, in the general crop, a waste of power, which detracts from the desired crop. Experiments were made in England, on a large scale; three rows had the blossoms cut off, and on three they were left intact alternately all over the field. The produce of the rows which had been deprived of their flowers showed a marked increase over that of the rows which had not been so treated.

We have been asked by several of our readers if placing potatoes on sod, and covering with straw, instead of planting in the usual way, has proved a success. We have heard of crops being raised in this manner, but would not recommend it; it is in no way commendable.

**Millet.**

We have found this plant of great value as a substitute for hay, and also as a soiling plant. We believe Canadian farmers would find it profitable if they cultivated it more extensively. We have known some who have cultivated it not to be fully satisfied with the results; but we believe this was due to an imperfect knowledge of the plant. There are several varieties; the kinds most grown in this Province are commonly known as the Foxtail Millet and Hungarian grass; some authorities highly recommend the Golden Millet.

Millet is a rapid and rank grower, and produces large quantities of green food, hay or seed; it may be sown in drills or broadcast. If sown broadcast for hay, 40 qts. of seed per acre will be required, but if in drills for seed, 8 to 10 qts. will be sufficient. It requires a dry, rich and finely pulverized soil, though it will grow on light thin land, but like cereals, is not so remunerative. The sowing should not be done until the weather is warm, say from the 15th of June until the 15th of July. It ripens in 60 to 75 days if the weather is favorable, and for this reason should commend itself to the agriculturist. Frequently clover and grasses become partially winter-killed, but whether they may be profitably left for meadow purposes is not always discernible until it is too late to prepare the ground for a cereal crop. In such cases, if the grass or clover does not come up to the desired standard, after sufficient time has been allowed, if plowed up and the land well cultivated, a profitable crop of millet may be grown. In this respect alone it should be a great boon to our farmers.

It may be cut with a mowing machine, and dried like hay; but as the ground has been so recently plowed, it is apt to become very dusty if handled in this manner. We prefer to cut it with a reaper, laying it off in small sheaves, which if necessary can be turned by hand with a barley or large steel fork, and when dry enough may be put in cocks or drawn from the rows to the barn.

A fair average crop of seed is 30 bushels, but when cut for fodder and sown on good land, it should produce from two to three tons per acre. Some eminent agricultural writers claim it to be equal to good hay. Horses, cattle and sheep are fond of it, and if it is properly fed they all do well on it, but it is a very rich food, and should be fed in small quantities, or mixed with other hay; this is especially true after the seed has ripened. When a larger amount is fed at one time, it will be as injurious as so much unthreshed wheat. If to be used as hay it should be cut before the seed is ripe, but not before the head is well formed.

A farmer who has had experience with millet states his views as follows:

"I want millet cut when heading or in blow for horses that are fed grain, but when used without grain, cut when in the milk, cure and take to the



stack or barn as soon as possible. I prefer common millet to the other kinds; the straw is less liable to be woody, and it is sweeter and makes a better quality of hay. The great secret of feeding it, and what will do away with all bad results, is simply not to feed too much. Do not carry as large a forkful to a horse as if you were feeding straw or wild hay, especially if seeded. Some feed a large quantity and allow the horses to eat the heads off, and then give a full feed of grain. The effect is the same as if a lot of grain in the sheaf were fed, and then after the animal has eaten it, to give a full feed of threshed grain."

If it is used as a soiling crop it may be cut during the various stages of its growth.

### From the United States.

[BY OUR OWN CORRESPONDENT.]

Washington, D. C., April 18, 1881.

The importance and profit of flax and hemp culture in this country has been called to the attention of farmers in the United States, in a recent report of the Commissioner of Agriculture. As it is of equal importance and profit to the farmers of Canada, let me give some of the data and information gathered upon this subject from reliable sources. It is evident from official reports that the production of wool and cotton cannot supply the rapidly increasing demand for a cheaper product. Fabrics and texture surpassing either in cheapness are the continually enlarging necessities of the times. With a present demand in the United States for 35,000,000 yards of cotton for bagging, while flax fibre enough to produce it is thrown away, the effort to extend the production of flax bagging would seem to be worth official consideration. The Commissioner of Agriculture says that "there is an increasing demand for flax for oil in the heart of the wheat growing region, and that its rough straw is now used in immense quantities for paper stock, and each year more largely for bagging. With more invention, easily acquired skill in manipulation, and more method in cultivation, and care in preparation for market, great and permanent and ever growing industries may be built up, providing labor for millions who need it, and increasing the prosperity of the country."

The imports of flax and hemp raw and manufactured, into the United States the past year amounted to \$5,781,710. For the foreign flax supply we depend mainly upon six or seven countries; since 1877 Russia has furnished the largest amount and England next. A considerable amount comes from Canada, either in the form of tow or line; the tow being subject to a duty of \$10 a ton when intended for bagging manufacture, though it comes free for paper stock. The finest foreign hemp, and that which brings the highest price, comes from Italy; this little kingdom producing over 90,000 tons annually, the yearly production of the United States not being over 20,000 tons. The principal supply of foreign hemp however is derived from Russia, and in the past year large quantities have been imported, owing to the insufficiency of the American supply.

The commissioner in his report says the question of quality, especially in regard to flax, is one of the most important considerations in the fibre industry. The ability to produce fibre to any required amount within our own borders is of less moment than the ability to produce a quality of fibre that will compete with that produced in the flax growing countries of Europe. It is grown to an exceedingly limited extent in this country for fine fibre, though there are large areas now under cultivation in the Middle and Western States, chiefly for the seed. For this purpose it is grown until thoroughly ripened, cut with a reaping machine, threshed by a common wheat thresher,

there being nothing yet invented to keep the straw straight, and it is sold by the load to the nearest mill. It is transported like hay, in a tangled bulk of fibre, pitched upon the load loosely just as it comes. In this condition in some sections it can not be sold at any price, and is often burned to get rid of it, while we pay out millions of dollars for the properly prepared imported article.

"There is necessity for greater care and skill in the American production to obtain a finer material, more strength by improved methods of treatment and more evenness in length. The Irish and Dutch sow thick for fine fibre. They have a moist climate, too, which gives better fibre, although in Northern New York, and New England and Michigan, &c., the latter especially, fine flax can be grown. The principal reason for coarseness is the production for seed, as has been stated. It is sown thin, and not cut till ripe. The stalks are then large and coarse and the fibre good for nothing but as a substitute for jute butts in the manufacture of bagging, or tow for paper stock." The foreign flax brings a higher price, and is used in the manufacture of a fair class of goods, on account of the greater care in culture and preparation for market. Canada flax by some manufacturers is considered finer and softer than much of the American; but even here there is room for improvement in growing and in manipulation.

That it is not an exhaustive crop, as urged by many, is abundantly proven by repeated chemical tests in this country and Europe, showing that flax takes less inorganic matter from the soil, per acre, than wheat, oats, barley or tobacco. It must however prove an exhaustive crop, as its cultivation is practiced in many portions of the West, where the seed is sold to the oil mills, the straw burned, and nothing returned to the soil. If, however, only the fibre is sold, the oil extracted from the seed, and the residue made into oil cake and fed upon the farm, the plant rotted upon the land in which it is grown, so that the glutinous substance washed out in the process be returned to the land, or if water-rotted, the steep water pumped up and spread over the land, and the slime or woody part composted with the manure of the farm, or simply spread over the land, it will be found that, instead of deteriorating, land will steadily improve under the culture of this plant, and at the same time yield a good profit to the farmer. Foreign flax producers are of the opinion that flax improves the soil, instead of serving to impoverish it, and that a peculiar advantage attending the cultivation of flax and hemp is, that a crop of the latter prepares the land for a crop of the former. There seems no reason why flax culture cannot be carried on as profitably in this country as in any other, if proper care is taken to keep up the fertility of the soil, and bestowing upon the crop careful culture.

Official statistics give the rate of yield of flax in Ireland at 300 to 521 pounds of fibre to the acre, and an enormous yield of 1,210 pounds is recorded. The average yield in Belgium, ranging over a period of 10 years, is 470 pounds per acre. In France 505 pounds; Holland 471 pounds, and in Russia, where less care is taken, it runs as low as 280 pounds to the acre. Land is less expensive in this country than in foreign flax growing countries, and importing the fibre must add to the cost, so there is every encouragement for flax growing in this country (and I may add Canada) for those who wish to farm with brains.

The Commissioner in his report also touches upon the character of soil best adapted to the growth of flax, the rotation of the crop, and the best seed. In relation to the first, he says; "In selecting a soil for flax growing, a moist, deep,

strong loam upon upland will give the best results. Barley lands in the Middle States are held to be the best, and in the Western States new prairie and old turf are frequently chosen. A weedy soil is not to be used, and manures that are liable to contain ungerminated seeds should be avoided. In New York State flax growers of long experience consider that heavy clay loam stands first, as regards both fibre and seed. On the subject of rotation he says; "One great element of success in foreign flax cultivation is the careful attention paid to the rotation of crops. In Flanders, growing the crop once in ten years upon the same ground is considered the best system. A favorite rotation in Flanders is potatoes, barley seeded with grasses, meadow (cut for soiling stock) pasture, and fifth, flax or one half in oats, so, on the return of the rotation, the part that was in oats may be put into flax. Finally as to the selection of seed, he states, that as to the kinds of seeds to plant there are great differences of opinion. From experiments made by the Flax Society of Ireland, it was demonstrated that home-grown flax-seed yielded the best results. The Dutch Association for promoting the interests of flax growing recommended the White Blossom Dutch seed for American planting. It produces abundance of seed, but a coarse fibre. When fine fibre is desired, the Blue Blossom Dutch is preferable. In purchasing seed, the heaviest, plumpest and brightest should always be selected, and that which has not been taken from different crops preferred. A bushel to a bushel and a half of seed to the acre is the average for New York and other States producing fibre, though for finer fibre it is recommended to sow two bushels. In Belgium and Russia where the finest linens are produced, the average is from two to four bushels. When planted to produce seed alone, one-half bushel or three pecks is the limit. The mode of harvesting foreign flax is to press it; in this country most of it is harvested with reapers. The objections to the latter method are the loss of fibre and injury to its working quality, and the gathering of weeds with the flax.

A new variety of potato, called the "White Elephant," has recently been received at the Department of Agriculture, and several barrels of them sent out to be tested during the coming season. They are not so early as the "Beauty of Hebron," but are much larger and equally prolific. They are said by those who have tried them to be of excellent quality.

The reports received at the Department of Agriculture during the month of April show an increase of nearly four per cent. in the area sown in winter wheat over last season. Kansas and Missouri show the largest increase, Ohio and Illinois but slight, and Pennsylvania and New York the same as last year. Owing to the prevalence of snow at the date of the returns (April) in large portions of the principal wheat growing States, the condition of the crops was not given, but wherever mentioned it was stated below the average of last year. The live stock of the country, notwithstanding the scarcity of food and provender caused by the long and severe winter, have come out in fair health, though reported very low in flesh. No malignant nor prevailing disease is reported over any large extent of country. Local disorders of lungs and stomach are often mentioned.

A shipment of products from Japan have just been received for planting in American soil, of which I shall write hereafter.

LOTUS.

J. H. Zavitz, Lobo, Ont., sowed three bushels of Extra Early Vermont peas, which yielded over 100 bushels; planted second week in June. They escaped the bugs.



### Carrots and Parsnips as Field Crops.

Were we to estimate the value of root crops by the quantities of the several component elements, as given by analysis, we would hold a very low opinion of them for stock feeding, but we have a more reliable instructor in the experience of those who proved their value, and who have long fed them with profit. It is true that in all roots there is a large proportion of water, but that water, with the other component matters, is needful as part of the nutritive qualities. In winter roots as food are very valuable. The change from a dry fodder and grain to a succulent food is very serviceable. They aid digestion, they sharpen the appetite, and aid in keeping up the general health and condition of animals. To young stock, roots as part of their regular food are of great advantage. For milch cows roots increase the flow of milk, and some varieties improve its quality.

In Great Britain roots are greatly relied on for fattening stock in the fall and winter, and for keeping store animals over to the spring. The manure made by the feeding of roots is considered ample remuneration for the food consumed, even were there no other profit. The roots most generally used for stock feeding are swedes and mangolds. To these are to be added ruta-bagas, parsnips and carrots, each variety having its peculiar value.

Parsnips and carrots are more generally known as a garden vegetable than a field crop for stock feeding, and for either purpose they are very valuable. The parsnip is largely grown in the Channel Islands for feeding cows. It causes them to yield a great flow of milk of good quality. Parsnips yield under favorable circumstances from 500 to 800 bushels. The seed is sown in drills 15 inches apart, and the plants thinned to about 6 inches in the row. Carrots are in many respects preferable for stock-feeding to other roots. They contain a greater percentage of flesh, fat and milk forming principles. They are especially adapted for feeding milch cows. They impart to the milk a desirable color, and do not give an unpleasant flavor to it. They are also greatly relished by young stock, as they are very rich in sugar. As food for horses they are much superior to any other roots. They are very productive. As a field crop they produce from 500 to 1000 bushels. They are sowed in drills 24 to 40 inches apart, and the plants are thinned to about 6 inches. The quantity of seed required is 2½ to 4 lbs. per acre. For field culture the white Belgian is an excellent variety, being a very heavy cropper.

### The Domestic Wool Required to Supply American Looms.

A very long and able address on the above subject was delivered by John L. Hayes, LL. D. (Sec'y of the National Association of Wool Manufacturers) before the convention to promote the sheep and wool industry, held in Philadelphia last fall. After speaking at length on each of the various wools used in America, he stated that it was impossible for any person to form an opinion as to the kind of wool which will be most profitable in the future—this being governed by the fashions. Some seasons materials made from the long lustrous wools are very fashionable; in such cases the long wools bring the higher prices. In other seasons materials made from finer wools take the lead; the finer wools will then have the ascendancy. His advice to farmers is: Grow that wool which you find of most advantage to you; discard every consideration for special manufactures, but breed that variety of sheep which is most suitable to the situation in which you are

placed. To the wool-growers of the Northern or Middle States, whose interests are identical with ours, he says:

You will undoubtedly find it most for your interests to grow the English races of sheep, producing the different varieties of long combing wools. I have already shown how unsafe it would be to predict which variety of wool from the different mutton races would be most valuable at any future day. The only safety for the farmer growing sheep of this class especially, is to absolutely ignore the wool, and to regard himself solely as a mutton or lamb grower. I would say to the farmer, go on and manage your sheep in the way you can get the most money for their carcasses, whether raising mutton or lambs, and let your wool take care of itself. You must regard your sheep as machines for converting grass, roots and grain, in the shortest possible time into mutton, with wool as a mere incident. By making your sheep fat in the shortest possible time—which you can do best with the English races—and killing them as soon as they are mature, you make the best and soundest wool. It will not only be young, but healthy; it will have no tender places in it. Aiming for the best mutton, you will be certain to get the best wool, which will always sell, no matter what race it belongs to. This is the system in England, the greatest mutton and combing-wool producing country in the world. It is really a matter of surprise in reading the English agricultural journals to see how little consideration is apparently given to the qualities of wool, while the size and fattening aptitudes of the different breeds or varieties are the subjects of the most weighty attention. Yet it is fully recognized that the characteristic qualities of the English combing wools have been developed upon originally short-wooled animals by the unconscious development of their forms and the secondary qualities of their fleeces through a constant aim to develop their carcasses for the mutton market. Thus the interests of the grower, the consumer of meat, and the manufacturer of wool are identified.

The custom of washing sheep before shearing is an English one. Its continuance here is partly due to the fact that so many of our manufacturers, or the overseers in our mills, have come from England; but the principal reason why the custom is retained is, that the buyers of wool can, or think they can determine its quality and value much better when washed. Whether from custom, prejudice, or sound, practical reasons, the majority of manufacturers are undoubtedly opposed to the abolition of the custom of washing sheep preparatory to shearing. On the other hand, a vast majority of the wool growers of the country would unquestionably prefer to have the custom of washing abolished.

It is cruel to the hired help to compel them to go into the cold water; it is cruel to the sheep, who often die from the rough handling received in being caught and held for washing. And the universal testimony is, that the sheep do not gain, but lose, all the time from the day they are washed until they are shorn. The cost of getting the washing done is more than the increased cost of getting the wool to market with the dirt still in the fleeces. The wool growers agree that the custom of washing required by the arbitrary distinction in prices of washed and unwashed wool made by the manufacturer of wool, is a loss to them, and injury to their flocks.

If there is a loss and injury from this cause, it is clear that it must, in the long run, fall upon the consumers of wool.

Besides the considerations of loss to the wool grower, and therefore ultimate loss to the manufacturer, the present system of washing involves a total waste of the immensely valuable material contained in the natural yolk of fleeces. This waste is against all the laws of economy. I believe that science and the inventive genius of the manufacturer will point out to him a means of saving all this waste, when unwashed wools will prove the most economical for the manufacturer to use. Some way will be contrived to convey the wash waters, with their highly fertilizing elements from raw fleeces, upon the land, or they will be used for the manufacture of that most valuable chemical, potash, as in France, whose fleeces, it is said, could supply all the potash consumed in that country; or they can be converted into a most valuable oil. The experiments of a lady chemist—Mrs. Richards—in the laboratory of the Massachusetts Institute of Technology, first published in the "Bulletin of

the National Association of Wool Manufacturers," prove that raw wool may be most economically and perfectly washed by means of naphtha or gasoline of about 86°, the process leaving the fibre in the best possible condition for taking dye, while the waste products are readily recovered. This recovered waste consists principally of oil, which is now saved to a considerable extent in Europe, and is imported into this country under the name "de gras," to be used in currying leather. The oil, also, after being in some degree refined, and mixed with a small portion of mineral oil, makes a viscous emulsion, absolutely free from a tendency to spontaneous combustion, and meeting all the conditions required for preparing the wool for carding. It is said that the wool now used in this country will yield 45,000,000 lbs. of grease, now worse than wasted, which is believed could all be saved by the process above mentioned. I may observe that the process is now being practically applied on a large scale in one of the most important mills in New England. We may hope therefore, that the interests of the wool grower and the wool manufacturer may soon be identified in the matter of washing wool.

### Mustard as a Garden and Farm Crop.

In ordering your garden seeds do not omit a package of white mustard seed. Though not generally grown here, it is in Britain and also in the United States much used as a salad. For this purpose the seed is mixed with cress and sown thickly in rows. The young plants are cut while still in the seed leaf, and furnish a delicious salad merely pungent enough to please the palates of those who enjoy an excellent salad served up cool and agreeable at the noonday lunch in the warm summer days. Mustard is sown not only as a salad herb, but is often cultivated in England as a forage crop, for which purpose it is very valuable. It gives an abundant crop of succulent forage, which is cut before the seeds begin to mature, and to cattle, sheep and pigs there is no more healthy green food than mustard, and it is grown with little trouble. The land on which it has grown may after it is fed off be sown with millet or autumn turnips, by this means providing two crops in one year. It is also sometimes ploughed under as green manuring, for which its early growth makes it well adapted. It is well known as a condiment. The seed is crushed between rollers in the manufacture of flour of mustard, pounded in mortars, and then sifted from the remaining portions of husk. This is the mustard we purchase from the grocers. Both the black and white varieties are used for its manufacture—the black is the more pungent. Both are used together. As Canadian industries are well protected we might direct our attention to the growth and manufacture of mustard.

An agricultural writer cautions all to be careful about coming to conclusions even from appearances. The writer stated he had been long desirous of demonstrating in some way how difficult it was to arrive at a conclusion with regard to fertilizers, and the folly for any one to suppose they could get up any fertilizer and tell its results before applying it, for they could not with any degree of certainty until after having used it.

He said in July he plowed up about three and one-half acres of land, one part being sod land, another where spring rye had been grown, another winter rye, and another oats and peas. On this whole piece he had used superphosphate of lime, and had sown it with Hungarian, which had come up, and the whole was looking well. Yet any one could distinctly draw the lines where these different crops had been previously raised. Any one looking at it would say that different fertilizers had been used. However, but one fertilizer had been used, though it appeared evident that different crops had been previously raised, and the result was the same as though different fertilizers had been used.

In testing different fertilizers farmers should be careful not only to experiment on land of equal quality, but that which has received similar treatment and which corresponds in all other particulars.



## Dairy.

## Prize Essay on Butter Packages.

The following Essay, by Benjamin Urner, won the \$50 prize awarded by the International Dairy Fair Association of the American Institute, N. Y. City, for the best Essay on "The best and most desirable Butter Package for home distribution and export to foreign countries:"—

The subject here presented by the International Dairy Fair Association is one of great importance to the butter interest of the country. A correct solution of the question, "What is the best butter package for home distribution and export to foreign countries," and the general adoption by our butter producers of the packages decided to be the best, will confer benefits upon both the producer and consumer of butter, and greatly facilitate trade.

There is as good reason why there should be a standard package for butter, as a standard package for flour, pork, beef or lard. A lot of 10,000 barrels of flour made up of lots from 100 different store houses, will be practically uniform in style, appearance and weight. The same should be true of butter. If a merchant received an order for 10,000 packages of a certain quality of butter, he ought to be able to collect it and have the size, style and weight of the packages perfectly uniform; but as the case is now, he would probably be obliged to put into his collection at least three styles of package, each of which would include several sizes, making a lot of a mongrel appearance, however careful his selection might be. Any person familiar with our larger markets cannot fail to have noticed how much easier it is to sell a lot of butter running uniform in the size and handsome in the style of the package, than one irregular in these respects. It is no exaggeration to say that, the quality of butter being the same, there will be often a difference of a cent a pound in favor of the regular lot.

And if the weight of all packages were alike, the seller would realize a farther advantage. There is a real economy of labor involved in buying, selling and handling the goods, which affects the price. It may not be practicable to make packages of uniform size, which will run exactly uniform in weight; but this will be a matter of comparatively small importance, provided we can construct them of uniform capacity, so that they may hold an equal weight of butter. We care little about the weight of a flour barrel, yet all standard flour barrels will honestly hold 196 pounds of flour. And with a little care on the part of dairymen, packages of standard capacity can be made to hold equal weights of butter.

Before attempting to consider what is the best butter package for the home and export trades, it will be well to ascertain whether there are any essential differences between the requirements of the two classes of trade which will necessitate two different styles of package, or whether these requirements are essentially the same, and can be provided for in a single style. As our country is so great in the extent of its butter-producing area, and much greater still in its consuming area, and as the chief customers for our exported butter are, in Europe, not much more distant from some of our producing sections than many parts of our own country, without more trying climatic conditions, it would seem that the package suited to the general trade at home would be equally well suited to the general trade abroad. And, in fact, experience teaches us that this is true. The systems of transportation are the same, the methods of store-keeping and retailing goods are much the same, and the taste of the public probably not materially different on either side of the Atlantic. Custom has, doubtless, in certain neighborhoods, created a prejudice in favor of certain styles of package, which may require time to remove, but this it will be impossible to specially provide for. In general, the producer does not know whether his butter will be consumed in Canadian cities or in London, Liverpool, Glasgow, Dublin, Hamburg, Bremen, Amsterdam, Berlin, or other markets. How, then, can he safely adopt a peculiarity of package which might be appropriate to one of these markets but to none of the others? He cannot, but must take the alternative of using that package which experience demonstrates is best adapted to getting his butter to either market most economically, in the best order, under all the vicissitudes it may have to encounter.

We must except from our consideration packages especially designed to meet the conditions requisite in shipments to markets in tropical climates. It would be impossible to describe a general style of package which would suit the trade of Europe and America, and at the same time meet the wants of such special markets, having special conditions.

We must make exception also of packages used by such producers as make a specialty of catering to some local market, and who adopt a style to meet the taste of fastidious customers, at the same time having an eye to individuality of style, which may be an advertisement of their special product. No general style and make of package can meet the requirements of such cases, for a general style is just what is not wanted. The butter of such producers finds special channels, and does not enter the general trade to any appreciable extent.

We shall proceed, then, to try to find one style of package which will meet the requirements of the general trade of Europe and America. And we must begin by considering some of the properties of butter itself, in order that the package, in its form and the materials of which it is made, may be well adapted to its use. The properties of butter which it is necessary for our purpose to consider are three. First, the evanescent character of its flavor. All butter will deteriorate upon exposure to the atmosphere; consequently it is desirable that the package containing it should be so constructed as to expose as small a portion of its contents to the air as possible, at any time in its course from the producer to the consumer, consistently with its necessary exhibition for sale. This property affects the form of the package. Second, its quality of acquiring the flavor of substances in contact with it must have an important bearing upon the package designed to preserve it with as little damage as possible. It affects the material of which the package is to be made. Third, the changes in its consistency and texture caused by changes of temperature. This also affects the material of which the package is to be made in relation to it as a non-conductor of heat, and the tightness of the package as well, for sometimes the butter may become oily in its texture, and tend to leak through the joints of the package, injuring its appearance and causing loss of weight.

There are other important considerations, also, which must be given their due weight. One of these is cost; this, of course, must be as small as possible, and the package still meet the other requirements. Another is weight, which affects the cost of freight and handling. Another is strength. Another is appearance; a package should produce a pleasing impression upon the purchaser at first view. Another is the facility of opening and exhibiting its contents, and of closing it again without blemish. Another, the ease with which the butter may be "stripped"—that is, turned out upon a scale for testing tares, or upon the counter of the retailer, and replaced in the package.

We will discuss considerations of form in describing, in detail, different styles of package. Here we will try to ascertain what is the best available material for our purpose. Stoneware is almost perfection, so far as preventing loss by soakage, preservation of butter, and contamination from any injurious flavor in the package itself, and in being a poor conductor of heat, are concerned. But its weight, cost and liability to breakage make it entirely unfit for our use. Sheet tin, or tinned iron, has some of the good qualities of stoneware, in its preventing loss by soakage, but in the packages where it is used it is found that the brine of the butter will, in places, reach the iron beneath the tin, and develop rust, to the injury of the butter. This material is also liable to injury by denting, but the chief objection to it is its being a good conductor of heat, and offering very little protection to the butter in hot weather. This objection is insuperable. Wood of some kinds will be found to best meet our requirements in the most essential particulars, with fewer disadvantages than any other material. It is cheap, it is easily worked; it is a good non-conductor of heat; it can be made into a tight package; its absorptive properties can be corrected by filling its pores with brine before the butter is packed. Its principal disadvantage is that it has some flavor which it imparts to the butter. In this respect some kinds are far more objectionable than others. There are varieties which are almost free from this objection, but they are too scarce and expensive for general use. There are other kinds which are so objectionable that they must be discarded; among these are all soft woods; all kinds of oak,

excepting white oak; all kinds of ash, excepting white ash. Red oak, in addition to imparting flavor, stains the butter. Black ash is very porous, and has a decidedly unpleasant flavor. In fact, practice has eliminated all kinds of wood, excepting white oak and white ash. Elm is sometimes used for covers, without exciting serious objection. Hoops, not being in contact with the butter, may be of any suitable material of sufficient strength. White oak is a more porous wood than white ash; it is of a redder color, and shows grease stains more plainly. The two woods are about equal in weight; in the dry state oak is a little the heavier; in the thoroughly seasoned state, a little the lighter. Neither will impart much flavor if thoroughly soaked in brine before the butter is put in contact with it, until considerable time has elapsed after packing. The flavor of white oak detected in butter is clean; that of white ash slightly less pleasant, but there is not quite so much of it. There was formerly a prejudice in some sections in favor of the former over the latter, but probably this prejudice attached to the package from the general character of the butter then contained in it. Of late years the use of white ash by many makers of the finest grades of butter has overcome this prejudice, and it may be said to no longer exist.

Let us now mention the several packages in common use, and ascertain which, if either of them, best meets the conditions heretofore described. We will dismiss, in a word, packages whose unfitness for our purpose we have already proved, and those whose unfitness are apparent at a glance, such as the old-fashioned stone cask, the refrigerating and other packages for prints, the so-called return pail, and all tin packages, and consider such only as we think will have some advocates as the most suitable. We mention, then, the firkin, the so-called Jamestown tub or pail, the half-firkin tub, and the so-called Welsh tub.

The firkin has been long in use in this country, but is known in Europe only as an American package. It is little known there by the name "firkin." It is a package which has met with much favor in several branches of trade in this country. In many of the counties of New York State it is extensively used for packing early-made butter to be carried over the summer, and as when this butter is marketed it has lost its freshest flavor by keeping, the package has become associated with butter somewhat old in flavor. It has been unusual, excepting at times in the spring and summer, to find strictly fresh butter in firkins. Were the chief use of the package the preservation of butter for as long a time as possible, it would be hard to find one which met the requirement better than this. But as the tendency of the production is more in the direction of supplying the markets with fresh butter the year round, this quality has not the same force it once had. The firkin is a "small cask" or keg, generally made; staves and head of white oak; hoops of hickory, with the bark on; weight, twenty pounds, more or less; and capacity, about 100 pounds net weight of butter. It is about twenty-three inches high; diameter of head and bottom, inside hoops, thirteen and a-half inches; of bilge, sixteen and a-half inches; thickness of staves, head and bottom, about half an inch. The hoops are in four tiers. This package meets well some of the conditions we are seeking. Its material is first rate; it is very tight, and it exposes less of its contents to the air than any other package. Its cost (about ninety cents) and its weight are relatively about the same as the half-firkin tub. When nicely made, as it often is, it is handsome. But notwithstanding these good features, it has some positive disadvantages. It is rather too large to be carried, and is often rolled, which is very objectionable when the butter is soft. It is liable to be turned on the wrong end, and, as there is generally a space left between the butter and the head, this will at times permit some shifting of its contents. The size of the package prevents it from being taken entire by many families and small retailers. But these objections are trifling as compared with the serious one that the package is the most difficult of all to "strip" and turn out its contents entire, either for the purpose of testing the tare, trying the butter, or display upon the counter. The upper tiers of hoops must be started to remove the head, and the staves must be spread apart to such an extent that the brine or pickle escapes, soiling the package; and unless the operation is carefully done the butter is liable to be more or less broken. The labor involved in removing the firkin from and replacing it over the butter and making all tight



again, is much greater than to turn out the contents from a properly constructed tub. It is not always necessary, however, to remove the head of the firkin to try the butter. A hole may be bored for the insertion of the tryer, but this is never so satisfactory to the buyer as when the whole top surface can be seen. Besides, to permit of trying in this way, the cloth, which is used on the top of the butter in other packages, must be omitted. From all of these considerations it will, we think, be readily seen that if we can find in some other package most of the advantages inherent in the firkin, with none of its disadvantages, the latter will not be the package "of the future."

The next package we shall consider is that one known in New York as the Jamestown pail or tub. It is of comparatively recent introduction, and is not very extensively used. Its dimensions are as follows:—Stave, thirteen inches long and half-inch thick; diameter of head, fifteen and a-half inches; of bottom, inside of the hoops, thirteen inches; chine, half-inch deep, beveled; bottom, about half-inch, tapered to chine; and cover, half-inch thick, chamfered at edge. Three hoops of galvanized iron, one at bottom, one three and a-half inches from the top, one between. The staves, bottom and cover are white oak, smoothly finished, and the staves are varnished. The cover is nailed flat to the top of the staves, without a rim. The cost of this package is about fifty cents, its weight is about eleven pounds, and it holds about fifty-six pounds net weight of butter. Almost the only disadvantage which this package has in comparison with the firkin is that it exposes more of the top surface of the butter, and if long held will lose more in becoming "strong on top." It turns out its contents very easily, and is not too large for convenient handling. It is handsome, but slightly suggests the blacksmith or the cooper shop rather than the dairy. Its varnished staves are not easily stained by brine or grease. Its disadvantages are high cost and greater weight than the Welsh tub of the same capacity.

The half-firkin tub is, as its name implies, like the half of a firkin when the latter is sawed through the bilge, except that the upper hoops are set nearer the head of the tub than they would be in a sawed firkin, and instead of a head set into a chine, the cover is flat and nailed to the top of the staves. The dimensions of this package vary a good deal, but average about as follows:—Stave, eleven and a-half inches long and a half an inch thick; diameter at top, sixteen and a-half inches, and at bottom, thirteen and a-half inches inside of the hoops; chine, one inch deep, beveled; bottom, about half-inch thick, beveled and let into the chine; top, three-eighths to a half-inch thick, chamfered at edge. Hoops, hickory with the bark on, three at the bottom, two within one inch of head. This package weighs about eleven pounds, holds about fifty-six pounds of butter, and costs forty to fifty cents. The staves, bottom and cover are of white oak, smoothly finished and generally without varnish. This package is an old favorite, and having been largely used in the dairies of New York for butter marketed fresh, has become somewhat associated in the public mind with that class of goods. It has the same slight disadvantage as compared with the firkin, inherent in the tub form, just described as belonging to the Jamestown tub, and the same advantages. The contents are easily removed entire. Being larger at the top than at the bottom, the head having been removed and the tub turned upside down, a blow with a mallet on the bottom, when the butter is sufficiently firm, permits the package to be slipped from the contents, leaving the latter standing entire. The tub may then be replaced, and little or no injury to the butter results. In this operation the hoops need not be started, and the labor and time involved are slight. An objection to the half-firkin tub, and the same is true of the Jamestown tub, is that the cover cannot be readily removed without some splitting or breaking of it, or pulling it off the nails, which are left sticking in the staves. When the cover is replaced it shows that it has been once opened, and this advertises the fact to a buyer that the package has been once examined and rejected. The half-firkin tub is also open to the objections made to the Jamestown tub in its cost and weight. It is, when well made, a handsome package, and a good one for general use.

The only remaining package to be considered is the so-called Welsh tub. This varies more in size than any other package used for butter. We have seen sizes ranging in capacity from twenty to one hundred pounds. It differs from the half-firkin tub in being generally made of white ash instead

of white oak; in being higher in proportion to its diameter; in having flat hoops finished without the bark, and in having a cover with a rim which passes down over the tops of the staves. The dimensions of a Welsh tub weighing eight pounds, and designed to contain fifty-six pounds net weight of butter, are as follows:—Stave, fourteen and a quarter inches long and three-eighths inch thick; diameter at bottom, inside of hoops, twelve inches; of cover, inside of rim, fourteen and a-half inches; thickness of bottom, half-inch; of cover, three-eighths inch; rim on cover, one and three-eighths inches wide, and about three-sixteenths inch thick; chine, five-eighths inch deep, chamfered. The upper ends of the stave are chamfered to a perpendicular, so that the rim of the cover may fit snugly its entire width. The hoops are one and a-quarter inches wide, by a large one-eighth inch thick; there are five of them, three at bottom, two about two inches from top of stave. Sometimes two hoops are used at bottom, and another as intermediate between lower and upper hoops, but this style is not generally so well liked. When the staves are well fitted they can be held tight by three hoops at the bottom and two at the top. The cover is secured to the staves by four strips of tin tacked to cover and stave, or by four double-pointed tacks or wide staples, one prong of which is driven through the rim, and the other into the stave below. The last mentioned method is best liked. The staves and cover are generally white ash, the hoops ash or white oak, the bottom sometimes of white oak and sometimes of white ash. The inside of the staves of this, as of all other packages, should be finished perfectly smooth, free from lumps, splinters or irregularities of any kind; the flat cover should be of one piece, or, if two pieces are used, they should be joined by a tongue and groove. The cost of the package described, in large quantities, is thirty cents.

This tub has all the good qualities of the half-firkin, and advantages over it in lightness, cheapness, and the facility with which the cover can be removed and replaced without injury. It is whiter in color, and may become soiled easier, but grease stains do not show so plainly upon it. The Welsh tub is now the most extensively used in this country of all the packages. Nearly all of the western producers use it; it is almost exclusively used in the northern counties of New York, and its use in other sections of that State is increasing. Canada, also, uses far more Welsh tubs than any other package. They are used for all kinds and qualities of packed butter, from the finest creamery to the most inferior "milled." The home trade makes little or no objection to them, and many prefer them. The package is a favorite with the export trade, and is well known and liked in England and the continent of Europe.

Now, we think that each succeeding package described has shown us increasing advantage, until the last one leaves little or nothing to be desired. It is not a theoretically perfect package, but experience proves that it is as nearly so as the arts and the wit and the ingenuity of man enable us at present to construct. It is gradually but surely and steadily supplanting all other styles in the general trade, and it is only a question of obtaining the consent of dairymen, especially those of New York, to have it become the universal style, the desirability of which we tried to make plain at the beginning of our essay.

As we have asserted the necessity of one standard butter package of uniform size, style and capacity, we have a few words more to add to complete our paper. The size and style of package, given in detail in describing the Welsh tub above, are those which we recommend. Our reasons, besides those already given, are as follows:—The package of this size is easily handled; its weight packed is under (but not much under) 70 pounds, so that the advantage is with the seller in allowance for soilage—the custom being to allow one pound soilage on a package of butter less than 70 pounds in gross weight, and two pounds on a package of 70 pounds and over. Again, the net weight to be charged would be 56 pounds, just half an English hundred weight of 112 pounds. As we in this country sell by the pound, both wholesale and retail, an exact weight, excepting on the score of uniformity, is not of special importance; but as in England wholesale prices are fixed by the 112 pounds, it is convenient to have the net weight of butter in our package an even fraction of that weight. The package, when soaked in brine at the dairy, creamery or factory, is calculated to have absorbed one pound of water;

if it does, then the gross weight of our package filled would be, say, 65 pounds; the tare would be 8 pounds for package and 1 pound soilage, say 9 pounds, leaving net 56 pounds. It may be objected that the weight cannot be figured down so closely as this in practice. To this we reply that it can be and is done by some packers. There is a small space allowed for between the top of the butter and cover, which gives the packer a margin of a pound, more or less, in filling, by which he can make his net weight uniform if he "gives his mind to it." Some slight drying out of wood in packages of butter long held may work slightly against our calculation, but if the package has been properly soaked, and 56 pounds net weight of butter put into it, without salt and extras, it would have to be held a long time before, upon being "stripped," it would be found not to contain exactly that weight of butter.

#### Butter from Traveled Milk.

In a previous issue some experiments were described showing that milk which had been carried some distance in a wagon, as to a creamery, before being set for the cream to rise, yielded less butter because of the slow cooling on the way, in the place of the rapid cooling which would take place if it were set at once, while still warm from the cow, on ice or in cold water. Further researches on this point are given in recent numbers of *The Milk Zeitung*. It is there shown that the diminution in the yield of butter is the same whether the milk is carried by rail or by road-wagon, notwithstanding that the kind of motion is so different in the two cases. This result is in accordance with the opinion expressed by Cordes in the article above noticed, that the agitation of the milk while travelling has nothing to do with the smaller yield of butter. It was further shown in these last experiments that the loss of butter is greater the more milk has cooled down before being set to cream at the end of its journey; the loss of butter is much greater if the milk is allowed to stand but ten hours than if set for thirty-six hours, while, if the milk is put in ice water at once, it will throw up nearly all its cream in ten hours; therefore the change which the milk suffers is of such a character as simply to retard the rising of the cream. The conclusion of this last investigator, Fjord, is, like that reached by Cordes, that it is the partial cooling of the milk before being set for the cream to rise which causes the loss. The possible extent of this loss in some cases is shown in one of his experiments.

A quantity of fresh milk was divided into three portions, one of which was set in ice-water at once; the other two were allowed to cool an hour by standing at ordinary temperatures, and one of these was then set in ice water; the third portion was carried in a wagon for three hours before being set in ice water; all the samples were allowed to stand ten hours. Calling the quantity of butter yielded of the first portion of milk 100 parts, the other two gave 70.6 and 73 parts respectively; or in other words, there was a loss of 27 and 29.4 per cent. of butter in the two cases, as compared with what should have been obtained if these two portions of milk had, like the first, been put in ice water at once. The loss was not in all cases so great as this; but the fact that it may occur, and may under certain conditions be so serious, is well worthy the attention of managers of creameries; and no less worthy of their consideration is the simple method discovered by Fjord, of almost entirely avoiding this loss, which consists in heating the milk, so soon as received at its destination, up to about 104 degrees. In the warm season the milk may be cooled as soon as drawn, so as to be delivered in a fresher condition at the creamery, where it may then be warmed as above.—[N. Y. Tribune.

**FIRM BUTTER WITHOUT ICE.**—In families where the dairy is small a good plan to have the butter cool and firm without ice is by the process of evaporation, as practised in India and other warm countries. A cheap plan is to get a very large-sized, porous earthen flower-pot, with a large saucer. Half fill the saucer with water, set it in a trivet or light stand—such as is used for holding hot irons will do; upon this set your butter; over the whole invert the flower pot, letting the top rim of it rest in and be covered by the water; then close the whole in the bottom of the flower pot with a cork; then dash water over the flower pot, and repeat the process several times a day, or whenever it looks dry.—[Ex.



**Stock.****Hurdling Sheep.**

The system of hurdling sheep has long been practised in England by the best farmers, and is a most excellent method for preventing waste and utilizing the crops of grass or roots produced upon the land. A flock of sheep turned upon a field of rank grass will waste more by trampling it down than they will consume. This system is also largely practised in Great Britain in feeding off turnips, where the latter are left in the ground without pulling, to be consumed by the sheep. Turned in upon a field of several acres of flat turnips a large flock of sheep would nearly destroy the crop in a few days, by running over a whole lot, biting a hole into nearly every root, which holes would hold sufficient water to rot the whole crop in a short time.

In England hurdling sheep is also practised upon both winter rye and wheat, in the fall as well as in the spring, when the growth is found too rank for feeding in the ordinary way. Through this system sheep not only fertilize the land evenly and thoroughly, but also firm the soil around the plants.

As yet hurdling is almost unknown in Canada. We have no doubt much benefit could be derived from this system, especially when pasturing rape or clover. Profit is also derived from dividing pasture land into several parts and pasturing alternately.

The accompanying illustration shows how an Englishman fed his sheep on an irrigated pasture, by the use of hurdles of a peculiar description. They are twelve feet long and are made with a

vertical pole bored with two series of holes twelve inches apart. Stakes six feet long are put into these holes so that they project from them three feet on each side of the pole. One series of holes are bored in a direction at right angles with that of the other, and when the stakes are all properly placed they form a hurdle, the end of which looks like the letter X.

The engraving shows how these hurdles are used. A row of them is placed across a field. The field in which they are used consists, say, of six acres. A strip of ten feet in width is thus set out, upon which four hundred sheep feed. They eat up all the grass upon this strip. The hurdles are then turned over, exposing a strip of rather more than four feet in width at each turn. When this is fed off the hurdles are again turned over.

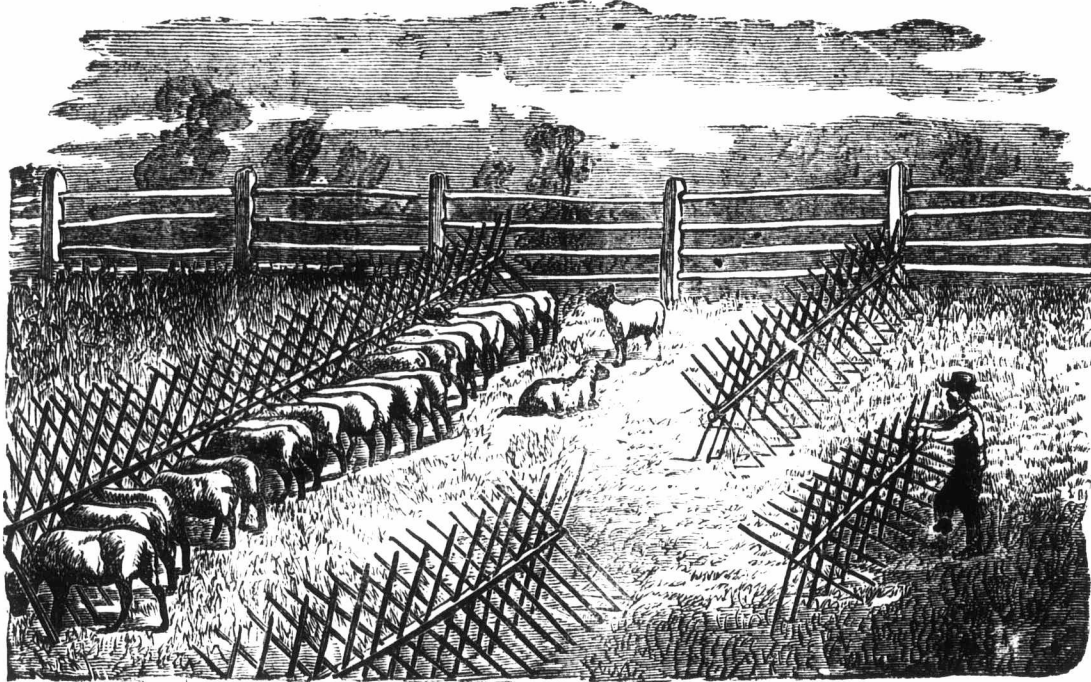
The *chevaux-de-frise* presented by the hurdles prevents any trespassing upon the other side of them, and by using two rows of hurdles the sheep are kept in the narrow strip between them. Their droppings are very evenly spread over the field, by which it is richly fertilized. At night the sheep are taken off, and the grass is watered. The growth is one inch per day under this treatment, and when the field has been fed over the sheep are brought back again to the starting point, and commence once more eating their way along.

**The Coming Sheep—Shorthorns vs. Herefords.**

Last month we gave an article on this subject which we copied from the English Agricultural Gazette. We think it of the utmost importance that Canadian farmers know the value of the different breeds of sheep and cattle, and for what purposes the different breeds are best suited. This month we make an extract from an article written by a special English correspondent of the "National Live Stock Journal." From what we know of the breeds spoken of by the writer we coincide with his views. We believe the time has come that the English down breeds of sheep will hold a prominent place, if not the first place among the mutton producing breeds of the Dominion.

The Hereford cattle are also attracting much attention, but we believe they are more suitable to the northern and western plains than the arable lands of the older provinces. The breeds which suit the purposes of the English farmer will most fully fill the needs of the farmers in our older provinces.

The writer referred to says:—



ENGLISH METHOD OF HURDLING SHEEP.

"In some of our agricultural journals of late there has been an attempt made to show that the Hampshire Downs are the 'coming sheep.' They may be, but I very much doubt it. They are excellent sheep to live between hurdles, and can stand more mud than any breed of sheep with which I am acquainted, and they are good mutton; but with a fair run of pasture or seeds, I should greatly prefer the Shropshires, which come between the Southdown and the Hampshires in point of size and quality. Shropshires are extending over a great portion of the Midlands, and generally find favor wherever they are tried. It is not likely they will displace long-wooled sheep on rank pastures, or the Hampshires in their district; but they are easily adapted to the general requirements of flock-masters in the shires, and are in great favor with butchers, their mutton being full of flesh, and not too large. I think, therefore, that they are more likely to increase in number than are the Hampshires. Next to Southdowns, they are the best mutton we have, and their area of usefulness in this country is very much larger than that of the Southdowns. I cannot, of course, offer any opinion as to how they would answer in America; but if the exportation of mutton to England is an object to breeders there, it would be worth while giving them careful trial. Their wool is of a good medium class.

I am pleased to see that the Herefords are making good headway in the United States. I always

thought they would exactly meet the requirements of beef producers there, and I believe they will become more popular—because more useful for that purpose—than the Shorthorns. At the same time I do not see that they are likely to displace Shorthorns in England. The stock kept on English farms, which consist largely of arable land, must be able to give more milk than will suffice to rear a calf, and must be easily converted into fairly good beef when barren. I don't know any breed of cattle which will suit these conditions so well as the Shorthorns do; and, therefore, I think the Shorthorns will continue to increase in number at the expense of other breeds; because the dairy industry must form part of British agriculture to a greater extent than heretofore. What is wanted here is an animal that can be bred, reared, used for a few years—if a heifer—and then stalled on arable farms; and for such work I believe the Shorthorn has no real rival. A writer in one of our agricultural papers says that the Herefords no longer 'top the market' in London, and declares that they have done so only in days gone by, when cattle were travelled many miles, on the hoof, from the grazing districts to the metropolis. I do not remember those days, as I was not then old enough to know anything about the cattle trade; but I can well understand that the Hereford should have proved himself a better traveller than some other breeds, just as he is proving a

better 'wrestler' in the United States. The other portion of the statement I take to be an erroneous representation of facts. The Hereford bullock in London is quite a season animal, and comes only as grass beef in the late summer and autumn; then it tops the market, for there is no better grass beef sent to London than the Hereford, except the West Highlanders, which are older and few in number; these generally make prices which are above the ordinary top quotations. The Polled Scotch cattle are stall-fed, and do not come under the same category as the Herefords, which have to compete with Welsh runts, Shorthorn bullocks off grass, a few Highlanders and Devons, Schleswig-Holstein cattle from

Tomning, and Spaniards. The supply from Christmas up to June consists of stall-fed cattle, home-bred and foreign; and of these the first cross between the Shorthorn and the Polled Scot is the best, then the Polled Scot and the Devon, and then the Shorthorn.

**Directing the Growth of Horns.**

Several devices have been resorted to for the purpose of remedying irregularities in the growth of cows' horns; but attempts at regulating the shape or direction of the horns can be carried out more or less successfully only when the animal is under three years of age. In young stock, the rasping should be done midway of the length of the horn, on the side towards which it is desired to have it turn, and not occupy more space than an inch and a half in length and about one-half the circumference of the horn. It should not be done with a coarse rasp, and great care should be exercised in the rasping, so as not to penetrate through the horn, or divide the horny fibres next to the vital parts; for, if blood is drawn, the horn is apt to be spoiled beyond remedy. It should be remembered that the horn is not one-eighth of an inch thick at the place mentioned. When the horn has been rasped down to an even thickness, all that is necessary to do is to keep the whole horn lubricated with an ointment made by melting together equal parts of tar and tallow.—Ex.



**Water Fowl**

Are more valued by agriculturists each year. The reason they have not been more extensively raised is because many persons suppose they must be within easy reach of a running stream or body of water. This is a false notion; a large trough or vat let into the ground and filled with water, or a small pool of sufficient size for them to wash in daily, is all the water necessary. In such cases, if possible, give fresh water each day. Under such circumstances, water fowls will give better results and less trouble than when they have access to large bodies of water. As an insect destroyer, we know of nothing to excel the duck. Why they are not more extensively bred we are at a loss to know. Comparatively few find their way to the market, but at certain seasons of the year many wild ducks are sold in our cities.

**THE ROUEN DUCK,**

Which some writers say is simply the wild mallard, is an excellent variety; being a good layer; of a quiet disposition, and will fatten very rapidly; a fine specimen will dress six or seven pounds, and weigh when alive sometimes as much as 11 lbs.

The Aylesbury ducks are very handsome, being pure white; they are considered the finest of the English breeds; are hardy and active; good layers and good mothers, and grow to a large size, though not as large as the Rouen. We have found them of rather too

wild a disposition; if kept in the vicinity of a running stream or large body of water they will give no end of trouble.

The Cayuga duck is very highly prized, being one of the best varieties; in color they are a rich metallic black; they possess a quiet disposition, and mature early; are prolific layers; are large; and their flesh is said to be of a superior quality.

The Pekin duck is of recent introduction, and is considered a valuable acquisition. They are also large, and like the Aylesbury, their plumage is pure white. Some poultry breeders say they are the best layers of the duck family, and grow to the greatest weight at an early age.

Although there are many other varieties bred in Canada, we believe the four breeds above mentioned are superior to any others.

Among the geese we consider the Emdens or Bremens and Toulouse geese superior to any other breeds with which we have had any experience. The former is white, and is considered by many

the better variety; they attain a great weight sometimes, as high as 65 lbs. per pair. The Toulouse are not so tall as the Emdens, but have a more solid appearance, and sometimes excel them in weight; in color the Toulouse resemble the English Gray Goose.

The Hong-Kong and White and Gray Chinese are bred to some extent in Ontario, but we much prefer either of the above breeds for practical purposes.

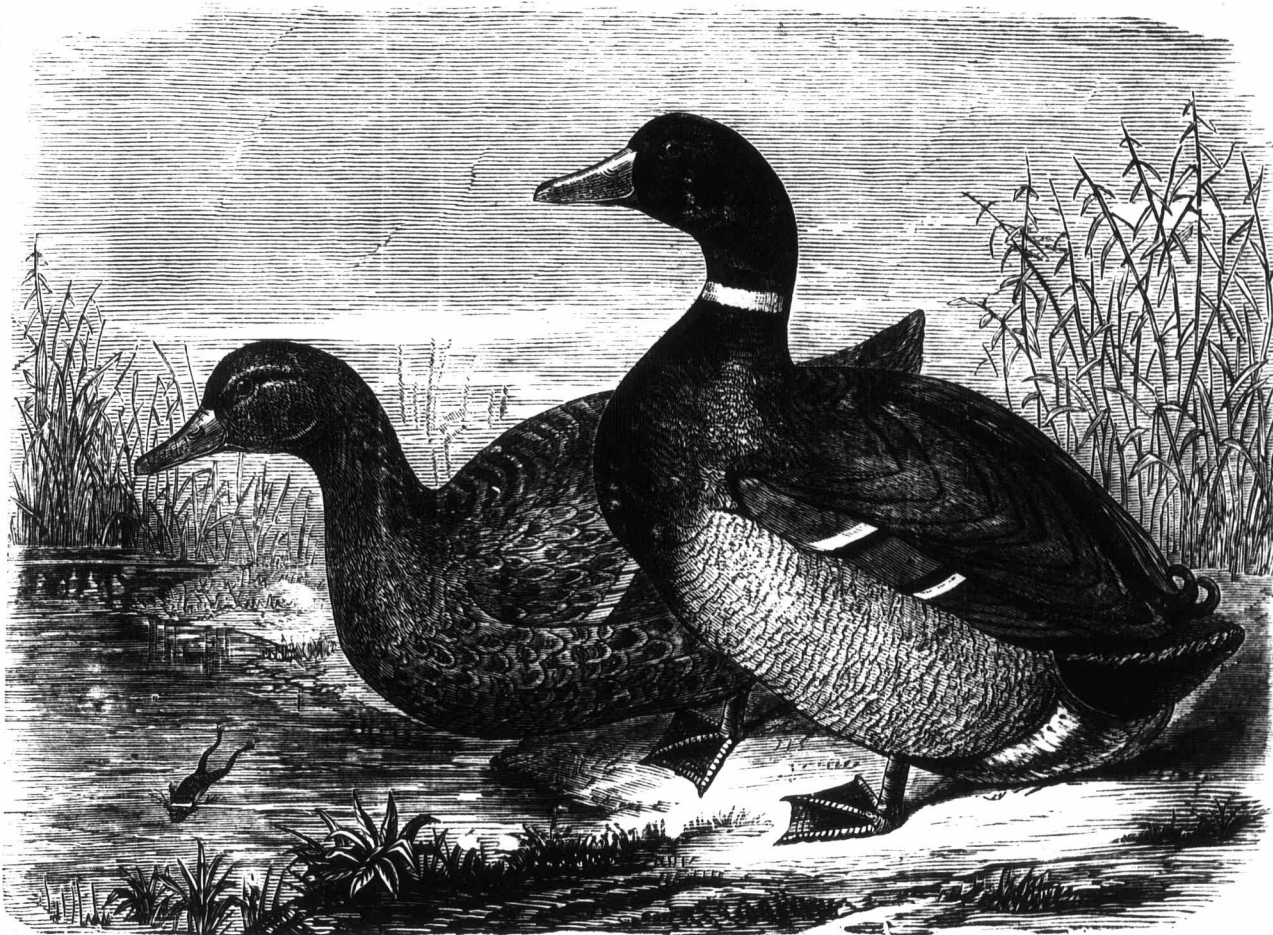
**Animal Abortion—A Remedy.**

Abortion first appeared in my dairy, and also in the dairies of one or two of my neighbors, in 1878. The disease has spread since then, and nearly all the dairies in our immediate vicinity have suffered more or less from it. At first we indulged the hope that, like the horse epizootic, it would run its course and leave, but we have been forced to the conclusion that the evil has come to stay. We should be glad to get at the cause of the trouble, but feel ourselves entirely at sea in regard to this.

became well advanced with calf, when one aborted, losing twins, and was closely followed by two others. From that time until October, 1879, when using the remedy, I lost no calves; if I stopped using it for a few weeks there were abortions. In November, 1879, having just lost three calves, I determined to give the asafetida a fair and thorough trial, and began using twice a week instead of once, as before. The result was that not a cow aborted for more than a year. About a month ago a heifer aborted, having had no asafetida for more than a month. My experience had convinced me that I had found an excellent remedy. I cannot positively say that the cows which it was given to would have aborted if they had not been given it, but it is a fact that whenever it was given a fair trial there were no abortions, but there were in every instance when I neglected to use it for any length of time.

A circumstance has just occurred which I will mention. When the heifer last spoken of aborted a month ago, in looking over some others I found one, with calf for the first time, five months advanced, whose udder was so large and full that I expected a calf from her at any hour. The case

seemed nearly hopeless, but I gave her asafetida at once and once a day after wards, and to-day the fulness of udder is entirely gone, and the heifer is apparently safe. A neighbor reports a very similar experience with a heifer in his dairy. Asafetida costs about sixty cents a pound. After cutting it into small pieces, leaving none thicker than a pea, I give to each cow that is from four to eight months with calf about as much in bulk as would be taken of powder for a shot-gun load. The best way to administer is to put the dose into the cow's feed. I now give twice a week. I hope others will give this



ROUEN DRAKE AND DUCK.

None of the theories that have been advanced explain the mystery to our satisfaction. Having no theory of my own, I will simply mention the remedy I have used and my experience with it.

Two or three years ago Mr. Wm. T. Smedley stated, in substance, that abortion had prevailed in his dairy (a large one, if I remember rightly) to such an extent that each year nearly all his cows aborted, and often a cow died from the effects. He had driven out the disease by the use of asafetida, as had also some neighbors who used the same remedy by his advice in their own dairies.

At the time I read the statement eleven of my cows had aborted in succession as fast as they were five, six or seven months with calf. According to directions given by Mr. Smedley, I began giving asafetida once a week to cows that were from four to eight months with calf. All went well for six weeks, when one day two aborted. Hastily concluding that the medicine was of no value I abandoned the use of it, and lost no calves for several months, seven or eight cows calving in the meanwhile, all having been treated with asafetida for six weeks. Supposing that the disease had left, I gave the asafetida no credit for those calves, until some cows that had been given none

remedy a trial, using it regularly and perseveringly, and report.—[R., Sussex County, N. J.]

**Packing Eggs.**

There is a mode of packing eggs by which they may be safely carried any distance, and over rough roads, without any damage. And there is another mode by which half of them may be very easily broken. The secret lies in solid packing, with an elastic material between the layers. We have watched many barrels of eggs opened without a single broken one in them; and many badly packed, which we would not have handled had they been given to us for nothing. The proper mode of packing, either in barrels, boxes, or baskets is to place first a layer of long hay or straw three inches thick in the bottom. On this scatter an inch in depth of cut hay or straw, or chaff of oats, or whatever packing is used; then place the eggs on their sides, not touching each other, and when the layer is complete, spread over them and between them the cut stuff or chaff two inches deep. Press this down gently with a piece of board, and put another layer of eggs, taking care that they do not touch each other.



## Agriculture.

## Soiling in Midsummer.

BY PROF. L. E. ARNOLD.

Where land is cheap and sparsely settled pasture very naturally forms summer food for dairy cows. Where land is plenty labor is generally scarce and high, and a dairyman can better afford to furnish land for large pastures than to pay for extra labor to increase his summer feed by cultivated crops. But in dairy districts land is seldom cheap enough to make it profitable to furnish pasture for the entire summer support. There is a season in midsummer when growth ceases and grass becomes dry and comparatively innutritious, and the cows shrink in milk for so long a time that they will not recover from the shrinkage, and the mess remains smaller for all the remaining season than it would if a full supply of green food had been continuous. Flush feeding, after a long shrinkage, does not bring back the previous flow, and greatly diminished yields become inevitable. The loss entailed by shrinkage in midsummer from food too dry or too scanty, or perhaps both, very often makes the returns of the season end in loss instead of gain. The man who prevents shrinkage by continuous supplies of green food will easily make his cows give one-third more in a season than if they depended on grass alone. This will more than pay for the extra feed. The less dependence there is on pasture the more stock can be kept on a given area. The number of cows can therefore be increased to the extent soiling relieves the pasturage. Thus a considerable addition to the income of the farm is often made.

There is also a strong reason in favor of soiling, at least a part of the season, by reason of the uncertainty of the weather. There is always a liability to suffering by drought, against which it is prudent to provide. Drought often cuts down the products of the dairy one-half, occasioning a loss no farmer can afford. The man who does not secure himself against such losses is not discreet. Men think they can afford to pay a high rate of insurance to protect themselves against loss by fire, but the loss by drought is often greater than by fire, and it comes much oftener. Every few years a drought sweeps over the country and catches hosts of farmers unprepared for it, and the result is the loss of a season's work and perhaps a debt in the bargain. No considerate man will fail to guard against such a misfortune, especially as the insurance will cost him nothing but a little thoughtfulness and attention. The insurance will consist in growing fodder corn enough to carry him through any emergency, and then if the emergency does not come he will be well paid for his trouble in saving for winter use any surplus the necessities of the summer may not consume. Fodder corn is named not because it is supposed to be better milk-producing food than anything else, but because it is more certain of a heavy growth. There is no season so dry that if corn is sown upon well prepared ground that it will not produce a large crop.

Fed alone it is an imperfect food, being deficient in flesh-forming matter, but still stock will live on it some time and do well, and when fed exclusively upon it, will give milk somewhat low flavored and watery, but far better than none. They give much better milk and more of it when the corn is fed with clover, either green or dry, or with peas and oats, sown together, or with grass or millet, all of which are rich in flesh-forming food and make a good balance for fodder corn. If one has not a clover field that he can draw

upon for something to feed with green corn, it will pay to mow a piece of stout grass early—just as it begins to head out—and dry it to feed with corn in July and August, and cut a second crop for winter, or to sow a piece of peas and oats for that purpose. It is quite as well to feed such food dried as green when it is to be used with green corn, as it seems to be an offset for the excess of water in the corn. It is thought by many that the cows give richer milk and more of it when it is so fed. If all the soiling food is to be fed green, it will be found an improvement to cut it a day or two in advance of feeding, that it may be relieved from some of its extra water. Food of some kind should be prepared for the dry season, to be ready for use as soon as pastures begin to fail, that no shrinkage may occur, and whatever it is there should be enough of it to carry the flock through any emergency, and now is the time to prepare for it, while the arrangements for the season are being planned.

## A Notable Crop of Corn.

RESULT OF THOROUGHbred SEED, FERTILE SOIL, ROOT-PRUNING AND GOOD CULTURE.

BY E. LEWIS STURTEVANT, M. D.

The past year Mr. E. F. Bowditch, of Massachusetts, raised, on seventeen and one-fourth acres of land, 3,474 bushel baskets of ears, and 52 32-100 tons of stover. This is 199 8-10 baskets per acre, or 99.8 bushels of shelled corn, farm measure, per acre, or probably 100 bushels sale corn per acre. This yield, well authenticated and reliable, will serve as a standard example of success attained through the judicious application of science to the farm practice.

The land for the crop was carefully prepared and well manured, though not heavily, but sufficient to give a good growth; the situation nor quality of the land were not the best for corn.

The foundation of this crop was laid the preceding year, by preparing the seed. It is well known by vegetable physiologists that the tendency of cross-breeding is to produce vigor in the offspring. If two seed corns, each of high character, be crossed, the produce will in all probability be a more fecund seed than either of the parents grown separately. The preceding year equal quantities of the Waushakum and Longfellow corn were mixed together and planted. From the crop thus raised, the seed corn was selected, particular care being given to pick out ears of a uniform style, of small cob, and compactly arranged grains of a large size. This was the seed for last year's attempt, and thus was it produced. In repeating this seed selection for another year, Mr. Bowditch will not depend upon last year's crop for the whole of his seed, for if he did he would be propagating toward grade instead of thoroughbred, as the new variety, the half-bred, would doubtless tend to vary even more than toward the original types; by crossing again with the Waushakum, he will secure a grain allied to that secured by the original cross, and thus diminish the future chance of loss which may come from the use of last year's crop for seed. Success in this method depends upon using for the parent seeds corn of similar types, of strong race peculiarities, and of fecund habit.

It is not difficult to find seed corns which, with good culture on rich land, will yield fifty bushels per acre. A better seed, of a fecund habit to be measured by a hundred bushel crop, may do no better under improper conditions of culture. It is only to the good farmer that the quality of the seed used assumes the highest importance. Of two seed corns, the one of a fifty-bushel power, the other of a hundred-bushel power, the same culture and care that will give the one crop will give the other. If the farmer then desires to improve his culture, he must improve the quality of his seed either by his own selection or by purchase from those who have given the proper care. No farmer can secure a large yield by any means so long as he uses a seed corn too infecund to bear the crop, as illustrated by an experience of my own some years ago, when two seed corns of similar appearance in the ear yielded the one fifty-five bushels per acre and the other just 110 bushels per acre, under as precisely similar conditions as ever can be obtained in farm practice.

This seed was planted in drills, and rather heavily seeded. As soon as the corn was up, a

smoothing harrow was used lengthwise of the rows, thus eradicating all the sprouting weeds without disturbing the more deeply rooted corn plants. After the plants were from one and a half to two feet high, the cultivator was used—one of those which straddle the rows, and whose disks cut deeply and lift the soil. This machine was run frequently, and as close to the plants as was possible and as deep as it would go. By this means the plant, whenever it obtained a rampant growth, was at once checked by the severe "root pruning," and reminded, so to speak, that its purpose was to grow grain and not leaf. This root-pruning was one of the secrets of the large crop. A neighbor, in friendly rivalry, using more manure and planting a smaller field, using more expense and greater labor in hand work, and no especial pruning, secured but seventy-eight and a half bushels of corn, and this gentleman of intelligence after careful investigation, ascribes his non-success to his not having full faith in this theory of obtaining crop through alternately stimulating and repressing growth during the cultivation of the crop.

We have, then, as an explanation and as a teaching from this success, but three leading factors: sufficient fertility, good seed, thorough and judicious cultivation with a purpose in view. Experiment and study of experience have convinced me that too much manure diminishes the merchantable crop; excessive manuring may have the excess turned to advantage through a cultivation so severe as to check each appearance of rampant crop; manure can never obviate the necessity of good seed, nor can good seed obviate the necessity for fertility of land; good seed, abundance of manure, and no cultivation will result in disappointment; good seed, sufficient fertility, and proper cultivation will always give a large crop on corn land. Of these factors, good seed assumes the greatest importance, because fertility of land and the process of cultivation are under the farmer's control, and good seed is a scarce article and difficult to obtain, and is further from his control. With good seed, the farmer can work with hope; with poor seed he seems the sport of adverse circumstances. It is with the recognition of the great importance of the character of the seed for influencing the crop that we are to hope for a general and extended improvement in quantity and quality of yield.

[We are aware many of our readers hold different opinions from Dr. Sturtevant, especially concerning root pruning. We will be glad to hear from any such; it is only by comparing our experiences with others that we can hope to come to right conclusions, and we have no doubt agriculture would make a much more rapid advance if farmers would tell their experience more freely on all agricultural topics.]

## The Influence of Grass Culture on the Growth of Cereals.

To the attention given to the pasture lands of England is to be attributed much of the grain producing capability of her soil. The Americans are in this also beginning to profit by her example. A writer in the *Prairie Farmer* urges his readers strongly to increase the area of their pastures and to sow a judicious selection of grasses as the best means of preventing the impoverishing of the soil. He says:—

"The vast increase of manures (if fed on the farms,) which will result from the consumption of this augmentation of the herbage grasses must wonderfully increase the productions of the cereals. Millions of dollars will be thus added to our income. The influence of grass culture on the growth of the cereals is very strikingly exemplified by a comparison of the agricultural statistics of France and England. France has 53 per cent. of its cultivated area under cereal cultivation, while England has but 25 per cent. Those who read this statement for the first time will be surprised to learn that notwithstanding this disparity between the areas of the grain lands in the two countries England produced five and one-ninth bushels of grain for every individual of her population, while France only produced five and a-half bushels for every individual of hers. Thus with less than one-half of the proportional area under cultivation England produces within seven-eighths of a bushel per head of what France does."



### Land Drainage.

Tile are better than stone, and if labor is to be paid for, and is worth anything, they are cheaper. If stones are at hand, and need removal to clear the land on which they lie, the farmer can afford to pay fifteen or thirty dollars per acre for tile, and dump the stone in a pile, rather than use them for covered drains. The tile are less likely to clog up with sand and mud, and cost less than half the labor to dig the drains and lay them.

One very essential point, in fact the most essential one, in drainage, is to give the drains a continuous fall. If any point is dug out too low, the water will stand there, and deposit mud until the passage becomes obstructed. It is easy enough to attain the continuous fall if there is water flowing in the ditch at the time of digging, as the water will stand at any point below the proper grade; but in case the ditch is dry and the bottom of uneven character as to hardness, it will need close watching to prevent the digger from going too deep in spots where the bottom is soft. The level is the only safe guide in such cases.

When the bottom is clay or hard gravel there is little trouble in making covered drains work well, especially where there is a good fall to the water; but when the bottom is sandy or peaty and the fall slight, much care will be required to secure good working of the drains. Stone are not satisfactory for such places and tile only are to be trusted; these should be laid on strips of rough board, if the bottom is soft, to prevent settling, and should be covered with an inch or two of tan-bark or sawdust if it can be had to prevent infiltration of mud or sand.

The best place to utilize stone is in laying open ditches, walls, etc., or making roads. To dig a covered drain for stone requires the removal of more than double the earth needed for tile, and after all is not so good a job.

It is often desirable to introduce surface water into a system of covered drains; to do this safely the only way is to let the surface water fall into a well or catch basin dug out one or two feet below the level of the drains, large enough to allow the flow of surface water to settle and deposit its mud before entering the drains; the accumulated mud will need removal as occasion requires.

The cost of the drainage of many a wet hole would be returned in one to three years of good crops, and the land thus reclaimed is usually the very best, being able to withstand drought better than high land, and containing abundance of vegetable mould.

In case the land to be drained is a pure peat bog, it will need the addition of sand or loam as well as drainage to make really good soil. Pure peat when drained becomes dry and dusty and needs the admixture of the soil to make it fertile; three or four inches of any kind of loam spread and worked in will accomplish this purpose.—[American Cultivator.]

### The Northern Limits of Some of our Nut-Bearing Trees.

Tree planting has been carried on in Ontario for a number of years, but only for ornamental purposes. In this respect the western prairies of the U. S. are far ahead of us, as tree cultivation on an extensive scale is being carried on there, and we hear with very profitable results. In Ontario, Quebec and the Maritime Provinces there is a vast amount of rough and rocky land, which is ill adapted for cultivation, but which if planted with valuable timber trees would be a source of wealth to the owner of the estate and to our Dominion at large. Below we give some interesting facts concerning some of our valuable timber trees, abridged from an essay read before the Ontario Fruit Grower's Association:

**THE BUTTERNUT** has the most northern limit, which is found to begin in the west, at the southern end of Nova Scotia; running north it passes about midway through New Brunswick, crossing the St. Lawrence River at Quebec and extending some thirty miles to the north of the city of Ottawa and Georgian Bay. This tree is the hardiest of our nut-bearing species, and the area of its growth is quite extensive, and for all practical purposes it could be replanting be maintained for all time to come. Every autumn the nuts are sold in the markets. The timber of this tree loses the name of butternut when it is cut into boards and

scantlings, and assumes that of grey walnut. The expert cabinet maker, by a certain staining process, is enabled, after the wood is worked up, to make it resemble black walnut so closely that it requires a practical eye to tell the difference.

With regard to the cultivation of this tree I speak from practical experience, when I state it is one of the very easiest grown I know of. If given anything like a square chance it will produce nuts after ten year's planting, and I believe a good saleable tree may be had of eighteen inches through, at from twenty five to thirty years from the nut.

The seeds are not in great demand at present, though I feel sure if they were advertised like other commercial products a market for them could be created, both for home, the North-west and European planting, and I have no doubt the United States alone would absorb a large quantity, if nursery men, private individuals and farmers knew where they could be procured.

Besides the value of this tree for timber and nuts, the feathery palmlike spread of its graceful leaves and clean looking stem, makes it a great object of beauty on the lawn, and for a wayside tree or a pasture shelter there is nothing gives a much denser shade, though probably if planted along our roadsides the ubiquitous boy might injure it whilst robbing the trees of their autumn nuts. Those gathered early in the season make a pickle fully equal to the walnuts of English manufacture for which Cross and Blackwell are so widely celebrated. This tree has another advantage, it never suckers. The bark is also often used by farmers' wives for imparting a rich brown to their home spun yarn, before it is manufactured into stockings, or woven into fabrics.

**BLACK WALNUT.—JUGLANS NIGRA.**—This tree closely resembles the former in shape, and the general appearance of its leaves, so much so that people accustomed to see them side by side are scarcely able to distinguish them, but by running some leaves through the hand the black walnut gives off a strong scent, while the butternut is odorless; the nut of the former is more spherical than the latter, and does not contain so much kernel as the former. This fact however does not detract from it as a suitable nut for a pickle. It is scarcely necessary to state that the wood is much more valuable and that its crotches and roots are greatly sought after for cabinet work, gun stocks, etc., and all purposes for which it is required; it brings a high price in the market.

This tree is only indigenous to a small area, extending from a point near Port Franks, on Lake Huron, running north of London nearly in a line with the Grand Trunk Railway to Toronto, and extending along the lake shore as far west as Cobourg. I am satisfied, however, these limits could be considerably extended, but even the area mentioned would give a good many thousands of acres of waste lands and side roads for planting, should no one feel disposed to trespass on the best part of his farm for the cultivation of this most valuable of all Canadian trees.

**SWEET CHESTNUT.**—This tall and handsome tree, the leaf of which much resembles the beech, but is more glossy and attractive, has a still more southerly range. The northern line of growth crosses the Detroit River, a little above Windsor, cutting across the Peninsular to Long Point, taking a northerly direction from this point on Lake Erie. Before Port Stanley is reached, the line strikes near St. Thomas, running north of Hamilton and Toronto, curves about forty miles north of Lake Ontario and runs into that lake a little further east than Port Hope.

The nut produced by this tree, though frequently sold in shops, has not a very high commercial value, as it is smaller than those cultivated in Europe. It, however, serves to indicate in the same way our wild grape does, that the better varieties might be easily grown.

Its wood is chiefly used for furniture in ladies' boudoirs and bedrooms, as it gives a bright and airy appearance to a room. Its grain is wide and open, and when oiled and varnished has a pretty light yellow color.

**HICKORY.—CARYA ALBA.**—The northern habitat of this tree is probably on a line with the butternut. The shell bark variety finds its chief home in the woods of the country of Lambton and West Middlesex. The tree is not easily cultivated as it is a slow grower and difficult of transplantation, but its wood is so valuable where its toughness and elasticity are required, that it commands a high price. It is principally used for tool handles, carriage spokes and felloes, and if grown in suffi-

ent quantities, would readily find a foreign market at remunerative prices. This tree is usually cut in its juvenile stages, when from four to six inches through at the butt, and could consequently be advantageously grown in plantations between trees used at a more mature age, which would be relieved by removing the hickories as required. If grown as proposed the nuts could be dropped where it was intended the tree should stand. The foliage of the hickory is of a light pleasant green; the rich leaf would add much to the beauty of the home surroundings. The nut deprived of its shell may be obtained from all itinerant newsboys on boats or cars.

I would strongly urge upon our farmers and others, especially those in youth or middle age, to begin at once, if they have not already done so, and prepare a suitable piece of ground, well fenced with some durable material such as cedar posts and barb wire, and obtain and plant some of the nut-bearing specimens I have spoken of. Any soil suitable for corn or wheat, having previously had a hoeing crop such as potatoes or mangolds, would suit admirably for the purpose. A half acre well plowed and planted with nuts would raise enough young trees to cover several hundred acres, or if used for roadside planting would extend a number of miles. The cost for seed, care and culture would scarcely be felt, while the beauty insured would be a lasting one.

### It Pays to Grow Forest Timber.

I tried, twenty-five years ago, to keep the original wood lot (on the farm) renewed and keep a good stand of timber, by dressing up and planting in it, and it proved a failure. But I am now growing all the timber I want on the farm by planting seedlings, which I have propagated of such thrifty kinds as I choose and in such rows and belts for windbreaks and protection as my orchards and fields require. These trees are making very satisfactory growth, and it is all done very cheaply. So that I would recommend all farmers to plant groves and belts of timber, as their farms and locations require, and they would find that after a few years they might clear off their original woods and have acres of new land to cultivate, besides having a new and thrifty growth of timber instead of decaying forest timber, and would have it where it would be both useful and ornamental to the premises; besides the crop of old timber would probably much more than pay the cost of starting the new timber growth. Five or six years ago I planted two acres of four-year old seedlings of white elm and soft maple, in rows sixteen feet apart and three feet apart in the row, and now the best of them are twenty feet high and twelve inches in circumference, and for thinning out the rows I sell trees for more money than wheat would have brought grown in the same years, and can continue to sell until they are so large that I will take them for fire wood. I am growing a good crop of orchard grass between the rows, so that these acres in forest timber are paying as well, and are likely for years to come, as any other acres on the farm. I am cutting now the second crop of wood where the first or original wood was taken off about twenty-five years ago, and last winter a thousand rails were taken by a neighbor from one-third of an acre of similar growth, besides a quantity of wood from their tops and timber not taking rails. Another neighbor used the black walnut in building a house, hewed from trees that he had helped to plant when a boy. Our village of Batavia is admired for its fine rows of thickly growing forest trees along the streets. One soft maple on Main street was broken down by wind, and when cut up made two and a quarter cords of eighteen-inch wood, and the owner of it said he planted it there twenty-one years before; the stump measured nineteen inches in diameter, inside of the bark, and I could count about twenty circles outside of its red heart. Other trees on the same street were planted seventeen years ago last spring. The largest elm measures four feet around, two feet above the ground, and a maple measures three feet eight inches. I could give many more facts and figures to show that it does pay Americans to plant forest trees both for fuel and timber, and hold that very few enterprises they can take hold of will pay better. H. IVES.

Tansy tea, poured over cabbage plants after they begin to head, is said to have been found during two seasons a sure defence against the green worm.



## Garden and Orchard.

## How to Grow Evergreens.

BY HORTUS.

To no class of trees are we under such an obligation as to the evergreen family. Our country would be poor, indeed, if it were not that we are possessed of vast forests of pine and cedar, which have in a great measure built up our country. We are still, fortunately, possessed of millions of acres of forestry, but so fast is it disappearing before the axe of the lumberman, that it becomes an important question in the political economy of our country how we should husband our present supply and increase it by replanting. This we will not enter into now at length, but briefly give a few hints respecting the manner of growing and transplanting evergreens; and first the most valuable one for the several purposes of shelter, ornament, &c., is the Norway spruce. This evergreen is pretty well known throughout, having been disseminated by the nurserymen of the States and at home. It is indigenous in Norway, from whence it takes its name, and in northern Europe. Here, amid the mountains and glens, and foaming torrents of the land in which it delights to dwell, it presents from its towering height and graceful proportions a most beautiful appearance. From the abundance of our native pines, and the superiority of the timber, the wood of the Norway spruce will never be of much value here, but in Europe, not so blessed as we are, the wood of the Norway spruce is of considerable value, and is known as white deal to distinguish it from the "red deal" of the Scotch fir.

The main product of the tree is the Burgundy pitch in chemists' shops, and is nothing more than the hardened sap or resin, melted and clarified by boiling in water. We do not imagine that it will ever become an article of commerce. The Norway spruce is exceedingly hardy and a very rapid grower. It germinates easily from seeds, which it produces abundantly in cones like others of the fir tribe. In Canada here it would not pay to grow from seeds in small quantities. Large growers even find it less expensive to import from the nurseries of Great Britain. Thousands are thus annually imported, and it would well pay the farmer to invest a few hundred dollars in an enterprise of this sort. The time for ordering them would be from the middle of January to the middle of February. This time is necessary to allow the nurseryman time to assort and select the orders sent him, so as to have all ready for shipping to Canada from the 1st to the middle of March. The plants to be ordered should be twice transplanted; they are furnished at a price so low as to cause surprise how it could pay for labor. They are packed in large crates in dry moss. They arrive usually in fine condition. They should be unpacked, and if the ground will permit should be trenched in layers thinly, tramping the earth firmly, and giving all a good watering. The young tops should be protected from the night frosts and bleak winds we have in spring, till the weather becomes mild and warm. Planting may be deferred till the middle of May. The Norway spruce succeeds in all good soils, but seemingly thrives better in those moderately stiff. The ground should be prepared as for growing roots and well enriched. Great care should be taken not to allow any manure near the roots. And here allow us to say that all we have said in reference to procuring young plants of the Norway spruce, the care necessary on reception of same and the mode of planting, will equally apply to all other evergreens that we can grow here, such as

Austrian pines, Scotch and Swiss pines, Nordmann's spruce, cedars and larch, and all other kinds of the pine sub-family, and cedar hardy enough for cultivation in Canada. A cloudy day should be selected to commence planting, but if the weather is hot and sunny, a little extra care in keeping from the sun will be all that's necessary. The roots should be dipped in thick mud and kept moist all the time; dig the trench about six inches deep and place the plants a foot apart; be sure and tread the soil in firmly. As to the manner of planting expeditiously, we refer our reader to article on the Berberry, appearing in the *ADVOCATE* for March. Have the rows about two feet apart; here the plants may remain for say two or three years, when each alternate row may be removed, thus leaving remaining rows four feet apart. The cultivation required is the same as for a good crop of corn. Great difficulty is frequently experienced in transplanting pines; their natural tendency when undisturbed is to make but few roots, and these of a long thread-like character possessing no fibres. These, when digging up, are almost impossible to preserve intact, and they consequently in this condition require extraordinary care in transplanting. To obviate this the trees when young should be frequently transplanted, say every two years; this will cause them to produce numberless fibres, and they can then be easily transplanted where they are finally to grow. It is not necessary to dig them up altogether in this primary transplanting, but merely dig alongside, and cut underneath with spade, leaving the tree where it stood and firming the soil around it afterwards. A very useful machine for this purpose, now considered indispensable by large growers, is what is called the tree digger. This consists of a strong steel blade in the shape of the letter U, with strong handles and attachments for hitching horses to. This scoops right down underneath the plants, cutting the roots, but otherwise does not disturb the tree.

Evergreens may be transplanted all the season around; the writer would as soon plant in August or September as in May or June. All that is necessary is to see that roots are not exposed very long to sun or wind. All varieties of evergreens succeed admirably in plantations by themselves, but never thrive when crowded indiscriminately amongst deciduous trees, the drip from these soon destroying the foliage of either pine or spruce. In the natural forests of pine, the young plants being the produce of different years, and consequently of different sizes, the stronger gradually destroy the weaker, until the wood is reduced to the distances at which the trees can ultimately stand whilst the lateral gradually decay and fall off, so that thinning and pruning are quite necessary. In short, a natural or self-sown forest of pines is left entirely to nature. Nature sows the seed and rears the tree, prunes and thins the tree, and the hand of man is applied only to cut it down when fit for timber. When woods are planted the trees will be usually of the same age and size; then it will be absolutely necessary to thin them. For hedges all evergreens are suitable, but the Norway spruce is the most preferable; planted three feet apart it soon makes a hedge without further care. An annual shortening of the leading tips will do much to preserve the evenness of the hedge.

For all purposes we prefer to let the trees grow naturally without clipping. An even, close, clipped hedge is right enough in confined places, but outside in large fields we consider a trimmed hedge only an object for morbid curiosity.

Some excellent authorities on the subject say they prefer pure redtop for lawns to a mixture of grasses.

## Select and Prepare Grounds for Fruit Culture.

A fruit culturist, writing to an exchange, says: "The Baldwin apple suffered more in the winter of 1856-57 than any other, and somewhat in hard seasons before; also during two hard winters since that time, but in all these winters was not injured on the top of the highest hills. All trees ripen earlier on high hills than in valleys, as may be seen by observing every fall the early oxydation of the leaves, causing the variegated hues upon the trees on hills, while in the valleys the leaves remain green and are often frozen to the twigs, as they were in the late fall and winter of 1856-57."

That "depends," however. For the early and thorough ripening of the wood on the hill is chiefly due to the want of water to continue growth in August and September. In seasons when such heavy and continued rain occurs in August as to saturate even all the dry slopes, trees make a second growth on high ground as well as low; and if this is begun late, or continued so late as to fail of full ripeness before a sharp freeze occurs, we see the leaves hanging frozen while still green on both upland and lowland. But of course there is usually more liability both to protracted second growth and to severe November freezing in the valleys than on the hills.

All fruit gardens and orchards should be well underdrained, and the cultivator should in every possible way aid nature to accomplish the best results.

## Peas.

A most delicious vegetable is the garden pea. This may be grown in great variety so as to mature at regular intervals during the Summer and Fall. One mistake made in growing peas is to have the ground too rich. This produces vines instead of pods. Another mistake is in not planting early and late peas at the same time. A great gap is thus made in the supply at a season when the want is much felt. Last season I succeeded, after many attempts, in having peas all through the season. Early in April two rows of each of the following varieties were planted on the same day. The picking began on the 25th of May and lasted until the 28th of June. A second planting was made on the 20th of April and a third late in May. Another planting was made in the field with oats for a fodder crop in June. The varieties were Landreth's Extra Early, Carter's First Crop, Tom Thumb, Alpha, Blue Peter, Advancer, Little Gem, Dwarf Marrowfat, Laxton's Prolific, Champion of England and Challenger. These are set down in the order in which they matured. The kind planted for fodder was the large black-eyed marrowfat. A quart of each of these varieties will give a good daily supply for a moderate family and leave some for canning or drying. It may be a pertinent hint just now that it is a good time to get a supply of peasticks.—[Ex.]

THE CARNATION.—The cultivation of the carnation is very simple. It is rooted from cuttings at any time from October to April or May, and as the plant is almost hardy, it may be planted out with safety in the open ground in early spring, as soon as cabbage, lettuce, or any other plant of that nature. Many, for want of this knowledge, keep carnations in house or pot until such time as hardy plants are set out, or later in the season, thereby not only having the trouble of taking care of them, but depriving them of a longer season well adapted to their growth. They are best placed out in beds of six rows, nine inches apart, and the same distance between the plants, with eighteen inch alleys between the beds. The carnation is very impatient of a wet soil, and care should be taken that the land be made dry by draining or otherwise. As the carnations grow they throw up flower shoots, which should be cut off all through the season until about the 1st or 15th September. If the plants are wanted for winter flowering, the cutting back of the flower shoots induces a dwarf and stocky growth, which is very desirable in the carnation. If only a few are required to mix in with a general collection of plants, it is more convenient to grow them in pots, so that they may be moved about as may be necessary. Of the varieties grown we have only a few suited for winter flowering. Of these, the most productive is La Purite, a deep carmine variety, and a variegated variety of it; among whites, Maimie and Delsew, and in yellows, Astoria and DeFontana take the lead. Roots from cuttings may be procured from nurserymen in April and May.



CORRESPONDENCE



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PRIZE ESSAY.

We will give \$5 for the best essay on saving and applying liquid manure, essay to be in our office by the 20th of June.

TURNIPS FOR STOCK.

SIR,—In looking over the April number of the ADVOCATE, I saw a pretty long account on cattle foods compared, making turnips and other roots nearly worthless for feeding purposes. I confess I know nothing of the way he makes that out, as I know nothing of chemistry; but I know that cattle or sheep will fatten on turnips and straw, without any grain at all.

In Scotland, where I came from, they put lean sheep on turnips in the fall, and took them right off to Morpeth, in the latter end of winter, without getting anything else but the turnips fat enough for Newcastle colliers, and nothing lean will suit them. This is done with white turnips, which I consider a long way inferior to the swedes.

I have had 900 bushels of swedes to the acre, instead of 400.

And, Mr. Editor, I take notice that the root growing farmers have the best farms, and as a general thing are apparently more prosperous than those who don't raise roots.

A WESTMINSTER FARMER.

CURING CORN FODDER.

SIR,—Would you in the next issue of your paper give a description of the best mode of curing corn fodder? We in this county have never used it or seen it used for fodder. We have the finest county here in the Maritime Provinces, but a very primitive and bad system of farming.

X., Antigonish, N. S.

[When using corn for a soiling crop, it may be cut as soon as it is large enough; but to procure the most feed from a given amount of ground do not cut before it tassels out. When growing it for winter fodder cut when the ear is well formed, but before it begins to harden. In cases where varieties are grown which do not ripen in the locality where they are sown, cut in time to cure before the fall frosts come. Sweet corn is highly recommended for fodder. Prof. S. A. Knapp says "that in practical feeding, as nearly as could be estimated by substituting corn and hay for sweet corn fodder, an acre of the latter is equal to four tons of hay and eighty bushels of corn."]

SHEEP FOR THE N. W.

SIR,—Which kind of sheep do you think best suited to this part of the Dominion?

A. G., Lake Francis, Manitoba.

[No variety of sheep do well on very flat, wet land; but when the land is dry and fertile, we have no doubt any of the long wools or downs will be successful. We believe the general farmer will find most profit in breeding good market animals. Many make a great mistake by investing a large amount of money in pure-bred females. We do not deprecate pure-bred animals, for we know them to be of great value, but we believe the general farmer will find it more to his advantage to buy as good females as he can procure at a moderate price; on these use a pure-bred ram of some desirable breed—Cotswolds and Shropshires are most in favor now.]

BLOATING IN COWS.

SIR,—Believing that you are deeply interested in all that pertains to the welfare of the farming community, and that you desire to see farmers intelligently acting upon scientific principles rather than following the erroneous and misguided theories of their ancestors, I submit the following case to your judgment, and request your opinion upon it:

My neighbor's cow eat about (as nearly as could be ascertained) half a bushel of wheat screenings on Saturday. She was not noticed to be sick until Tuesday morning, when she bloated considerably. The owner at once called in a neighbor, and they gave her a dose of salts. This did not appear to relieve her, though she passed a little fluid manure. In the evening I went to see her. She was standing up moving her hind feet uneasily, and appeared to be in great pain, occasionally moaning. Her time for calving was overdue. One neighbor attempted to punctuate her to release the gas, but the knife did not enter the stomach, as we found on opening her afterwards. Still it caused her to belch up wind, and pass a little watery stuff. She did not eat or drink. The next day a cow doctor was sent for. As soon as he saw her he said, "The cow has been sick for two months; she is hide-bound and has hollow horn." He rubbed turpentine in her head between the horns, and gave her something which he brought with him, to physic her. She got gradually worse, though the bloating somewhat subsided, and she died in the night. The cow-doctor's dose did not affect her, only she shook her head a little. Next day we opened her. She had not more wind in her than usually is the case. Her stomach contained some undigested hay and fodder, and a large quantity of wheat, and a still larger quantity of water or liquid manure. It was very sour. The calf was perfect, and lay right for passing from the cow. The kidneys did not appear quite healthy. The puncture did not affect her, having only passed through the hide. The cow was not poor nor hide-bound, but in fair order. Query—What was the cause of death? Was it the cow-doctor's ever-ready hollow horn? Was it that the gas interfered with the passage of the calf when it should have left the cow, and stifled it? Or were we all at sea in our surmises? Please give your opinion as to the cause of death, and the proper mode of treatment in such cases, and oblige,

International Bridge, Ont. VETERINARY.

[From the description that you give we are of the opinion that the cow died from gastritis, caused by fermentation going on in the stomach after eating a quantity of wheat. You did right by giving a dose of purgative medicine, but you should have followed up by giving her some medicine to neutralize the gas, such as a pint of raw linseed oil with two ounces of turpentine or two drachms of liquid ammonia in the oil, or from one to two ounces sulphuric ether every two hours in cold water or oil. It would have been proper to give her two ounces of baking soda in a pint of warm beer every two hours, and an injection of warm water with a little soap rubbed in it. If she was bloated very much you should have tapped her. This is done in a spot on the left side at equal distances from the point of the hip, the last rib and the back bone. The proper instruments to do it with are the trocar and canula, but where they are not to hand it can be safely done with a long-bladed knife. A veterinary who doctors for hollow horn does not know his business, and should be let severely alone.]

SIR,—Shortly after arriving from England I saw a number of your paper, and was so well pleased with it that I at once subscribed. I find the stock in this vicinity is very inferior, and as I have located here, I desire to improve the herd I have bought by using a Shorthorn bull. Where could I get one? J. C. R., Evor Dale Falls, Ont.

[In our Breeders' Directory will be found the names of several breeders of Shorthorns. Apply to them for particulars.]

SIR,—In the Feb. No. of the ADVOCATE, page 26, you will find a notice of a "tuber" called Red Brazilian Artichoke. Can you tell me where it can be found; cost per bush, &c.; whether it requires any particular *modus operandi* to propagate it? G. W. W., Port Barwell.

[We have made inquiries concerning this plant, and so far as we can ascertain, it differs little from the common artichoke, being simply an improvement made by careful cultivation.]

HOW TO PREVENT SMUT.

SIR,—We are greatly troubled with smut in our wheat, to prevent which some people apply blue stone, and others lime. Which do you think is best? If lime, how would you apply it. The golden drop is the worst for smutting. The life is comparatively clear of it. Yours truly,

K. T. S., Little Saskatchewan, N. W. T.

[We have in former numbers treated on smut, but many who were not then among our subscribers require words of advice on the subject. Blue vitriol has been more used as a remedy for smut than any other of the many used, and is very effectual. The following is recommended on good authority:—Make a strong solution of Glauber's salt (sulphate of soda.) The wheat is then steeped in the solution and dried off with powdered quicklime. Its effect is to decompose the sulphate of soda, the sulphuric acid combining with the lime to make sulphate of lime or gypsum while the caustic lime is left behind to destroy the spores of the parasite. The remedy we were in the habit of using was a strong brine, so strong as to float an egg. In this we steeped the wheat for a short time, then took it out of the brine and dried it with quicklime. It is an old remedy, very simple and efficacious.]

SHELL MARL.

SIR,—I send you herewith copy of an analysis of shell marl, found in this section. Is it any good as a fertilizer? Will it do any good on a clay loam?

The following is an analysis of sample of shell marl:—Carbonate of lime, .90; organic matter (vegetable), 7.65; silica, 1.10; oxide of iron and alumi, .50; phosphoric acid, traces; sulphuric, traces; potash, soda, moisture, &c, 75.

SUBSCRIBER.

[Where lime would benefit the soil the above would be found of about as much value as slacked lime, which had been exposed to the weather for some time.]

SCALES ON OLEANDERS.

SIR,—Can you give me any information respecting a disease which has appeared on my oleander. The leaves first become covered with black spots, then wither and drop off. I should like to know the cause, and whether there is any remedy.

B. J., Annapolis, N. S.

[The black spots on the leaves of your oleander are scales, produced by insects, commencing on the back of the leaves and progressing through the leaf to the front. The disease is caused by the extreme drought of the soil, and consequently of the plant. The remedy is:—Take off all the leaves and cut down the plant. The remaining stem will produce young leaves and the plant will be healthy with due care.]

FREQUENCY OF DRAINS.

To J. S., Kintail:—The frequency of drains ought to depend on the depth to which the drains are sunk, and to the degree of facility given to the passage of the water by the stiffness or porosity of the soil and subsoil. Very heavy soils require drains not very far apart. It has been proved by the experience of those who have been much engaged in draining that the intervals between drains should not be more than twenty-four feet in clay soils, nor less than thirty to thirty-six feet in ordinary lands, the width of the intervals to be determined somewhat on the depth of the drains. Deep draining, where it can be accomplished, is to be preferred; nor is the expense greater, as fewer drains will be required.

SIR,—Shortly after being stabled in the fall, for the last few years, my cows seem to get itchy, and as soon as they are let out begin to lick and scratch the hair off, and do not seem to be doing as well as they should. Can you give me a remedy?

A SUBSCRIBER, Glencoe, Ont.

[Examine and see if you can find any vermin on them. If hens have been in the same building it likely comes from them, and if so remove the hens to another building and whitewash the walls and roost to get rid of the lice. Give your cattle plenty of sulphur and salt mixed with their food.]



## PROF. BROWN CRITICISED.

SIR,—I am much surprised at Prof. Brown's remarks on cheese-making. I have had transactions with cheese factories for a number of years, and butter factories for the last four years. Mr. Brown should have taken an average of seven or eight months' milk to decide such a case for practical purposes. The farmers don't want experiments in such cases for a day or two, but for a whole season. I have known where a factory has yielded 1 lb. of cheese from 9½ lbs. milk through the season of six months, and when it has taken 10½ lbs. milk for 1 lb. of cheese for a like term. Again, in November, I have known 1 lb. of cheese made from 7½ lbs. of milk. The Devon cow, though very good, will not give such results through the milk season as Prof. Brown states. As to butter—in the creameries or butter factories I find that 3½ lbs. of butter to the 100 lbs. of milk is a top average where the milk is skimmed for skim cheese, which is the case in those to which I refer. I mean for the 6 or 7 months' season, but the cheese made from milk so skimmed has not "a particle of grease in it," as the buyer states, yet such cheese has sold at the factories during last summer at from 8 to 9 cents per lb. Other creameries I know have made scarcely 3 lbs. of butter to the hundred lbs. of milk, seasons average; but the cheese is, of course, better. I have kept books for both cheese factories and creameries, and know the results from actual figures. I did so last year, and in the cheese factories the milk netted the patrons from 9½c. in some to 10c. in others for 10 lbs. milk delivered—very few, yet some factories went over 10c.—for six months' season. Two creameries close by me have paid 10 7-10 cents for 10 lbs. milk for the six months season. One creamery has paid 11½c. for 10 lbs. milk delivered at the creamery, the maker receiving 20c. per 100 lbs. for making it into butter and cheese, and furnishing all requisites himself. Of the butter factories without making cheese I have no knowledge, but cannot think the sour milk worth as much as the skim cheese made in a good creamery. Were it of any use I could give you a list of prices paid for creamery skim cheese and for full milk cheese made in the same months. In a good creamery, well and carefully managed, 7½ lbs. of cheese and 3½ lbs. of butter can be made from 100 lbs. of milk during the season of seven months, by using Joselyn's Prescription for saponifying the fats left in the milk, and for removing the acids from the buttermilk, which is taken from the churn to the milk vat to mix with the skim milk. One creamery, about fifteen miles from here, I am told, netted the patrons nearly 12c. for 10 lbs. milk. It is a union factory, well conducted, and the whole proceeds, less the actual expenses, are divided amongst the patrons. The butter and cheese were removed from the factory at about every two weeks, and was contracted in advance. The cheese was very fine skim cheese, and the butter was good. I weighed the last lot of cheese and butter, and therefore can speak for it.

G. L. L., Caintown P.O., Leeds Co., Ont.

## FIFTEEN QUARTS OF MILK PER DAY.

SIR,—I have been well satisfied with the ADVOCATE during the past year, and feel that I would not be doing you justice if I did not send in my subscription and the name of a new subscriber. The ADVOCATE is not only the farmer's friend, but useful in any home. It is from such we get valuable information from all parts of the Dominion. I asked a friend if he took the ADVOCATE. He said he had taken it the last year, and scarcely looked in them, and thought it did not pay. Well, I do not think it pays to take a paper or book, lay it away on the shelf, and keep up the old notions that our great grandfathers entertained.

This may be a hint for some one of your subscribers. I keep two cows and have seven acres of pasture, formerly in one field. It was not sufficient for them, and I used to get them in my neighbors' pastures for a few weeks. Two years ago I fenced it across, since which time I have plenty of feed and enough for the third cow which I intend to keep this season. I think, if farmers would clear their pastures and build more fences it would pay them two fold; It pays to have green fodder for the dry season. Last season I sowed a small patch of white globe turnips, with a small piece of prickly comfrey. Instead of getting ten to eleven quarts of milk per day from each cow, I got fourteen to fifteen quarts. So much in favor of green fodder. J.F.D., Hebron, Yarmouth, Ont.

## LAND PLASTER.

SIR,—The above name has become the universally accepted appellation for gypsum in the ground state. This is almost unfortunate because it gives a chance to manufacturers to depart from the pure substance and adulterate the article. Gypsum is, when chemically pure, absolutely white, but the impure rock makes, when ground, a grey substance, which is commonly known as "grey land plaster." The color of this latter is a proof patent that it is not pure, and once the white appearance is lost it can be adulterated with other rock to any extent.

Those who have seen the report of the Ontario Agricultural Commission will remark that it is conclusively proved therein that it is impossible to adulterate gypsum or white land plaster, for the simple reason that there is nothing it would pay to adulterate it with, while the very color and extra weight of grey land plaster shews it is adulterated with limestone and clay, shale, &c., to what extent the chemist alone can tell.

Many farmers, because they are not charged thirty or forty dollars a ton for gypsum, imagine it is an inferior fertilizer.

Pure gypsum is superior to the average artificial fertilizer, because these are largely composed of land plaster and the other constituents are often inferior to gypsum as fertilizers. We know superphosphate establishments in the States where hundreds of tons of gypsum are used every year. Even at home it would be interesting to have some of the "superior" fertilizers analysed.

Gypsum, used when moisture is needed, or where there are any gases escaping is, without doubt, the best fertilizer in the world. Besides attracting the moisture, its greatest virtue lies in its power of seizing on escaping ammonia from decomposing plant life or from manure (either in the heap or spread on the field), and forming by a natural chemical process the most valuable of stimulants to the plant life, namely, ammonium sulphate.

Ask any of your neighbors who keep stock what he thinks of land plaster for his clover. When the result of the application of any fertilizer is visible to the eye, what must be the difference of yield per acre? It is impossible ever to calculate it out very closely, but the return for anything laid out on fertilizers is something enormous; as a rule from ten to twenty times the expenditure. Professor R. C. Kedzie, of Michigan State Agricultural College, after experimenting in the College Park, states:—"At the rate of yield on the State Farm every ton of plaster returns a profit to the farmer of from \$100 to \$200 at the least calculation."

Nearer home Mr. James Cowan, Government arbitrator, of Waterloo Township, testified before the Ontario Agricultural Commission, that from his farm of 500 acres "without gypsum he did not think he could have made more than one-half the money that he had done."

We advise farmers or anyone that has a stable to keep it there and throw it under the bedding at night. It will save the ammoniacal urine, and when thrown on the manure heap will keep the gases from escaping, which carry off the virtue of the manure. W. M.

## WILL DECAYING WOOD INJURE CHEESE?—

"Will the sawdust, bark, chips and debris which accumulate about a saw mill injure cheese while curing near by?" [The substances which do harm by decaying near cheese consist of all kinds of animal matter, including both the solid and liquid excretion of animals, and all vegetable matter which would support the higher forms of animal life, such as grain, fruit, edible roots and tubers, grass, leaves, etc., all of which contain considerable nitrogen in the form of albuminous or flesh forming material. The natural refuse about a saw mill does not belong to the flesh-formers, but to the carb-hydrates, and have not enough nitrogen in their composition to produce any appreciable effect, especially while lying open to the weather so that all matters as fast as they become soluble by decomposition are washed away by the rains. There is hardly anything emanating from mouldering sawdust, etc., but carbonic acid gas and the seeds of blue mold, both of which are harmless to curing cheese. The spores of blue mold, which are given off in immense quantity, so far from being injurious to cheese, are sought for and developed in some of the best varieties of cheese made in France and England. There would be less objection to setting a curing room over a pile of sawdust than setting it within twenty rods of a hog pen or by a stinking whey-vat.]—Ex.

## WESTERN ONTARIO DAIRYMEN'S ASSOCIATION, ETC.

SIR,—The ADVOCATE for March has just reached me, and as usual is replete with useful information. I must beg to offer a few remarks on some of the items therein contained. And first, as to the report of the Western Ontario Dairymen's Association. How could you, Mr. Editor, possibly be so innocent as to make such an offer as you did to publish, free, gratis, selected matters of interest to the farming community, so as to save the Association the trouble of publishing some thousands of copies at the public expense? Could you not have perceived that the acceptance of your liberal offer would have deprived them of the pleasure of benefiting some esteemed friend by giving him the job of printing and publishing their report? Whether the money so expended is wasted or not, so far as the farmers are concerned, does not matter to them. They will not have to defray the expense out of their own pockets. It is unfortunate for the farmers that politics should have become so mixed up with everything of a public nature. If politics could be confined to parliamentary elections matters would not be so bad, but they seem to have become a ruling power in municipal elections also, and so long as farmers will allow themselves to be influenced by political motives there is no help for it.

The latest novelty in New York appears to be a corner in eggs, and when our speculative go-ahead neighbors have worked out that I would suggest that they should get up a corner in rats. The rat skins might be dressed and manufactured into ladies' kid gloves and the flesh might be chopped up into sausage meat, which, if well seasoned with cayenne pepper, would not be more unwholesome than their trichinosis pork or some of their artificial preparations which they are trying to palm off on the public as butter. Would it not be well if the Dominion Parliament were to pass a law providing for the appointment of an inspector to inspect all butter brought to market and branding it for what it really is—oleomargarine, suetine, butterine, soapstone, etc.? So that at least purchasers might know what they are getting for their money, and if they prefer when they ask for butter to be put off with a stone, it would be their own fault.

One of your correspondents asks how to proceed when fruit trees are gnawed by mice. I have had a little experience that way, and will tell him: If the mice have only cut through the outer bark he may throw a little earth over the cuts, either by hand, or, if the trees are small, with a plow. If the bark is cut completely through all round the trees, your advice to dig them up and plant others is probably the best if the trees are young; but if they are bearing trees a young twig inserted with one end below and the other above the girdled part on two sides of the tree may save the tree, and if the girdled part is banked up to exclude the weather, the bark will grow over it again, and the tree will be nothing the worse for it. In fact if the tree has been growing fast it will be rather the better for it, as by checking the flow of sap it would be equivalent to root forming.

Another wishes to know how to prevent hens from eating their eggs, and I have had a little experience in that way also. Several years ago I was residing in a place where I had only a few hens, and could not readily replace them if killed. Having a hen which was accustomed to lay every other day, and always ate her eggs, I caught her one morning, brought her into the house, placed her in a flour barrel and threw a bag over the barrel to exclude the light, as hens will not eat their eggs unless they can see them. The hen tried the plan of passive resistance until nearly evening, when finding further resistance useless she gave up and laid her egg, and was allowed to go free. The second day after I tried the same plan again; this time she held out for three or four hours, and having laid her egg was restored to liberty. The second day after that I tried the same plan again; this time she laid about an hour after being shut up, and from that time I had no more trouble with her. Another way is to place pieces of chalk about the size and shape of an egg in the hen's nest. They will peck at that, and when they find themselves disappointed will not again attempt it. Also place a box of air slaked lime in their way so they can help themselves when they want it. Egg shells broken up small should be mixed with their food, or burnt bones broken up in small pieces, which supply the place of both bone and gravel. Give a little animal food of some sort occasionally.



As for the weather during the last winter, we have had a fair share of frost and snow, though perhaps less than they had in many other places. I have not noticed my thermometer lower than 5° below zero for the winter, and that at a time when it was 22° below zero at Owen Sound. I account for this partly by the influence of the latent heat from the Bay, and partly, but still more from our situation on a hill, as experiments have proved that the mercury never falls so low on a hill as it does in the valley below.

A few English sparrows paid us a visit one day last winter, but they appear to prefer the village of Presquile, probably because they find more food and shelter there. These hardy little immigrants appear to be increasing so fast all over the Province that fears are entertained of their becoming a nuisance in a year or two. Let us hope that an increase in the number of sparrows will lead to a diminution in the number of the caterpillars.

The cultivation of fall wheat is increasing in this section of the country, and that of spring wheat diminishing, but if every farmer would discontinue sowing spring wheat for a year or two we might hope to get rid of the midge. Rust in all cases seems to depend mainly on the weather, which, fortunately, is in wiser hands than ours. We had our full share of rust and midge last year. As one old Dutch farmer said, the blacksmith and the taxes took one half of his wheat, and the rust and the midge took the other half, so there was nothing left for himself.

Root crops of all kinds were good last year, and the potato bug not as numerous as usual. If some of those boys who are always in mischief would catch a few English sparrows next June, put them in a cage and teach them to eat potato bugs, and then turn them loose into a potato patch, they might effect sufficient good to counterbalance their apple-stealing propensities.

SARAWAK.

THE PROSPECTS OF BARLEY-GROWERS FOR 1881.

SIR,—To the uncertainties of profit from any crop in advance, there are some to be added to the uncertainties of barley-growing peculiar to barley itself. We can do no more than speculate with reasonable certainty what may be the yield and profit of wheat and oats. For these, however, there is a certain market; but that there may be a market—a home market—for barley is, we are told, somewhat doubtful, partly owing to the fact that this cereal is little used in Canada, except for brewing, and that strenuous efforts are made to prohibit the brewing of malt liquors; and scientific men are endeavoring to make corn a substitute for barley. Either of these efforts would, if successful, seriously interfere with our barley market.

As to barley, there is need of a change in the uses for which it is grown. Why should we in this matter be altogether dependent upon the brewer and the exporter for a market for this grain? On the continent of Europe barley bread forms no inconsiderable portion of the food of the inhabitants. It is both nutritious and palatable. Barley graded lower than No 1 should be fed by the farmer to his horses, and fattening stock. For this purpose it is worth at least as much as it will bring in the market. Were this generally done, it would have a tendency to enhance the value of malting samples. Barley malt has been long held in high esteem by English stock-feeders for cattle. Barley can be easily converted into malt for feeding purposes. One hundred pounds of barley yield about eighty pounds of malt.

We have no doubt of the profit of barley-growing in seasons at all favorable. There is for Canadian matting barley a good demand in the United States, where it is now bringing \$1 per bushel—a higher price per cental than any other grain. Our barley is admitted to be of superior quality. Canadian climate and soil are well adapted to it; it is well suited to a northern climate. It well pays good cultivation on almost any soil, though succeeding best on land lighter than a wheat soil. The hardness of the husk, on which much of its relative value depends, is influenced by soil, climate and cultivation. On clay lands we have grown some very good crops—heavier than on lighter soil, but not of equal quality—not so light in color or so good for malting.

The earlier in spring barley is sown the better, care being always taken not to till or sow when the soil is wet or cold. The malt duties have been repealed in England in favor of agriculture. Should we not have the same privilege of converting our barley into malt for stock feeding? Such a measure would enable us to feed beef more profitably for the European markets.

BARLEY, Paisley, Ont.

HOW TO SAVE YOUR SMALL FRUITS.

SIR,—I notice frequent enquiries in the ADVOCATE respecting insects injurious to small fruits, especially currant and gooseberry bushes. "A. M." Glencoe, Ont., writes despondingly—his painstaking efforts, it appears, "failed to protect the fruit." For the information of "A. M." and others so circumstanced, I will write that which possibly may throw some light on this vexed question. In this outlandish place where I reside we have all the most celebrated insects known to entomologists, such as leaf-rollers, leaf-eaters, and bark-bursters, span worms, tent caterpillars and borers. Yes, I may safely say, every insect with a rapacious appetite for greens, from a red ant to a king grasshopper—apple moth excepted. But hold! we are expecting daily a large importation of that remarkable tribe from the neighboring Republic. Now we don't set much store by that reptile; it is not a healthy animal; the climate is against it. We have several insects injurious to the currant and gooseberry. One of the most destructive known here is the current-worm or gooseberry caterpillar. This fellow requires to be handled without gloves. Let me describe the *modus operandi*:—Take a tin can—say a pound mustard can, or one similar—with a close-fitting top that won't fall off when using, perforate the top with small holes similar to a dredging box, not one or two holes, but as many as the top will contain at regular distances; put a half pound of perfectly dry powdered white hellebore in it—not black hellebore—or let the box be half full, as it is necessary that it should contain a certain portion of air to facilitate the escape of the powder. If doubts are entertained as to the purity of the hellebore, and experimental proof is required, take a sniff. If sternutation follows suddenly with sonorous energy, so as to be heard in a serene atmosphere a reasonable distance, say a radius of half a mile, you will have tearful confirmation of its genuineness. With such a weapon of defence go ahead. You are armed against the whole army of leaf-devouring—well, call them what you please. We do not consider it incumbent to watch for the moth or appearance of the worms. Prepare the bushes beforehand; there are several modes of doing it. The moths make their appearance in June, depositing their eggs upon the leaves of the currant, gooseberry and various other plants. Now for the hellebore. When vegetation commences, and the leaves are unfolding, open the bush to be operated upon with one hand, and dust the base and expanding foliage. A few jerks of the box are sufficient if the morning is bright and calm. Dew is not an essential element—that, if any, is generally on the outside of the plant and it is the interior of the bush to be acted upon. The down on the newly developed leaf will retain the powder better dry than wet. The larva when hatched commence the work of destruction. They perforate the tender foliage—they get a taste of the hellebore—they sneeze—they collapse—they are dead insects suddenly. Don't wait until they are large enough to work upward and outward, and are to be seen and heard upon the foliage. If so you will not only have your hands full, but your heart also. Your vigilance and comprehensiveness will have demonstrated an unsatisfactory fact—the worms the aggressors. Where the worms have been in the ascendant the season previous, an application once a week, or a looking over, is to be recommended, until subdued. A most excellent and reliable way for reducing their number is to remove the surface earth from under and around the bushes in the fall to some other part of the grounds—the earth removed, of course, will be replaced by a good compost. If fowls are present they will make short work of the shells; if no fowls be admitted spread it or use it as a top dressing. The worm in the pupa state is helpless, and falls a prey to birds, beetles and frost. Where these operations are properly performed no apprehensions of loss from this kind of caterpillar need be entertained. There is another class of insects that attacks the stems and branches, and, if not looked after, does considerable damage. The most destructive of these is the currant borer. This insect perforates the wood, and takes up his abode in the heart. It is most generally discovered in the three-year-old growth. All wood with a brown or wilted appearance should be cut out at the fall pruning. The pith of a diseased shoot is black, and if followed up the worm will generally be found at the base. If Mr "A. M." Glencoe, Ont., will dust his currant bushes with the real "Simon Pure," at the proper season, when the worms are in the adolescent stage, he will view with pleasure the

fructifying activity of his well preserved bushes, exceeding in an abundance of luscious fruit Aaron's miraculous blooming rod. Small fruit down here is not much thought of. Some apples are grown, but outside of that horticulture is at a discount. The genuineness of the statement may be questioned by some suffering friend. I speak from my own point of view. Horticulture, no doubt, would be an important business—the fruit garden especially—provided a market could be secured for the product of the soil. At present potato is king, and of the rule absolute. A man having land that does not grow potatoes is all wrong. I bought my place a few years ago from Barrabas. The neighbors said he cheated me. I am no flagellant—I show no bad temper—I didn't wail and lash my neighbors—I would like to sell the place if I could, and cheat some other fellow. One kind friend said if he had only known I was looking for a place he'd "put me up to a thing or two." "Barrabas cheated you; your place won't grow potatoes; I'd like to have sold you my place." My place may not be adapted to potato farming, I remarked, but it will grow small fruits, such as currants, gooseberries, strawberries and quinces, grapes, peaches and tomatoes by the cart load; sweet corn and all kinds of garden stuff. "Yes, yes, I know; but you haint got no market—the National Policy has done for what little you used to have. Our folks, you see, who don't grow potatoes, are going to the States as fast as they can get there. Three hundred and seventy-five and a half have gone already, and more to follow." What about the half? I inquired. "Oh, the half? yes; you see that was a ten year old and a half boy—you could not have kept him no way. His folks tried; but he rolled his quid of tobacco into one cheek, and said he'd be 'cussed' if he was going to stay and work under the National Policy. He'd go over to Uncle Sam, where labor was protected—no half measures for him. Yes, we were sorry to lose that boy; there was ten and a half years' growth in him—but Tim Targs, you know, twigs the grafton?"—I assented—"he said it didn't matter much about that boy—he was a cussmopolitan, and not likely to stay long in any place. Yes, you see you got no market for that garden stuff. You depend on Halifax, and when you get there you find Uncle Sam is there afore you. Halifax depends upon the Dominion Government, and the Dominion depends upon England, and the whole thing is so mixed up you don't know where you are going to land. A man that grows potatoes has got the States to fall back on—" But the duties?—"Oh, they are of no account; the States pay them both ways. Look at Injen meal—before the N. P. it used to be four and a half and five dollars a barrel—now it is three twenty. Ten per cent. in Howe's day was a better protection to labor than twenty-five now—just you cypher it out and see if it isn't so—theory one way and practice t'other. Yes yes, these potatoes I am taking down to go to New York." He passed on, and I heard him say, "science and book learning aint of much account in a potato field—a good market is better."

P. P., Wolfville, Kings Co., N. S.

COTTAGES FOR LABORERS.

SIR,—Although many have come to Canada, very few have come of the right kind. What we want is chiefly farmers and agricultural laborers to cultivate the land. Many engage to farmers who have not been used to farming in the Old Country, and therefore farmers are disappointed. It would be convenient for farmers and men if a proper place or hotel was known in each town, so that they could meet to make bargains, which should be made in writing. Many books on emigration are circulated in the Old Country; perhaps some of these mislead people in regard to Canada. But as regards farmers and their men, those coming over should be engaged for a month on trial, and if suitable then, farmers could engage them for a year. The first year an emigrant should engage to be paid every month, as they often have to forward money to the Old Country. For instance, if they are married, they would have to send some to their families to support them until they could send for them. Also, if more cottages were built on farms, married men with families would sometimes be more useful to the farmers than single men. There is a great want of cottages in this country, that is one reason why men have to go into towns. What is the use of farmers complaining that they cannot get men to work on farms, when they have no cottages for them to live in?

FARMER.



## Poultry.

## Rearing Chickens.

BY R. A. BROWN, CHERRY GROVE.

We know that any improvement in the rearing of chickens, or the building or erecting of coops and mode of feeding, is eagerly sought after by those taking an interest in this department.

We had something to say of the box coop in our last letter. This coop when it becomes well known will revolutionize the rearing of early chickens in this climate, which has its drawbacks. This is wholly overcome by the use of the coop mentioned; besides being warm and comfortable it is a safe from rats, skunks and other vermin which prey upon young chicks.

The cost of a box will only be about the price of a chick or two, and many old sashes, with glass already in them can be got in towns where old buildings are being taken down for the erection of new ones. Sash and glass can be had for less than the glass costs. We have ourselves eight large ones taken from an old church, which only cost \$2.40 for all. Each sash is large enough to cover a box capable of holding 40 chicks until large enough to run in the lath coops. To construct a lath coop procure pieces of board two inches square and make a frame out of this any desired size; 2 ft. wide, 4 ft. long and 2 ft high is a convenient size, and when you have the frame made, nail lathing all around both sides, ends and top; about two inches apart is the proper distance to nail the lath. Do not put any on the bottom; this makes a cheap and light moveable coop that can be changed from place to place in a minute, but should only be used in warm weather, and must always be accompanied by a box or barrel at the side, with the opening side next the coop, which will have one strip less on that side for the hen to go in and out.

There are other coops made rat-proof by procuring a netting of wire and tacking it on to strips the same as the lath coop just mentioned; of course these would be more costly, but will last nearly a lifetime. One of those wire coops 2 x 4 feet will only cost a dollar, and probably save the worth of that in chickens for one day. A few of these should always be found on a farm or in the breeder's yard; in fact the man that takes time by the forelock and leads his business, "not have it pushing him," will not be without one or two; they are just the thing for young goslings, ducks, turkeys or chicks. Reader, try one!

Turkey coops should never be stationary. If you observe a hen turkey covering her young, "when she has the opportunity," she moves to a fresh spot every night. The spot where she sat over night becomes soiled and polluted with droppings from her and her young, and one should never force such to be occupied for two or more nights in succession. I have seen some farmers keep a dozen young turkeys in a place two feet square for a month and never clean it out. Such care of poultry won't pay.

Another evil to be shunned is that of giving young ducks or goslings water to swim in before feathered out, that is when about four weeks old, because they "take naturally to it." It is often given them to indulge in at will; if this is persisted in it will be sure to take the profit off raising water fowls. The right way is to place in the coop a shallow pan or vessel, with no more water than they will drink at once, then replace fresh water again in the course of an hour or two, and give no more food at a time than will be eaten up rapidly; plenty to eat and none to waste. Do not give breakfast, dinner and supper at one dose, as I am sure the owner would not desire his in that way.

## THE FERTILITY OF EGGS

may be easily determined on the eighth day of incubation by holding the egg in your closed hand before a lighted candle in a dark room, or in the shades of evening. If the egg be fertile it will appear hazel or clouded, except a small spot at the large end where the air bubble is. If not impregnated or has been chilled, or otherwise ill-used, it will be still translucent, the light passing through it almost as if new laid. Old experienced hands can tell even at the fourth day, thus saving time, and giving room for those that are fertile.

When a fecundated egg is placed in a temperature above 100° it gradually undergoes remarkable changes, until developed into the perfect chick. The air vessel at the large end gradually becomes larger as time goes on, and the water evaporates through the pores of the shell. During its development the chicken derives its nourishment from the yolk. At the 18th day the yolk is drawn into the body, and passes into the digestive canal, thus constituting food sufficient for 24 hrs. after the chick's expulsion from the shell. At the 19th day the beak ruptures the air vessel and then its lungs are brought into action by breathing. If the shell becomes cracked after this the life of the chick is then not impaired.

## Effect of Food on Eggs.

All varieties of poultry can be kept well and economically upon screenings composed of all manner of seeds. They can be also kept upon table refuse, sour milk and decaying meat scraps and musty grain. This may be an inducement for keeping poultry, but the question arises whether it is the best way to keep poultry where an excellent quality of eggs and flesh is desired. Beef may be fed on distillery slops, but the quality is very much inferior to corn fed beef. Onions, cabbage, clover, and filthy water affect the taste and quality of the butter and milk of the cows to which they are fed. Pork made from corn is very much superior to the swill-fed article. When a fine quality of eggs and chickens is desired, poultry should be vigorous and healthy in order that their digestive organs may do their duty. Care should be taken to see that the poultry house is properly ventilated and not kept too warm, as a vitiated atmosphere has very much to do with the profit and health of the flock. Poultry, to be kept profitably, must be watered, housed and fed abundantly, with frequent changes in diet. The poultry-keeper who attends to these details may reasonably expect to realize considerable profit. Some profit may, however, be realized when kept simply as the scavengers of the farm, if ordinary care is taken to see that they get sufficient food and shelter; but the quality of the product is inferior. Corn and wheat produce the richest flesh and eggs, and should be the principal food employed. Buckwheat and decaying vegetables are the poorest foods, not only for quality but color of flesh and eggs.—Ex

## Ducks.

For the table every one is willing to admit the duck's excellence, though the want of cleanliness in its habits meets with everybody's reprobation. As a feeder it has few equals, while its feathers in the market stand high above those of the hen or turkey and only second to those of its giant companion the goose.

Ducks are easily hatched, and if properly managed they are easily raised—much more so than chickens or turkeys. Probably the worst thing for ducklings is the first thing they usually receive and that is unlimited range and water to swim in. The little things are, in a measure, nude and should be kept in pens with dry soil floors or stone pavement that can be washed down daily. No kind of poultry will succeed on bare boards. All the water they need is best furnished by burying an old pot in the ground and laying a round piece of board on top of the water with room for the ducks to stick their heads in and fish out the corn that is put in the water. This amuses them and does no harm, while, if allowed to go off to ponds or streams, they are very liable to fall a prey to vermin in some shape, or to get their bodies wet and chilled from remaining too long in the water. Their pens must be kept clean if they are expected to thrive.

Ducks are enormous eaters. They feed not only incessantly all day, but if it is a moonlight night they will up and at it again every hour or two be-

fore morning. Owing to their voracious appetites they are considered non-paying fowls. It is generally claimed that they eat their heads off. We know of no statistics going to show how many pounds of corn it requires to make a pound of duck, but we do know that ducks are very rapid growers, and have but little doubt that if penned and judiciously fed enough to make the most rapid growth they would return a handsome profit for the food consumed.—[L. S. H. in the Rural New Yorker.

## The Apiary.

## Spring Management.

BY CHAS. F. DODD, CANANDAIGUA, N. Y.

After such a trying winter (to the bee-keeper) as we have just witnessed, there will be found a number of stocks very weak; some may be scarce of honey, and others may be queenless. If any require feeding, exchange combs with those that have more than they require, or feed them in whatever way is most convenient, only do not feed outside the hives, as it is liable to cause robbing. If any are found without a queen they should be supplied at once, providing they are strong in numbers, otherwise they should be united with another stock containing a queen.

## BUILDING UP WEAK STOCKS.

If you have any weak stocks which you wish to build up in time for the honey harvest, we can recommend the following method, which is largely practiced: Contract the entrances, and make all snug and warm about the bees; contract their hive room to accommodate the size of the swarm, by means of a division board. Take away extra combs, but leave plenty of honey. It is necessary that at least one third of the entire number of stocks should be good and strong. When settled warm weather arrives (say about the 10th of May) begin to equalize. Take from the centre of each strong stock one or two combs of hatching brood, and give one of these to each weak stock, placing it in the centre of the cluster. Then make all warm again, and wait ten days, supplying the strong stock with good empty worker combs to replace those removed, and keep a record of your operations. Always select the oldest or hatching brood to give the weak ones, and repeat the operation about every ten days, till you have them all about equal.

[It will be noticed our contributor, Chas. F. Dodd, has removed from Nile, Ont., to Canandaigua, N. Y., where he intends to carry on an extensive Apiary.]

**A SAFE INSECT DESTROYER.**—Lime slacked to a fine powder and freely dusted over the leaves. By some authorities this is considered the best remedy for the codling moth. To destroy this obnoxious insect the lime powder should be plentifully thrown on the apple tree in the spring immediately after the petals fall from the blossoms. At this time the eye of the apple, in which the moth deposits its eggs, opens upward, the lime falls in the opening and destroys the young moth or egg before it hatches.

**DIARRHŒA IN CALVES.**—Give, according to size and age, from two to three ounces of castor oil, with a drachm of laudanum. After four hours, and as long as necessary, give twice or thrice daily the following mixture in one dose:—Two drachms of compound chalk powder with opium, one drachm of powdered gentian root, one ounce of peppermint water, and two ounces of starch emulsion. By way of prevention, the animal should have milk in small quantities at a time, and it is best to give it mixed with an equal quantity of flaxseed tea, which greatly tends to prevent the milk from souring or curdling in the stomach, which, causing irritation, produces the diarrhœa.





The Family Circle.

"Home, Sweet Home."

Maud Rochester's Valentine.

CHAPTER II.

"AND this is your final answer!"

"Final and irrevocable, Captain Arlington."

"Then I must submit. Can you forgive my presumption? Will the great love I bear to you plead my excuse?"

Maud bows haughtily, and crosses the room to ring the bell for a servant to show Captain Arlington out.

It is a bright spring day, with the sun shining and the birds carolling, the lilac in bloom and the golden clusters of laburnums drooping among the green leaves; but as Gilbert Arlington's sad eyes look upon the beautiful landscape visible from the open windows of Maud's sitting-room they see none of its loveliness, for his heart is heavy within him. He has staked all his heart's treasure, and has lost; and as he turns to leave Miss Rochester his step is unsteady and his eye dim. As he approaches the door Maud's voice arrests his steps.

"Stay yet one moment," she says, in her clear, rich voice. "Surely my decision has neither pained nor surprised you? You have called me proud—perhaps I am so; at least I am not mean enough to wound in the dark. I am too proud for that!"

Her voice fails her suddenly, and she turns away haughtily, while Gilbert raises his head, and speaks in a tone as proud as her own:

"I am at a loss to understand you, Miss Rochester," he says, naughtily. "But if your opinion of me be what your words imply, you have done quite right to refuse me."

Maud's lip curls as she touches the bell and Captain Arlington leaves the room. Then, as the door closes after him, and his retreating steps die away, her strength fails her, she sinks helplessly upon a sofa, her eyes close, and Maud Rochester faints away.

When her consciousness returns she is still alone, and she lifts her head wearily from the cushions, feeling faint, weary, and bewildered; then, as she looks around her, her recollection returns, and dropping her face upon the cushion, she bursts into tears—tears as salt and bitter as she had ever shed in her happy life.

"Well, that is over!" she says, brokenly, to herself, as she rises. "He is gone, and I shall never, it may be, see him again! Oh! if I could have believed him, how happy it would have made me! For I love him—I love him still, although he despises me! I suppose my wretched fortune made me a desirable *partie*."

The long, bright spring days pass away slowly and heavily; and although Miss Rochester enters eagerly into all kinds of gaiety, her cheeks are pale, her eyes are heavy, and her beauty loses much of its brilliance.

Arthur is away, and Sir Weston wonders anxiously if his absence is the cause of his darling's altered looks; but Maud only laughs lightly at his insinuations, and tells him that Arthur is irretrievably in love with Lily Arlington, and that he had better make up his mind to that effect.

"We are very fond of each other as brother and sister," she says, lightly. "But one does not fall in love with one's brother and *padre mio*, and you need not think that you are going to get it off your daughter, for I never mean to marry!"

"Never! Ah! my darling, some day you will sing to a different tune! But, if Arthur is in love with Miss Arlington, why does he stay away? She is still with Lady Saunders, is she not?"

"Yes."

"His brother has rejoined his regiment. He was a fine fellow. I liked him; and if the sister is as true a lady as he is a gentleman, Arthur will be a lucky fellow!" Sir Weston remarks.

And Maud's pale face colours as she hears the words, and her lip curls as she says to herself, contemptuously, "So true a gentleman!"

When Mr. Rochester returns he loses no time in finding out the state of Lily's feelings towards him, and one day returns to Rochester Hall in a state of great delight as her accepted lover. Maud congratulates him warmly, and accredits Lily as an embryo cousin with the greatest cordiality; while Captain Arlington writes a very kind letter in answer to Arthur's saying that Lily's happiness is his first consideration, and that, as it seems to depend on Mr. Rochester's affection, he has nothing to say, except to express his regret at losing his little sister.

"Dear Gilbert," says Lily, tearfully, as she folds up the letter, "how good he is! He was so unhappy when he went away, Arthur. Did you know—did Miss Rochester tell you that she refused him?"

"Refused him?" repeats Arthur Rochester. "Is it possible? Lily, I always fancied she cared for him."

"So did I, and I induced him to tell her how much he loved her," Lily answers. "He hesitated because she is so rich, and he was afraid of being thought interested; he loved her so dear to me. I was so sorry for him, Arthur, he was so wretched!"

"Poor fellow, of course he would be!" replies Arthur, sympathetically. "But, Lily, I don't understand even now what made her refuse him. I am sure she liked him."

Lily shakes her pretty golden head sadly.

"No," she did not," she says, mournfully. "Oh, Arthur, it almost broke my heart when I saw him come home! I was waiting for him at the window, and when he saw me he lifted his head and tried to smile, but he was as pale as death; and when he came in, he bowed his head on my shoulder, and oh, Arthur, although I could not see his face, I think he was crying!"

"Poor fellow, he loved her greatly! Well, she is worthy of a great love; for although she is a wee bit proud, she is so warm hearted and true. I wish she had cared for him, Lily."

"So do I!" sighs Lily. "And I am afraid it will be awkward for them to meet."

"They will have to get over the awkwardness," says Arthur, smiling; "for I am not going to wait long for my wife, Lily and you shall not have much time to devote to your trousseau."

And Lily blushes prettily as she submits to the embrace which accompanies these words.

Arthur Rochester certainly proved no laggard, in his wooing, for before many weeks elapsed the wedding-day was fixed, and Lily's trousseau was in active progress. She was still staying with Lady Saunders, who, as her aunt and nearest relative, save Gilbert, insisted on the wedding taking place from her house. Maud was to be the first bridesmaid, and Captain Arlington best man; but he did not arrive until they met in the church on the wedding-day, when one swift glance at his face showed Maud that Gilbert looked pale and haggard, and much older than a few weeks ago.

The wedding was a brilliant one, and Lady Saunders was determined it should go off with all possible eclat. Lily looked very lovely, and Arthur's pride in her was evident to all the guests, and made more than one smile.

Maud was charming in her soft white cashmere dress, with a Gainsboro' hat shading her fair face, and her manner was gracious and easy, although she talked but little to the groomsmen who had fallen to her lot, and who himself was silent and preoccupied, perhaps at the thought of his sister's departure.

After breakfast the happy pair departed amid a shower of rice and white satin slippers; and Lily broke down utterly as she took leave of her brother, who was hardly less moved himself; and Maud, who was standing near him, saw that his lip quivered as he put Lily into her husband's arms, and turned abruptly away.

"Arlington, you must come back and dine with us," said Sir Weston, when the guests had all departed. "You'll see no one but Maud and myself, and we will take no refusal."

Sir Weston carried his point, and Captain Arlington drove back with them to Rochester Hall for dinner. Maud was very silent during the drive; she lent back in her corner, looking rather pale and weary, but Sir Weston, who had taken a sudden fancy to Captain Arlington, talked incessantly, so that her abstraction passed unremarked; and during dinner she was perfectly courteous, and exerted herself sufficiently to allow her quiet manner to pass for fatigue after the usual excitement of the day; while poor Gilbert felt the old maid love beat fiercely at his heart, and wondered if she had forgotten that he had told her of it.

After dinner the two gentlemen did not sit long over their wine, but left the dining-room shortly after Maud; on their way to the drawing-room, however, Sir Weston was called away by an urgent summons from his steward.

"You will find Maud in the drawing-room, Arlington," he said, as he apologized, and Gilbert entered the room alone.

Miss Rochester was standing by an open window, resting her graceful head wearily against the frame; she still wore her bridesmaid's dress, but now she had a deep crimson rose in her hair and at her throat. She did not hear Captain Arlington's step, for the thick carpet deadened the footfalls, and it was only when he was quite near her that she perceived him, starting slightly, and standing erect as he did so.

"It is a lovely evening," she said, hurriedly, taking refuge in the weather for want of some other topic of conversation; and Captain Arlington bowed slightly in corroboration of the truth of her remark, which was quite evident.

"The roses are unusually beautiful and abundant this year," Maud said then, nervously, wishing he would speak, or at any rate look less gloomy and tragic.

"Indeed!" absently. "I had not noticed."

This was worse and worse. Maud felt her self-possession rapidly diminishing, so she turned from the window with a little shiver.

"Shall we—?" she began. "Oh, here is the coffee!"

Surely the appearance of White the butler was never so welcome as it was then; but when he was gone, and coffee had been drunk, the same embarrassing silence recommenced.

"You will miss Lily greatly. I am afraid," said Maud, at length, pitying her companion's evident depression.

"Yes," he answered, quietly, "I shall miss her very much; but as I am not going to stay in England, it makes the parting easier."

"Not going to stay in England," Maud repeated, turning to him in some surprise. "But your regiment has not been home long; surely you are not ordered away again?"

"Oh, no! but I am going to exchange; I want to see some active service again, and as Lily, my only tie in England, is happily settled, I have an opportunity of doing so."

"His only tie in England! How quietly he spoke, and how coldly! Maud's cheek flushed, half with pain, half with resentment.

"Lily will be greatly grieved," she said.

"Lily's brother must be content to be forgotten," he answered, smiling slightly. "She has closer ties now."

"Have you, then, no one in England whom you will regret?" she said, hurriedly. "It seems such a sad idea to wish to go and throw away your life in Afghanistan!"

"Does it? Life is not much of a boon at best," he said, with the same light, cold laugh. "It has never been very precious to me since—" he broke off suddenly, and their eyes met; there was a momentary silence, then he leant forward, and continued, in a moved, agitated voice:

"But if I thought that my life or death could make any difference to you, what seems so worthless now would become infinitely precious!"

"I was thinking of Lily," Maud said, with all her haughtiness, and Gilbert drew back as in silence, growing pale with the strong restraint he was obliged to put upon himself.

"Are you fond of Tennyson's poems?" Miss Rochester said at length, at which apparently irrelevant question Captain Arlington started, and answered, rather incoherently:

"I don't know—yes—I think I do; but I am not given to poetry—except Shakespeare; I hardly ever read anything of the kind," he said.

"And yet you can apply Tennyson," she said, with a little cold smile.

"I beg your pardon, I do not understand," he said, looking at her in some astonishment.

"Do you not indeed? Let me enlighten you," said Maud, going over to a writing-table, from a drawer of which she took out the valentine she had received on St. Valentine's-day which had so wounded her.

"Is not that your writing?" she said, proudly.

"Certainly," he answered, bending over it. "At least it looks like it; but I do not remember having written the lines."

Maud turned away with a gesture of contempt.

"Yet you acknowledge the handwriting," she said. "Have you forgotten that you sent them to me as a valentine this year?"

"I!" he said, in great surprise—"I! You are quite under a

misapprehension, Miss Rochester. Do you think that I should presume to send you such a thing?"

"But the handwriting is yours," Maud answered, dubiously, glancing at him as he bent over the lines.

"Yes; but I have no recollection whatever of having written these lines, and certainly I never sent them to you."

"And yet I received them," she remarked.

And at the tone of her voice Gilbert Arlington's face flushed, and he threw back his head with a haughty gesture.

"If you doubt my assurance, there is nothing more to be said," he said, as proudly as herself. "The lines were doubtless intended for you, Miss Rochester. Allow me to return them."

"They have not had the desired effect, I dare say," she answered, carelessly, as she threw them back into the drawer of the writing-table.

And the silence remained unbroken until Sir Weston came in, with renewed apologies for his absence. But, notwithstanding all his efforts, the evening passed heavily. Maud was absent and *distracted*; Gilbert, pre-occupied, and in anything but a talkative humor. And the leave taking between the young people was very cold and distant on both sides.

Sir Weston went out with his guest; but when he returned to the drawing-room, Maud had disappeared, and he saw her no more that evening; and the next morning she appeared at breakfast with such pale cheeks and heavy eyes that her father was alarmed, and suggested a physician, which suggestion Maud received with contempt.

A few weeks after Maud received a long letter from Lily, from Paris, where the young couple were lingering on their return from their honeymoon travels; and as they sit at breakfast, she reads scraps of information to her father from the dainty perfumed sheet.

But suddenly her voice broke; and although she read the letter on steadily, she turned so pale that her father rose and went to her side.

"My darling, what is it?" he said, anxiously. "Are you ill?"

"No—no," she cried, "I am not ill! But, oh! papa, I am of all women most miserable!"

She slid down on the floor beside him, and hid her face on his breast, while he read the passage in Lily's letter which had so affected her, and which we will take the liberty of reading over his shoulder, as follows:

"You will be amused to hear that we met an old acquaintance of yours, Annie Montrose. She is in Paris, with her mother and her *fiance*, and we saw her yesterday at the Louvre. She recognized me at once; and on hearing Arthur's name, inquired direct by after you, and told me to ask you if you received the Lady Clara Vere de Vere's valentine she sent you on last St. Valentine's-day. She tells me that she sent you some lines, which Gilbert had once copied out for me, which I had given her; but she says you must forgive the impertinence of the lines in favor of the charming little portrait of yourself which adorned them. Annie's *fiance* is a nice man enough—of course, not to be compared with Arthur or Gilbert! Is it not sad that the latter insists on going abroad? I wish—oh! how I wish!—he would remain in England."

"Maudie, darling, I don't quite understand," her father said, folding his arms round the sobbing girl. "What is this valentine? What was it all about? Did it liken you to Lady Clara Vere de Vere?"

"Yes," said Maud, lifting such tragic eyes to her father's face that he was obliged to hide the slight smile which flickered over his lips.

"Well, surely that did not hurt you, love, even though there may have been a spice of truth in them. You are a wee bit proud, daughter mine."

"It was not that, papa," and the beautiful face was hidden again on his shoulder; "but I thought—I thought they came from—from—from Captain Arlington."

"Well, and what then?"

"I was so angry, papa, that—that—"

Here Maud's composure gave way, and it was after many pauses, and with many sobs and bitter tears, that the story was told.

"Do you mean that you loved the young man, Maudie, and sent him away because you thought he had sent you such a valentine? Maud, I am afraid if he had done so you had deserved it."

"Papa, I have been very miserable—he is going away!"

"Ah! true; and you love him still, Maud?"

There was no answer, but Maud's face is pressed closely to her father's breast, and the rich blood mounts to her cheek.

"We must not let him go, Maudie—eh?"

"Dearest father!"

"Is that why you were never going to marry? Must I make up my mind to lose you?"

"He may not forgive me, papa!" said Maud, brokenly; and the face which it lifted for a moment from its resting place is rosy with its charms—beautiful in its sweet humility.

"I don't think he will be inexorable, my darling," said her father, smiling. "Must I make the *amende honorable*, or will you?"

"I will, papa; I will never be proud again if he forgives," said Maud, earnestly, as she rose with a new light in her eyes, at sight of which her father sighed and smiled.

"How will you see him, dearest child?" he asked, and Maud's face fell.

"I do not know; unless, papa, do you think I might drive over to Crossley Station? he has to change there on his way to town, and he leaves Lady Saunders for good to-day."

"You seem quite *au courant*, Maud; I will drive you over in time."

"Thank you, papa," the girl said earnestly, and her voice said more than her words.

Crossley Station was a busy little junction half-way to town, and Captain Arlington found that he had to wait there for some twenty minutes or half an hour before the London train came up. Chafing inwardly at the delay, he entered the little waiting-room, which was occupied by a lady who rose on his entrance, and went forward to meet him.

"Miss Rochester?" he said, in astonishment. "Are you going up town to-day?"

"No," Maud said, tremulously. "I came here to meet you."

He looked at her in mute surprise, and she went on hurriedly:

"I want to ask you to forgive me," she said. "I have discovered the sender of the valentine—it was a lady to whom Lily had given the lines which you had copied out for her."

"I think I remember vaguely having done so," he answered, muzzily. "I am glad to be exonerated from such a charge, Miss Rochester."

"And you forgive me?"

"Of course; it was a mistake."

There was a long silence. Maud stood pale and trembling



her hand resting on the table, while Gilbert Arlington watched her quietly, although his heart throbbed fast and warm, and every pulse beat quickly.

"You are going away," the girl said, faintly, at last. "Must you go? Will you not stay?"

"All my plans are made. There is nothing to induce me to stay," he said, calmly.

"Nothing! You said once—" She paused, check and brow flooded with crimson, then growing white to her lips.

"I said but—"

"You implied, at least, that if I cared you would stay?"

"And do you care?"

"Yes—yes—oh! Captain Arlington—I know that I have been proud and hateful; but—but will you stay?"

He went a step nearer to her.

"On one condition, Maud. Do you love me?"

"Ah! so dearly!" came from the girl's lips, and the next moment she was in his arms.

The up-train that day had no passengers from Crossley, and people say that when Captain Arlington goes abroad—if he should do so—his wife will go with him. There is no happier couple in England than Gilbert Arlington and his Maud, and the latter still preserves the valentine, saying that it always strikes a note of warning when her old besetting sin comes uppermost.

But she must be cured in a great measure, for her acquaintances say that Mrs. Arlington is far sweeter and more gracious than Miss Rochester was, and Gilbert declares that she is absolutely faultless. But that as it may, she often thinks with gratitude of those sad days which taught her to know herself, the A B C of the person being inculcated by the lines which had reached her on St. Valentine's-day. C. N.

THE END.

### Notes on Ornithology.

BY ORNIS.

A very engaging and tame bird, and at the same time a very active and vigilant one, is the Golden-crested Wren, or Kinglet, *Regulus cristatus*. This, with its cousin the Ruby-crowned Wren, *Regulus satrapa*, is just now passing north to its breeding places in the Hudson Bay and North-west Territories. They are diminutive creatures, about half the size of a Chipping Sparrow, and may generally be seen in the tops of trees, although they often come down to examine the lower branches. The prevailing color above is olive green; the centre of the crown of the Golden-crest being brilliant orange in the male and yellow in the female. On each side of this is a black stripe, and outside of this again a narrow whitish one. The Ruby-crown has nothing but a simple patch of scarlet on the crown, and in both birds the bright color is usually concealed by other feathers, but can be displayed at will, and when they do choose to display it there are few birds more elegant.

Very often in company with these is the Chickadee, or Blackcap Tit, *Parus atricapillus*, a bird so well known that no description is here necessary. Everyone has seen it and watched its pert movements no doubt with interest, for we have few birds endowed to a greater extent with activity and curiosity; ever on the go, it is the same confiding little creature in the backwoods as in the orchard. It is also one of the farmer's best friends, for in winter it eats large quantities of the eggs of injurious insects, and when we consider the large number requisite to make a single meal for the bird it must be evident that many are destroyed in this way. The nest is made of hair and feathers, and is placed in a hole excavated by the birds themselves in a stump usually about three feet from the ground. The eggs, eight in number, have a delicate white background, sparsely dotted with reddish and measure about 6 by 5.

Only a step farther are the Nuthatches—White-bellied, *Sitta carolinensis*, and Red-bellied, *Sitta canadensis*. The former stays with us all the year round, and during that time devours immense numbers of insects for which it is always on the alert, pasture, while searching, being apparently of no account with it, for it moves with equal facility with either the tail or head first, at the same time travelling up or down a tree. This is the smallest and perhaps the commonest bird, known as "Sapsucker." The head above is black, the same color extending down the neck a short distance; the back bluish-gray; the outer tail feathers partly white; the feathers under the tail chestnut, and the rest of the under parts white. The nest is built in a hole in a tree, at varying heights from the ground, and the eggs, seven or eight in number, are laid on a nest of cow hair, bits of cloth, string, etc., making a rough, felt-like material of loose consistence. The Red-bellied Nuthatch is so rare in this part of the country that a description of it would be out of place.

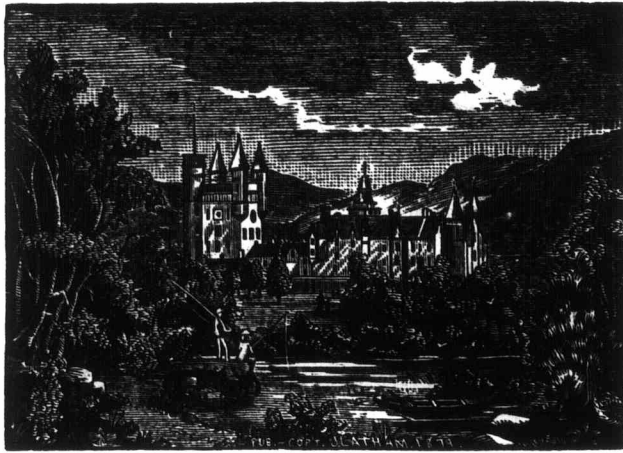
The Woodpeckers, *Picidae*, have some very well known representatives with us. The commonest is the Red-headed Woodpecker, *Melanerpes erythrocephalus*, so common indeed as to be immediately recognized by all. Nearly all the birds of

this species leave us in the fall and reappear early in spring, and from the time of the earliest fruit till the latest apples are off the trees they do more or less damage to the crops—cherries and apples being their favorite food. On this account they are not generally liked, and this feeling is fast growing. The eggs, six in number, are pure white and are laid in a hole in a tree. In the two last particulars all Woodpeckers are alike.

The High Holder, Yellow Hammer or Flicker, *Colaptes auratus*, is equally well known with most persons, and is a far more general favorite. In habits it is like the preceding species, except that it manifests a greater preference for orchards, where, however, it confines itself more strictly to insect food, feeding considerably on the ground.

The Hairy and Downy Woodpeckers, *Picus villosus* and *P. pubescens*, are included with the Nuthatches under the name of "Sapsuckers." Their coloration is almost identical—black and white all over the upper parts and white underneath. In some plumages there is a narrow red band across the back of the head. The Downy Woodpecker is simply a diminutive of the Hairy Woodpecker, while the Hairy Woodpecker is about the same size as the Red-headed Woodpecker.

There now remain but two species that are at all common—the Yellow-bellied and Red-bellied Woodpeckers, *Sphyrapicus varius* and *Centurus carolinus*. These appear in some abundance in spring and fall, but few remain to breed. The Yellow-bellied Woodpecker is somewhat like the Hairy Woodpecker above, except the top of



BALMORAL CASTLE.

the head, which is scarlet. The throat of the male bird is scarlet, of the female yellowish white; the forepart of the breast black, the rest of the underparts pale yellow. This bird is a frequenter of well-wooded, swampy districts, where it may be seen at all times in the summer.

The Red-bellied Woodpecker is slightly larger than the last; the back black and white; the top of the head, extending down the neck, light red, and the white under parts tinged with red.

Taken as a whole the Woodpeckers are a peculiar and interesting family, and at first glance appear to lead very dull lives; but after watching their courtship awhile no one can doubt that they are enjoying themselves to the utmost. This is especially true of the High Holder, and to my mind there is no more grotesque scene among birds than this species during the mating season. The construction of the birds themselves is also peculiar. The tail feathers are very stiff to aid them in climbing; the beak long and strong to bore into the tree, and the tongue pointed and barbed to transfix and draw out insects even from the end of their burrows in the wood.

Reading will be of little use without conversation, and conversation will be apt to run low without reading. Reading fills the lamp and conversation lights it; reading is the food of the mind and conversation the exercise. And as all things are strengthened by exercise, so is the mind by conversation. There we shake off the dust and stiffness of a retired, scholastic life; our opinions are confirmed or corrected by the good opinions of others; points are argued, doubts are dissolved, difficulties cleared, directions given, and frequently hints started, which, if pursued, would lead to the most useful truths, like a vein of silver or gold, which directs to a mine.

### Balmoral Castle.

To every Briton, in whatever part of the world may be his home, Balmoral Castle is a place familiar at least by name. Nor is it unknown to many who are not of the "Island Empire." Some of the happiest days of our Queen have been passed within the walls of this castle, or beneath the old trees of its demesne, with her husband, Albert the Good, and their children. Balmoral is in the Scottish Highlands, in Aberdeenshire, on the bank of the Dee, W. S. W. of Aberdeen. The castle stands on a natural platform at the foot of Craig-au-Gowan, 900 feet above the sea. The estate was purchased in 1852 by Prince Albert. It comprises over 100,000 acres, including 1,000 acres of woodland and a deer park of 30,000 acres. The scenery is highly romantic and the neighborhood is famous for deer stalking, grouse-shooting and lake and river fishing. The autobiography of Queen Victoria is replete with many delightful reminiscences of the Castle and woody craigs and demesnes of Balmoral.

### Why Some Birds Hop and Others Walk.

A little bird sat on a twig of a tree,  
A swinging and singing as glad as could be,  
And shaking his tail, and smoothing his  
dress,  
And having such fun as you never could  
guess.

And when he had finished his gay little  
song  
He flew down in the street and went  
hopping along,  
This way and that way with both little  
feet,  
While his sharp little eyes looked for some-  
thing to eat.

A little boy said to him: "Little bird,  
stop,  
And tell me the reason you go with a hop.  
Why don't you walk, as boys do and men,  
One foot at a time, like a dove or a hen?"

And the little bird went with a hop, hop,  
hop;  
And he laughed and he laughed as he never  
would stop;

And he said: "Little boy, there are some birds  
that talk,  
And some birds that hop and some birds that  
walk.

"Use your eyes, little boy: watch closely and see  
What little birds hop, both feet just like me,  
And what little birds walk like the duck and the  
hen,  
And when you know that you'll know more than  
some men.

"Every bird that can scratch in the dirt can walk;  
Every bird that can wade in the water can walk;  
Every bird that has claws to catch prey with can  
walk;  
One foot at a time—that is why they can walk.

"But most little birds who can sing you a song  
Are so small that their legs are not very strong  
To scratch with or wade with, or catch things—  
that's why  
They hop with both feet. Little boy, good bye."

\*The exceptions to this rule are rare. The rule  
is generally correct, and so simple as easily to be  
remembered.

—J. L. Bates in Wide Awake.

Few people realize the pleasure to be derived from the cultivation of our native ferns. They are of easy culture, and when a bed is established it requires much less care than any other part of the garden. The most shady, moist and cool portion of the garden should be chosen. A situation shaded from the noonday sun is best, and if the sun never shines on your ferns they will thrive all the better. Ferns will grow in sunlight, but moisture is necessary to their successful cultivation.



Minute May's Department.

MY DEAR NIECES -

Girls, do you want to know how to freshen up your old cashmere dresses, preparatory to making them over? If so, I will tell you how. I first carefully ripped every seam and picked out all the threads; shook and brushed out the dust from pleating and ruffling and each separate piece of the dress; then to a pailful of warm water I added two ounces of aqua ammonia, and sufficient bluing to make the water of a very dark blue. Should your dress be rusty, you will need all the more bluing. Then take your basket of pieces and carry it out to your clothes line; also your pail or small tub of water prepared as above. Take each piece separately, immerse thoroughly in the water, but do not wring on any account, as it would leave creases which it would be impossible to press out. Then have warm irons ready, and as soon as the pieces are partially dry iron them in the following manner:—Take your ironing-board and fold a thick woolen blanket, so as to have six or eight thicknesses over your board. Never on any account use cotton sheets, as every wrinkle or crease shows, and leaves a glossy mark on your cashmere. An experienced dressmaker told me this method of restoring old cashmere, and said it was far better and more satisfactory than to have the goods redyed. I was so well pleased with my dress when it was finished that I did not get a new one, as I had intended. I bought a quantity of trimming velvet (silk would be lighter for summer), of good quality, to use with it, for vest, collar, cuffs, etc., and, with the rearing of ruffles, nearly every one thought I had a new dress. I let a few choice friends into the secret, but as I did not feel called upon to proclaim from the housetops that it was "only an old one done over," the rest remained in blissful ignorance.

The most popular of washing materials this season is sateen. The best quality of this much resembles Indian silk, and makes up very prettily. Everything is to be very gay both in dresses and millinery this season.

— MINNIE MAY.

Answers to Enquirers.

E. V. writes:—I have a large quantity of frosted silver to keep clean. Could you recommend something in the way of a bath to keep it in good order? Ans.—Try a solution of 1 oz. cyanide of potassium in one pint water (cyanide is very poisonous, and must be handled accordingly). Rinse thoroughly in running water, and then in hot water. The heat imparted by the latter will cause to dry at once when taken out.

TRUTH.—1st. On receiving an introduction, should I repeat the name of the person to whom I have just been introduced? 2nd. When sleeping at a strange house, how should the bed-clothes be left on leaving the room? 3rd. When there is no water left in the bedroom, should one ask for some or go down unwashed? Ans.—1st. No, it is sufficient to bow and say, "How do you do." 2nd. Ladies usually turn the bed-clothes over the foot of the bed to air the bed; gentlemen are not expected to do anything; but it is a good plan to teach both boys and girls to always turn the clothes clear off the bed on rising, as beds cannot be too quickly or too well aired. Some country ladies consider it proper to make up the bed before leaving the room; this may be neat, but it certainly is not nice. Even if she expects to sleep in the same bed the following night, she should at least leave it to air until after breakfast. 3rd. Ask for water.

W. J. H.—What were the seven wonders of the ancient world? Ans.—The Pyramids of Egypt, the Hanging Gardens of Semiramis at Babylon, the Temple of Diana at Ephesus, the Statue of Jupiter at Athens by Phidias, the Mausoleum, the Colosus at Rhodes, and the Pharos at Alexandria.

MARY SMITH.—To remove the black specks from your nose and chin, wash your face several times a day in cold water, using a flesh brush, which will make the blood circulate more freely near the surface of the skin. It is owing to a sluggish condition of the skin.

LUCY.—1st. Is it proper, when being introduced to a gentleman, to say you are happy to make his acquaintance. 2nd. Is it proper to make a noise while supping or drinking tea, milk, &c. 3rd. Is it proper to laugh while speaking. Ans.—1st. No. 2nd. Certainly not; it is extremely vulgar. 3rd. No; tell what you have to say, and if laughable let the company do that, in which you may join.

RECIPES.

Add a little wood ashes to the flower pts of favorites, and see how quickly it will nourish and improve the growth.

If a little vinegar or some cider is mixed with stove polish, it will not take much rubbing to make the stove bright, and the blacking is not likely to fly off in fine dust.

INSECTS.

If found on the plants in the house, they should be destroyed at once by means of tobacco water or soap-suds. An old tooth-brush may be used on hard-wooded plants. Crush the mealy-bug by the use of a small pointed stick of soft wood, or give it a drop of alcohol from a small brush.

ALMOND CAKE.

The following recipe for almond cake is a good one; it makes a very nice cake for the basket:—Take one cup of butter, one cup and a half of sugar, three eggs, half a cup of milk, two teaspoonfuls of baking powder, about two cups of flour; flavor with a little almond extract. Blanch one pound of almonds; lay aside enough to cover the top of the cake when they are cut in halves; chop the rest, and put into the cake. After the cake is in the tin, lay the split ones over the top of the cake; they will rise and brown as the cake bakes. This is delicious! Try it."

ASPARAGUS.

G. P., Newark, N. J.:—"Please give simple directions for cooking asparagus to be served on toast."—Cut the stalks of equal length, rejecting the woody portions and scraping the white part which remains. Throw into cold water. Then tie in a bunch with a soft string, and put into boiling water slightly salted. Boil until tender—from twenty to forty minutes, according to age. Just before removing the asparagus from the water, toast several slices of bread, cutting off the outer crust; dip in the boiling liquor, butter and lay in a hot dish. Drain the asparagus, unbind the bundle and heap it upon the toast, with bits of butter between the stalks.

LEMONS.

For all people, in sickness or in health, lemonade is a safe drink. It corrects biliousness. It is a specific against worms and skin complaints. The pippins, crushed, may also be mixed with water and sugar, and used as a drink. Lemon-juice is the best anti-scorbutic remedy known. It not only cures the disease, but prevents it. Sailors make a daily use of it for this purpose. A physician suggests rubbing of the gums daily with lemon-juice to keep them in health. The hands and nails are also kept clean, white, soft and supple by the daily use of lemon instead of soap. It also prevents chilblains. Lemon is used in intermittent fevers mixed with strong, hot black tea or coffee, without sugar. Neuralgia may be cured by rubbing the part affected with a lemon. It is valuable, also, to cure warts, and to destroy dandruff on the head, by rubbing the roots of the hair with it. In fact, its uses are manifold, and the more we employ it externally the better we shall find ourselves.

Room for Guilford, Connecticut. A man in that town, who was too poor to indulge in any luxuries other than children, was presented by a loving but unreckoning wife with triplets—three boys—and he sought for some family to adopt them. Mr. Clark was rather inclined to take them, but his good wife thought one would, perhaps, be enough. They were talking it over before their eight-year-old daughter, who said:—"Why don't we take one of them, ma? or don't they want to break the set!"

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES—

Well, here's May come again, warm and bright and happy, and the children will soon be as busy as bees getting ready for the twenty-fourth. Well, that's right; have as good a time as you can, and help some other body to have a good time, too. But don't blow yourselves up, for that's not a proper way to rise in the world. Now to work! I am glad to hear from so many of my nephews and nieces; still there are some who answered all the puzzles correctly for March, who have not sent one for April. How's that? Of course you all know your letters must be in by the twentieth. Now, all write, and tell me what you are doing. I take a great interest in your letters. Have you commenced gardening yet? When I was a little boy, and living on a farm, I used to grow a great many melons, and much fun we used to have trading with each other, and always kept ourselves well supplied with pocket money, between melons, chickens, ducks, pigeons, rabbits, etc. I advise my nephews, and nieces too, to raise something this coming season on your own account. You can surely find a snug spot in one corner of your farm.

UNCLE TOM.

PUZZLES.

119—RIDDLE.

I am composed of three parts:—

My first is to increase.

My second is a vehicle.

My third is to stick.

My whole is progression.

120—WORD SQUARE.

1. A city. 2. Ajar. 3. Liquor. 4. Termini.

W. H. GOULD.

121—PUZZLE BIRDS.

Each of the following stanzas is to be completed by adding, at the end of the fourth line, the name of the bird described in the preceding three lines. The stars show the number of letters in the name, which must rhyme with the second line:—

What bird is fabled to bring pleasant weather,  
And every sailor boy is his well-wisher?  
His coat is gay with many a bright-hued feather.  
This bird is called \*\*\*\*\*.

What bird is ever prophesying rain,  
Though often his prognostics seem to fail?  
"More wet!" he cries; "More wet, more wet!"  
again.  
Do you not know the \*\*\*\*\*?

What bird is he whose humming charms the ear,  
And yet whose voice, perhaps, is seldom heard?  
His plumage gleams like gems with brilliance clear.  
This is the \*\*\*\*\*.

What bird so tame about our door-yards hopping,  
Builds nests in boxes, trees, or grass and yarrow?  
In city squares beguiles the ladies shopping?  
Sure, this must be the \*\*\*\*\*.

In Noah's day this bird was very tame;  
And it is one that all the children love;  
Its gentle innocence bespeaks its name.  
You surely know the \*\*\*\*\*.

122—CHARADE.

My first is in house, but not in barn;  
My second is in leg, but not in arm;  
My third is in brain, but not in mind;  
My fourth is in head, but not in hind;  
My fifth is in shovel, but not in blade;  
My sixth is in twist, but not in braid;  
My seventh is in howl, but not in sing;  
My eighth is in jump, but not in spring;  
My ninth is in coat, but not in vest;  
My tenth is in lair, but not in nest;  
My all is a well-known city in Europe.

C. M. FRENCH.

123—BURIED CHRISTIAN NAMES.

1. As usual, Fred is in the garden, studying botany.  
2. Will you tell Mary I can do Raymond's work better than he?



3. Jonathan drew his sword valiantly, and rushed into the midst of the enemy.
4. I have tried Garrick's piano; it is a very good one.
5. I found Paul in a room in which he keeps his books.
6. Will you tell Tamar I and Bernard are going to fetch some ferns?
7. I think of the amber; that deepest tint is a very pretty color.
8. I wish you would tell mamma Bella is a tire-some child.

**Answers to April Puzzles.**

- 113—Cod.
- 114—Tiger.
- 115—Larkspur; Fox-glove
- 116—Matrimony.
- 117—Gingerbread.
- 118—Land, Aloe, Noon, Pens.

**Names of Those Who Sent Correct Answers to April Puzzles.**

W. H. Gould, Laura S. Ripley, Hannah Stevens, George W. McCreery, Sarah Fenwell, James F. Peck, Harold E. Barum, Edith Lincoln, D. L. Vansicklen, Charlie M. French, M. A. Ketchen, James P. Miller, Harriet Brethour, Wm. Howe, Maggie Roberts, Mary Jane Dickson, Harry L. Lovering, J. Harvey Walton, Richard E. Osborne, Susie M. McIntosh, Charlie S. Husband, Ida L. Triller, Minnie G. Gibson, Robert Wilson, Clara A. Cassidy, George Ihman, Gertie Johnston, Jessie McKenzie, Ernest Cassils, Tom Scott, Ellis Gordon, T. D. Mulholland, Maggie Ellis Lucas

**Letters.**

Oakville, Ont., April 16th, 1881.

DEAR UNCLE TOM,—I am a little boy 13 years old next July. As I have never seen any letters in the ADVOCATE from this part of the country, I thought I would write you one. We live on a small fruit farm two miles east of Oakville, on the banks of the beautiful Lake Ontario. Pa has taken the ADVOCATE for eight years, and we all hail its coming with delight. I have answered all your puzzles for this month. I remain your nephew,  
CHAS. S. HUSBAND.

Surry, N. H.

DEAR UNCLE TOM,—I live way up in New Hampshire among the blue, blue sky and white clouds and mountains. Just where I live travellers compare to a Swiss hamlet. There are six households of us clustered, and I live in an old tavern, part of it one hundred years old. You would think we should be lonely, but no. There is a piano in the long front room, and in these six houses are five violins, one bass-viol and one cornet, so we have a fine band, and mamma says we can never be lonely with so many grand mountains so near the stars in winter, and in summer just before a thunder storm, how they and the brooke seem to hush and shield us. Years ago our old woman lived here all alone, and one winter's night she was going home from a neighbor's when she met a big wolf face to face. Nothing daunted; the old lady not frightened one bit, began to clap her hands loudly, and soon Mr. Wolf scared, retreated.  
LEE STILLINGS.

Kingston, Ont.

DEAR UNCLE TOM,—Our teacher gave us "hard times" as a subject for composition, and I wrote the one inclosed. He said it was a good one. I thought I would send it to you, and will feel proud if you will publish it:—

**"HARD TIMES."**

Hard times is a hard subject for a soft boy to write upon. I do not know what caused them, cannot tell what will cure them, and don't believe anybody that can. Still think not that we boys don't know what it means. Hard times, as I understand it, meant wearing your big brother's old clothes, going without ice-cream, and so on. When the bills for the last circus were posted, and I was told that owing to "hard times" it was doubtful if I could go, I thought I understood it a little more, and on the day of the circus, when was informed positively that owing to the hard times I could not go, and clown, witty sayings, songs, elephants, spotted horses, giants and dwarfs, and the only things that make a boy's life "in this world" bearable were blotted out. I realized that I understood it fully. If not, I prefer to remain in my ignorance rather than to receive any more knowledge in this line.  
J. K. G.

**Commercial.**

FARMER'S ADVOCATE OFFICE,  
London, April 29, 1881.

The warmth of the past few days, together with the few light showers, has had a telling effect on the remnants of ice and snow that have been laying about, and has given life-like appearance to the grass, trees, &c. The first 15 or 20 days of April were more like March, and in fact we have seen February with more mild weather.

**WHEAT**

Keeps about steady, in spite of the desperate efforts of the "bulls" to get up a crop scare in the west. No doubt some of the winter wheat is not looking as well as farmers would like, but then a few fine days and warm showers will bring to life and greenness what was supposed to be dead and lifeless during the cold frosty weather.

With us there is little change to note. There is very little wheat offering, and what little there is has been taken by the mills, considerably over export value. The flour trade with the Province is very good at present, and the requirements of the local trade also heavy. As the season advances, the remarks we made in the last number are being borne out. When we remember that the bulk of the wheat supply for the Dominion is drawn from Ontario, it will not be a matter of surprise that we have so little wheat for export, since January. In the States of Wisconsin, Minnesota & Dakota there is from 10 to 25 per cent. of spring wheat yet to thrash. This delay has been caused by the very early winter and deep snow. The bulk of this wheat goes out of that country in the shape of flour, a very large proportion of which is ground in the great mills at Minneapolis.

**CATTLE.**

Cable advices from England the past week regarding cattle have been of a rather discouraging character; the market on the other side having materially declined, and sales have been effected with great difficulty. Still we cannot think there will be any very serious decline; besides farmers must remember that prices have now got up to a pretty high figure, and they will do well to accept a good paying price and be content. This trade is like everything else, and will have its "ups and downs."

The loss of live stock in the west the past winter is said to be much heavier than was reported some time ago; Colorado is said to have suffered most.

**CHEESE.**

The dairy business is again opening up, and the prospects are, that should the season prove favorable, we shall see a pretty heavy make. We hear of a good many new factories starting up, yet many of these will draw a large percentage from some neighboring factory or factories that have been in operation for some time. Other sections will have their make somewhat shortened from farrow cows, while other localities are more disposed to go into beef and mutton, along with a proportion of dairying. So that taking all things into consideration, we do not see that there can be any very great increase, unless the season should be unusually favorable, and it is not at all likely we shall have a more favorable one than the last. The early make will not be as heavy as last year, from two causes, one the lateness of the season, and the other the scarcity of hay in the New York dairy districts, from which cause the cows are said to be in poor condition for milking, and a decrease in the number of cows.

An English dealer writing to his New York correspondent says that if Americans send adulterated goods to England they will "kill the goose

that laid the golden egg." We hope the Canadian trade will give the adulteration of cheese and butter a wide berth, for we are just now getting a good reputation, and they can easily keep that, by being honest in the class of goods they make and send forward.

Little Falls and Utica markets have opened at 12 to 12½ cts. for new full cream cheese. This is a good fair price, and if our markets start at 10 to 11 cents, we think every one should be satisfied. Comparing prices to-day with two years ago, we find that there is a difference of 29 shillings, the cable then being only 41 shillings.

**BUTTER**

Is having a sorry wind up for the shippers of this article. Butter that was held at 90 to 100 shillings in January has been sold for 60 and even less. This illustrates pretty forcibly the folly of holding Canadian butter too long, and if farmers and dealers would only sell and ship as fast as the butter is made and comes forward, it would be much better for all concerned. It is yet too early to form an opinion as to how the market will shape, as the make at present is only sufficient to meet the wants of the home trade.

**English Markets.**

April 30th.

Beerbohm Telegram—Floating cargoes of wheat a turn dearer; corner quieter. Cargoes in passage, wheat very dull, corn do.; good cargoes of red winter wheat off the coast 47s 6d. London fair average, No. 2 Chicago wheat for shipment, 44s 6d to 45s. Liverpool, spot wheat inactive, corn do.

**London Markets.**

**GRAIN**

	Per 100 lbs		Per 100 lbs
Dehl Wheat	\$1 85 to 1 90	Rye	80 to 90
Treadwell	1 85 to 1 90	Corn	85 to 1 00
Clawson	1 85 to 1 90	Peas	90 to 1 20
Red	1 85 to 1 90	Oats	1 00 to 1 15
Spring	1 56 to 1 80	Barley	1 46 to 1 65
		Medium	1 20
		Timothy Seed	0 00 to 0 00

**FLOUR**

Flour, fall wht.	3 25 to 00	Oatmeal fine	3 00 to
" mixed	3 00 to	" coarse	3 50
" spring	3 00 to	Cornmeal	1 75 to
Bran, per ton	18 00 to 20 00	Bran, per ton	10 00 to 10 00

**PRODUCE.**

Butter, crock	18 to 20	Potatoes, bag	75 to 90
do roll	18 to 20	Apples p bag	40 to 60
do keg	15 to 16	Turnips, p bu.	20 to 25
do store pkd	15 to 16	Cheese	12
Eggs	18 to 25	Beef, per qr.	6 00 to 7 50
Carrots, p bu	18 to 25	Mutton, lb.	7 to 8 50
Onions, bag	0 00 to 1 00	Lamb	9 to 10 00
Beef, per qr.	6 00 to 7 50	Wool	0 00 to 28
Tallow red	4	Dressed hogs	per 100 lbs. 7 75 to 8 00
" rough	4	Live hogs	do 5 00 to 5 50
Honey	20 to	Lard	0 to 10
Cordwood	3 00 to 4 00	Geese, each	40 to 45
Ducks	30 to 50	Turkeys	75 to 1 25
Chickens, pr.	25 to 40	Milch cows	20 00 to 40 00
Cheese, per lb	11 to		
Beans	1 06 to		

**HAY AND STRAW**

Hay to 9 00 11 00 per ton Straw, per load 2 00 to 4 00

**Liverpool Markets.**

Liverpool, April 30th.

Flour, 9s 6d to 11s; wheat, spring, 8s 6d to 9s; red winter 9s to 9s 8d; white, 9s 6d to 9s 8d; cal club, 9s 6d to 9s 10d; corn 5s 6d to 6s 3d; oats, 6s 2d; barley 5s 3d; peas 6s 1d; pork 69s; lard 57s; bacon 45s; beef 75s; cheese 70s.

**Montreal Market.**

Montreal, April 30th.

Markets quiet and prices unchanged. Flour, superiors, \$5.35, ext a \$5.25, fancy, \$5.25 to \$5.30, superfine \$4.85, strong bakers \$4.6 to \$5.00, middlings \$3.5 to \$4, Ontario bags \$2.50 to \$2.65, city bags \$3.45; corn 57c to 58c; peas 90c; oats 37c to 38c; barley 65c to 75c; rye 90c, wheat nominal, oatmeal \$4.50; cornmeal \$3; butter western 18c to 14c; Brockville, Morrisburg and eastern townships 15c to 18c; cheese 12½ to 14c; bacon 10 to 11c; hams 13 to 14c.

**Toronto Market.**

Toronto, April 30th.

Fall wheat \$1.10 to \$1.15, spring do \$1.12 to \$1.20; barley No. 1 90c, No. 2 80c, No. 3 70 to 75c; peas 70c to 75c; oats 30c to 40c; corn 58c; flour superior \$5, strong bakers \$5.30, spring extra \$4.90; bran per ton \$14.50; hay \$7.50 to \$8; butter 15c to 20c per lb; oatmeal \$4.30 to \$4.50; cornmeal \$3.  
Remarks.—Wheat and Flour dull and unchanged, Barley nominally low, Peas and Oats quiet and easier, Corn and Rye weaker.



**Boston Markets.**

Boston, April 27th.

Corn 59c to 36 oats 46 to 52c; wheat \$1.10 to \$1.20; rye \$1.20 to \$1.25; barley \$1 to \$1.15; shorts per ton \$17 to \$18; fine feed \$18.50; middlings \$20 to \$21; hay per ton \$20 to \$24; straw, 100 lbs. \$1 to \$1.75; apples per bbl. \$2.25 to \$2.75; butter creameries 28c to 30. V. & N. Y. 22c to 25c, common 12c to 17c; beans per bush. \$2.20 to \$2.75; cheese 6c to 15c; potatoes per bush. 70c to 90c.

**New York Markets.**

Flour common per bbl. \$4.40 to x x \$8, rye flour \$5.50 to \$5.60; wheat \$1.22 to \$1.25; barley dull and nominal; malt unchanged; corn 60c to 61c; oats 45c to 51c; hogs steady. New Yorks 12c to 28c; potatoes dull and weak, peerless \$2.12 to 2.37, rose \$2.25 to \$2.50; butter dull, weak, state 12c to 27c cheese unchanged and quiet; lard firm \$11.62 1/2.

**Chicago Market.**

Wheat active and higher, \$1.01 1/2; corn 42c for cash; oats 36c; pork \$17.45 to \$17.50; lard \$11.30; hogs, light grades \$5.90 to \$6.15, mixed packers \$5.75 to \$6.45; cattle, moderate common to fair shipping \$4.75 to \$5.15, exports \$5.75 to \$6.10, corn fed Texans \$4.40 to \$4.80, butchers cattle \$2.50 to \$4.45.

**Montreal Cattle Market.**

Montreal, April 25.

Owing to a continued liberal supply of cattle and a limited demand, prices were easier, ranging from 31-2c per lb to 41-2 for good to choice butchers cattle live weight. There was some demand for shipping cattle, a purchaser buying 100 head at 4 1/2 to 5 1/2c. Calves were scarce and in good demand the sale being reported of 11 good ones at \$4.75 each; Sheep at \$8 to \$12 each, some large ones selling at the latter figure. Small and inferior sheep were sold at \$2.50 to \$3 each. Hogs were dear, sales occurring at \$7.50 per 100 lbs.

**Stock Notes.**

The Guelph Fat Stock Show, which was held on the 6th of April, was a decided success. The Directors have decided to hold a Christmas Fat Stock Show in December next.

Mr. Hugh Love, of Seaforth, Ont., recently sold to T. Robson, of London, Ont., an entire colt, two years old, for \$1,000. The dam of this colt is Mr. Love's imported Clydesdale mare "Bonnie Gean," and his sire is imported "Sterlingshire Champion," which was recently sold for \$2,500.

It is reported that the farmers of Prestom, Manitoba, are building large stock-yards to enable them to keep all the cattle of the neighborhood in a drove during the summer, under the care of a mounted herdsman. Cows giving milk will be taken home from the yard in the evening by their owners, and returned in the morning, where they will join the outgoing drove.

Few men have ever exercised so much influence upon the horses of a large country as Mr. Dunham, of Ills., U. S. Within the last few years he has brought over more than 1,500 Percheron mares and sires, which are in use in the U. S. and Canada. We all know the influence pure-bred animals exercise over the common stock of the country. How great a change must such a large number work!

**The Osborne Self-Binder.**

We are pleased to call the attention of our readers to the advertisement of Messrs. A. Harris, Son & Co., of Brantford, which appears in another part of this issue of the ADVOCATE. We had the pleasure of visiting the factory in Brantford quite recently, and found it a scene of busy activity. About 150 men were employed and all hands were working full time. The machines made by this enterprising firm are known all over the Dominion, and must be favorites among Canadian farmers, or so large a factory could not be kept so steadily employed in building them. "The New Brantford Mower" and "The New Brantford Reaper" are a pair of new machines recently brought out by the firm to meet the demands of those farmers who desire light weight, combined with efficiency and strength. They are true Canadian machines, are patented both in Canada and the United States, and their popularity is shown from the fact that one of the largest manufactures in the State of New York has already purchased from Messrs. A. Harris, Son & Co. a set of patterns and the right to manufacture in the United States. The patentees claim special practical features in these machines, which must prove of great advantage in the hay and harvest fields. "The Osborne Self-

Binder," built by this firm, is one of the most wonderful among labor-saving machines. The prejudice against harvesters of this class has long been overcome, and now the Messrs. Harris' informs us that the only trouble is to fill the orders, which are poured in upon them from British Columbia, Manitoba and Ontario. "The Osborne" is the only self-binder in the market that can either cord or wire for binding in the same machine, and thus makes farmers independent in the matter of binding material.

Horse rakes are of two kinds, some good and some bad. We have heard of horse rakes being sold to farmers which looked all very well in every respect, but as soon as put to work have been left in the fence corner to rot, the teeth having been of poor material. Mr. J. O. Wisner & Son, of Brantford, Ont., are careful manufacturers, and are so particular that they put every tooth under a severe test before putting it into a rake; thus a person can safely depend on doing the work with his rake.

Farmers having papers or valuables that may be mislaid, stolen or burned, in their possession, would find a fire and burglar-proof safe a good investment. We have had three safes, but by far the best is one made by Goldie & McCulloch, of Galt, Ont. We think it quite equal to any safe of its size made in the States, and far superior to some we have seen made by others in Canada. If you want either a large or a small one, send to them for their circulars.

Mr. McCrae, of Guelph Ont., writes us that he intends going to England this spring, where he will select a few Galloways to replenish his herd. He reports his sales good for the last five months, having in that time sold 20 head.

The Board of Agriculture and Arts held a meeting in Toronto on the 27th of April. Mr. Jno. Wade, of Port Hope, was elected as the new secretary. Mr. Klotz, of Berlin, has discovered some gross misconduct on the part of Mr. Graham, the treasurer, which, if thoroughly investigated, may perhaps cause that official to disgorge a greater or less sum to the funds of the Association. The farmers require more light, truth and justice.

There are now many members on the Board who desire these ends. Every honorable member should aid to the full disclosure of every improper act; when this is done, and the Board reduced to working power, much good may be done by it. As the agricultural department of this paper is now struck, we must defer further comment until the next issue. Two prizes are to be offered for the best essays on Forestry:—1st prize \$30, 2nd prize \$20. The treatises to include a description of the best methods of preserving our present forests, and a list of varieties of trees best suited for forest planting. Similar prizes are to be offered for essays on the best methods of restoring fertility to partially worn out soil; these essays not to exceed twenty pages each of foolscap; to be sent to the Secretary not later than August 15th. A special committee shall be appointed to judge the same and award the prizes. On a motion from Prof. Croft it was decided that the prizes on the restoration of the soil be confined to essays from practical farmers. Perhaps some of our subscribers may try for them.

**NEW ADVERTISEMENTS.**

**Notice to Exporters & Feeders of Cattle.**

Those parties who wish to realize the best price for their FAT CATTLE should consign them to be sold direct to butchers in the large inland towns of England.

Messrs. URWICK & HUNT, Auctioneers, will be glad to make arrangements to dispose of weekly consignments in the great central town of BIRMINGHAM, where the supply is always much below the demand.

All particulars on application Reference: Mr. S. URWICK, Secretary to Hereford Herd Book Society, Hereford, England, or Editor of Hereford Times, Hereford.

Address communications to—Midland Counties Herald Office, Birmingham, England. 185-b

DERRY BASKETS & CRATES, Peach, Plum, Cherry and Grape Baskets, Bushel and Market Baskets, Clothes Baskets, &c., &c.  
W. B. CHISHOLM, Oakville Basket Factory, 185-f

**PORTABLE**

Saw Mills,  
Shingle Mills,

**GRIST MILLS**

Buckwheat and  
Corn Meal Mills,

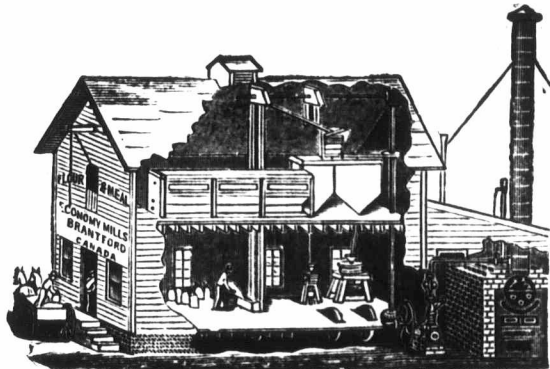
**Our Specialty**

Send for New Circular.

Address:

**WATEROUS Engine Works Co., - Brantford, Ont.**

185-ff



Capacity of Works per week—1 Portable Saw Mill, 1 Portable Grist Mill, 3 Standard Chopping Mills, 6 Champion Farm Engines.

**THE FIRST PRIZE DRAIN-TILE & BRICK MACHINE IMPROVED FOR 1881.**

This is the Cheapest and most Efficient Machine for Farmers and Tile Makers. Capable of making from five to ten thousand tile or brick per day, suitable for horse or steam power.

References kindly permitted to the following gentlemen, who have procured them in this part of Canada:—

Messrs. C. Pratt, John McGregor, London; J. Nichols, Frome; J. Gerward, A. Nichols, Lambeth; Geo. Vanghran, St. Thomas; S. Budden, Dorchester; Wm. Anderson, Arva; N. Foster, Exeter; J. Smith, West McGillivray; H. Marsh, Nairn; W. Dobbie, Appin; J. Waterworth, Wardsville; W. Feith, Glencoe; F. Bayington, Bothwell; E. Hales, Alvington, and others

I am now prepared to ship to all parts of the Dominion. The Bricks and Tiles have a smooth surface, no sand being required, and they can be packed up directly from the machine. For particulars and Price, Address,

**D. DARVILL, Manufacturer,**

**London, Ont., Canada.**

185-c.



NEW AGRICULTURAL WORKS.

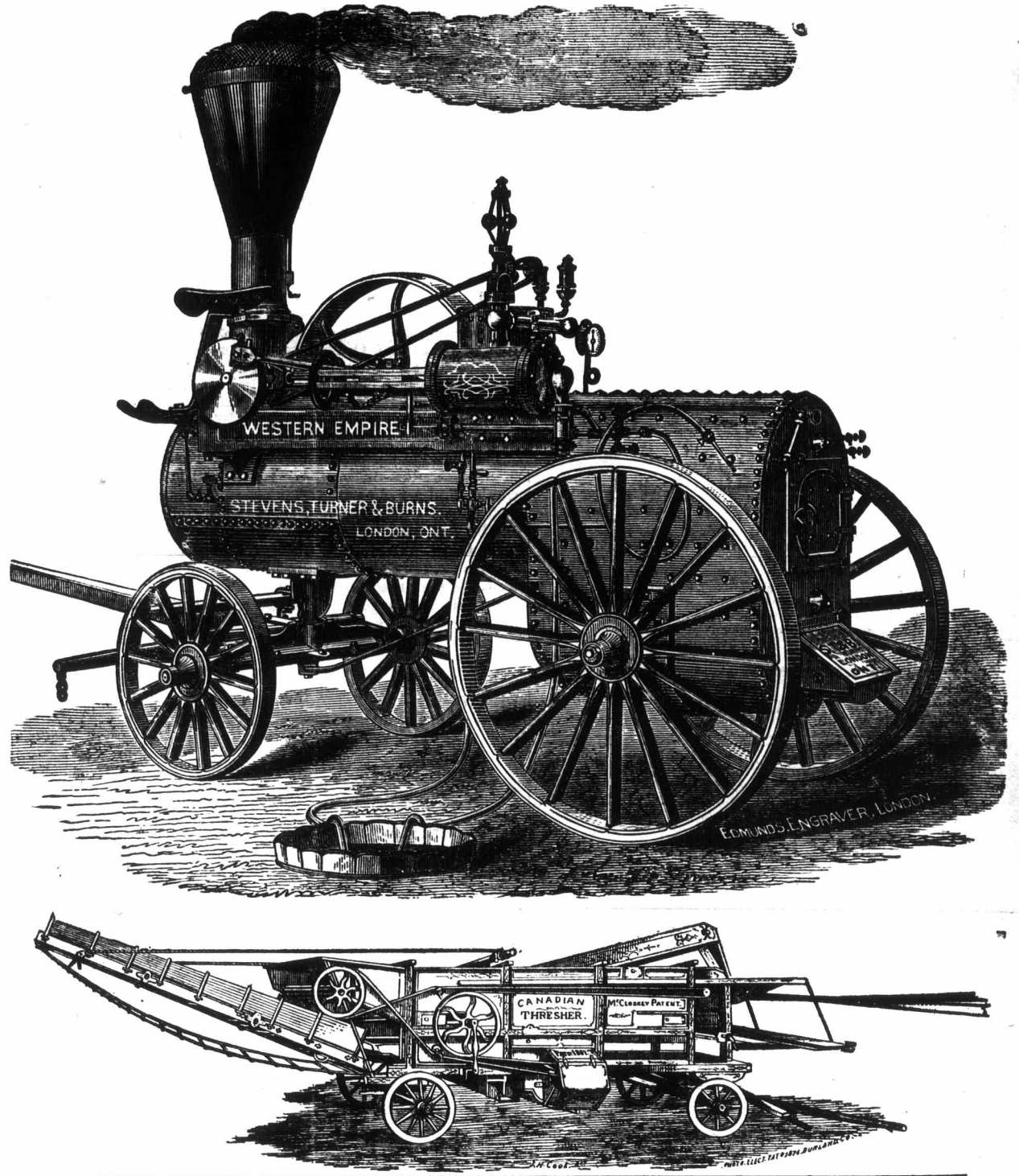
NEW THRESHING MACHINES! NEW AGRICULTURAL ENGINES! EVERY NEW IMPROVEMENT ADOPTED!

BEST MATERIAL USED, BEST MACHINERY AND BEST WORKMEN EMPLOYED.

Before purchasing your THRESHERS just CALL AT UR NEW WORKS, or send for our Catalogue.

STEVENS, TURNER and BURNS,

BATHURST STREET close to G. W. R. Passenger Depot, LONDON, ONT.



GALT SAFE WORKS.

GOLDIE & McCULLOCH,

GALT, ONTARIO, CANADA,

Manufacturers of

VAULTS, VAULT DOORS, ETC,

Fire and Burglar-Proof Safes

For Banks, Registry Offices, Public & Private Buildings, &c.

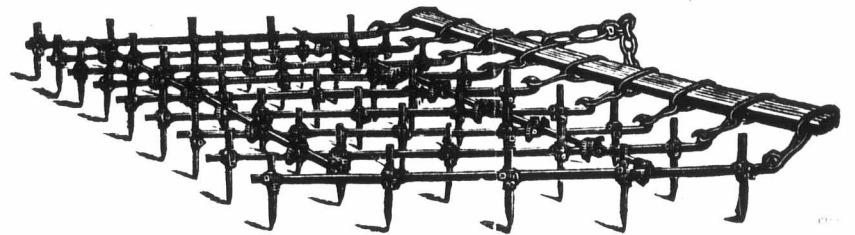
We are also the largest Manufacturers in the Dominion of

Steam Engines and Boilers, Water-Wheels, Wood-Working and Stave Machinery, Wool Machinery, Flouring and Saw Mills, Mill-Stones and Mill Furnishings of Every Description.

Circulars furnished on application. All materials and workmanship guaranteed.

N. B.—We are now making a small Fire-proof Safe, specially got up for FARMERS' use, 28 inches high outside, 19 inches wide, and 19 1/2 inches deep, with book space, pigeon holes and drawer inside, and patent combination lock. This little safe, when finished, is a nice ornament in a room, and every farmer should have one, the price being within the reach of all.

GOLDIE & McCULLOCH, Galt, Ont.



Having just commenced business, I am determined, if close attention to business, superiority of workmanship, moderate charges and the use of the best material can procure success, I intend to obtain it. I am now prepared to construct the neatest plain and ornamental fences, also to supply

BEST'S FLEXIBLE HARROW

and attend to general blacksmithing, horse-shoeing and jobbing work. Work shop on King street, to Campbell's carriage factory.

I am prepared to ship Superior Harrows to all parts of the Dominion. Price, single sets, \$16. For orders of six or more, a very liberal discount will be made.

JOHN SUSSEX, London, Ont.

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FRUIT  
The be  
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Village of  
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**E. L. Church's**  
**HAY ELEVATOR**  
And Carrier.  
THE BEST IN USE.  
**WORTMAN & MORROW**  
Manufacturers,  
LONDON, ONTARIO.  
Send for descriptive Circular  
and Price List.  
Responsible Agents Wanted.  
182-1f

**FRUIT FARM FOR SALE.**

The best bargain in Canada to-day for anyone desiring to purchase a Fruit Farm and a beautiful home in the best locality in Canada for fruit raising. Adjoining the Corporation of the Village of Grimsby, containing 75 acres of land, 32 acres of orchard, having 2,200 apple trees, between 300 and 400 peach trees, 1,000 black currants, half acre raspberries, all of which will soon be bearing. A splendid location for house, overlooking the whole orchard and lake. Property now has good barn, small frame house. This for sale at a price to suit any person wishing a home in this beautiful and healthy locality. Investment will pay greater interest than any farm in Canada. For particulars address Wm. FORBES, Grimsby, Ontario. 184-1f

**CHARLES THAIN,**

MANUFACTURER OF  
*Double-Mould Ploughs, Self-Adjusting Turnip, Carrot and Mangold Drills.*  
*Moveable Horse Hoes, Common Plows, Cultivators, Iron Harrows, &c.*

**ORDERS SOLICITED.**  
Deals with the consumer direct. All goods warranted.  
**CHARLES THAIN,** Guelph, Canada.  
184-b

**COTTON YARN.**

WHITE, BLUE, RED AND ORANGE. Warranted the very best quality. None genuine without our label. Also, BEAM WARPS for Woolen Mills.  
Send for Circulars, &c. Address—  
WM. PARKS & SON,  
New Brunswick Cotton Mills,  
St. John, N. B.  
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**"BELL" ORGAN**

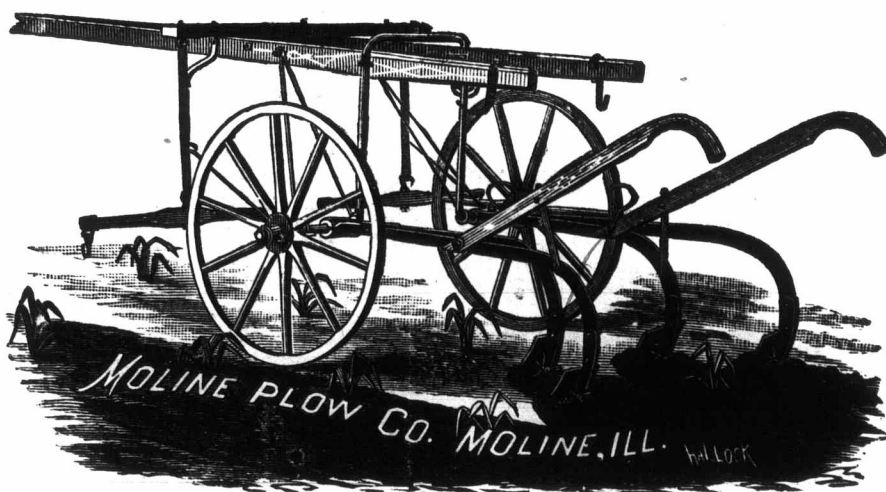
The following is what MR. HAGUE says about the "BELL" ORGAN:  
To J. Hecher, Esq., Agent for Bell's Celebrated Organs at Montreal.  
Dear Sir,—In handing your cheque in payment of the Bell Cabinet Organ I purchased from you, I cannot but say that the instrument is of a style and quality which I did not suppose capable of being produced in Canada, the tone is pure, rich and deep, and the effects that can be produced by combination of the stops are charming.  
Messrs. Bell & Co are to be congratulated on their success in developing the manufacture to such an extent as is manifest in the instrument you have sent me.  
Wishing them large and remunerative sales, I remain yours truly,  
Signed, G. HAGUE.  
General Manager Merchant's Bank of Canada.  
Montreal, January 24th, 1879.

- Received Silver Medal and Diploma at Provincial Exhibition..... 1871
- Received Silver Medal and Diploma at Centennial..... 1876
- Received International Medal and Diploma at Sydney, Australia..... 1877
- Received only Medal for Parlor Organs at Provincial Exhibition..... 1878
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**W. BELL & CO.**  
41-47 E. MARKET-SQ.,  
GUELPH, ONT  
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**BRANTFORD PLOW WORKS.**

J. G. COCKSHUTT, PROPRIETOR.



This cut represents the  
**WESTERN**  
**Corn Cultivator!**

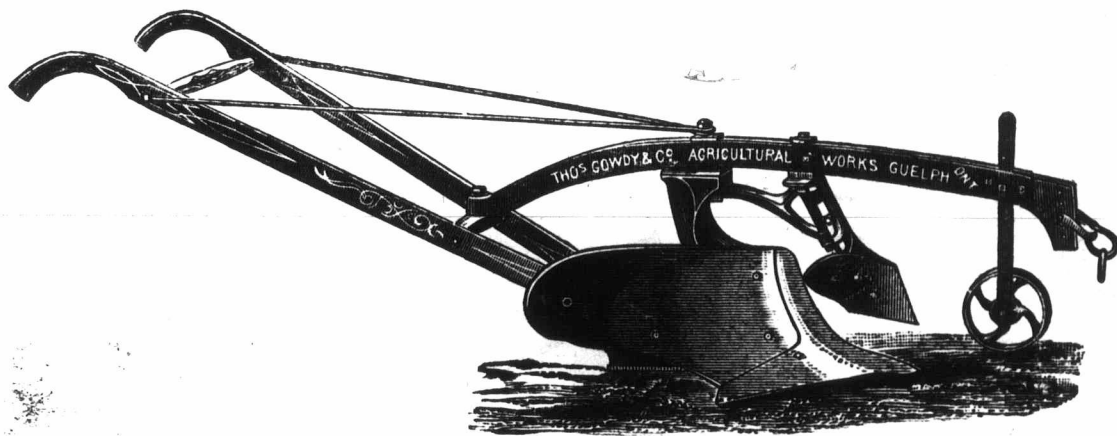
Which is without doubt the very best implement known for cultivating Corn and Roots. Send for circulars and read its record for last season. You had also better get a good planter for \$1.50.

JAS. G. COCKSHUTT, ESQ., BRANTFORD.

Townsend Township, June 17th, 1880.

DEAR SIR,—The Western Corn Cultivator I purchased from you this Spring is all that you recommend it, and does its work first-class. I have cultivated fifteen acres of corn with it and can clean it well without the use of a hoe, and I consider it as near perfect as can be made. I would cheerfully recommend it as the best Corn Cultivator I know of, and advise all who contemplate raising Corn successfully to try one.  
183 c

S. S. APPERFORD, Tyrrell P. O.

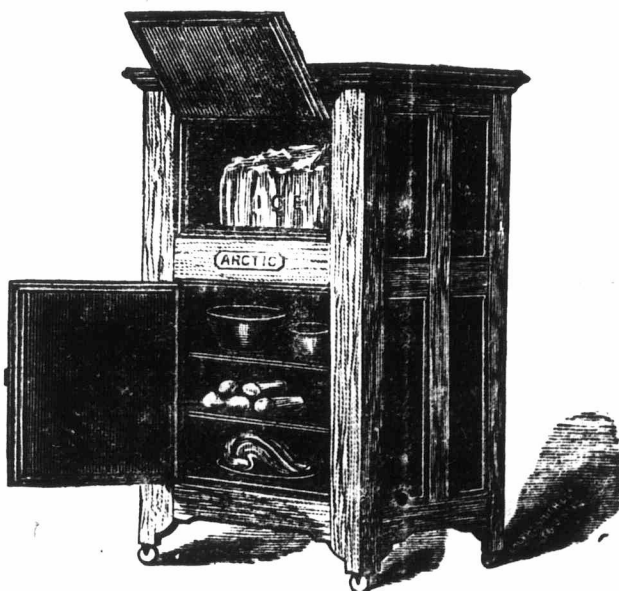


**PATENT SECTIONAL IRON BEAM PLOW,**

The Most Perfect Jointer Plow in the Market. Manufactured by  
**THOS. GOWDY & CO., GUELPH, ONT.,**

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Manufacturers of all kinds of Agricultural Implements.



**WITHROW & HILLOCK'S**

IMPROVED PATENT

**Arctic Refrigerator!**

Was awarded the Silver Medal and First Prize at Industrial Exhibition, 1880

The Best Refrigerator Made in Canada and Equal to any Made in the United States.

We Guarantee Pure Dry Air, Very Low Degree of Temperature and Moderate Consumption of Ice.

We manufacture a variety of styles for the use of Butchers, Grocers, Provision and Milk Dealers, Dairy-men and others; also several sizes for the use of families.

The cut represents one medium sized family box.  
Send for Illustrated Catalogues

**WITHROW & HILLOCK.**  
Office and Warerooms—114-116 Queen St. East.  
Factory—Cor. of Queen and George Sts. Toronto. 184-1f

**BERRY CRATES** & Baskets. In use 10 years. Best and cheapest made. (Send for Free Circular. N. D. Batterson, Buffalo, N. Y. 188-c

**\$72 A WEEK** \$12 a day at home easily made. Costly outfit free. Address TRUS & Co., Augusta, Maine. 178-1

**AGENTS Wanted.** Big Pay. Light Work. Constant Employment. No Capital Required. **JAMES LEE & Co., Montreal, Quebec** 179-L



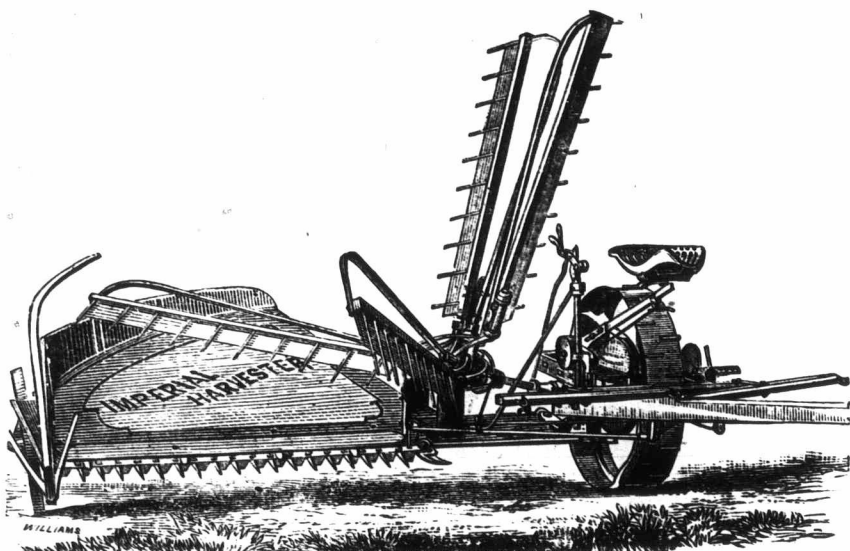
**MATTHEW'S SEED DRILL.**  
 The Standard of America.  
 Admitted by leading Seedsmen and Market Gardeners everywhere to be the most perfect and reliable drill in use. Send for circular. Manufactured only by  
 EVERETT & SMALL,  
 Boston, Mass.  
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**DAIRY GOODS FOR 1881.**  
**CHEESE MAKERS AND FACTORYMEN**  
 Should send for our  
**PRICE LIST**  
 Of Dairy Goods and Factory Furnishings before purchasing elsewhere.  
 PEABCE & PICKERING,  
 London, Ont., Canada.  
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**OSBORN**  
 FIRST PRIZE SEWING MACHINE  
**GUELPH SEWING MACHINE CO.**  
 Invite inspection and a trial of their  
**"OSBORN A" STAND,**  
 "B" Hand Shuttle Sewing Machines,  
 UNEQUALLED LAWN MOWER.  
 Superior Sad Irons & the Dover Egg-Beater.  
 All first-class articles, necessary in every house.  
 Try them!  
 W. WILKIE, Manufacturer,  
 Guelph, Ont.  
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**MOLSONS BANK**  
 THOS WORKMAN, President,  
 F W THOMAS, Gen'l Manager.  
 Paid-up Capital, \$2,000,000  
 Rest, 540,000  
 Contingent Fund, 10,169  
 The London Branch of Molsons Bank, Dundas Street, one door west of the New Arcade,  
 ISSUES DRAFTS ON LONDON, ENG. NEW YORK, U.S. ST JOHN, N.B.  
 and all the principal Cities and Towns in Ontario and Quebec.  
 Offers unusual facilities to those engaged in the produce business.  
 Deals liberally with merchants and manufacturers.  
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 Makes advances on United States Currency and Securities on reasonable terms.  
**SAVINGS BANK DEPARTMENT**  
 Offers opportunity for safe and remunerative investments or accumulative savings.  
**JOSEPH JEFFERY,** Manager.  
 London, January, 1880. 169-12

All Gold, Chrono and Lithograph Cards (no 2 alike), with name, 1c. 35 Flirtation Cards, 10c. Game of Authors, 15c. Autograph Album, 20c. All 50c. Clinton Bros., Clintonville, Conn. 178-L  
**JOHN CAMPBELL,**  
 KING STREET, LONDON, ONT.  
 Manufacturer of  
 CARRIAGES, BUGGIES, CUTTERS, SLEIGHS, &c.,  
 Selected from the Newest Designs; which, for Elegance, Durability and Workmanship, cannot be surpassed in the Dominion. dc-12



**IMPERIAL HARVESTER**

This is the most perfect and complete Reaper now made and offered to the farmer. It contains more practical improvements than any other Machine. It is the only one made with platform tilting independent of truck. It is the simplest and most Durable in Construction of any Reaping Machine now offered to the farmer. It cannot get out of order, and is guaranteed to work in any kind of grain and on any kind of ground. It is the **CHEAPEST** Machine ever offered to the farmer. It has **NO EQUAL**, and every farmer, if he wants full value for his money and a perfect Reaper, must have one.

For full particulars send to  
**GLOBE WORKS, London, Ont.**  
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THE NEW BRANTFORD REAPER.



THE NEW BRANTFORD MOWER.



THE OSBORNE SELF BINDER.

**The Leading Machines of the Dominion.**

THE NEW BRANTFORD REAPER weighs 750 lbs.; has our new patent chain lifter for raising the outside end of the machine; is largely made from malleable iron; is simple, strong and durable, and warranted to have no superior in the harvest field.  
 THE NEW BRANTFORD MOWER is the simplest in the world; the stillet runner, and has no equal in the hay field.  
 THE OSBORNE SELF-BINDER is the only perfect Binder in the market; uses either cord or wire, as preferred, and stands without a rival as the most wonderful machine of the age.  
 Send your name and address for "THE NEW BRANTFORD MONTHLY," a handsome illustrated Journal. Sent free to any address.  
 These Celebrated Machines are manufactured for the Dominion only by

**A. HARRIS, SON & CO.**  
 Brantford, Ontario, and Winnipeg, Manitoba.

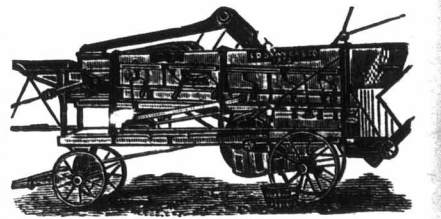


**25 Years'**  
 experience of a  
**CONSTANTLY INCREASING DEMAND**  
 for the

**Cook's Friend Baking Powder**

shows that the WANTS of the CONSUMER have been WELL STUDIED.  
**THE COOK'S FRIEND**  
 is PURE, HEALTHY and RELIABLE. It will always be found equal to any duty claimed for it. Retailed everywhere.  
 ASK FOR McLAREN'S COOK'S FRIEND.

**L. D. SAWYER & CO.**  
 Hamilton, Ont.  
 Original and Only Genuine  
**"Grain-Saver"**  
 THRESHING MACHINERY.

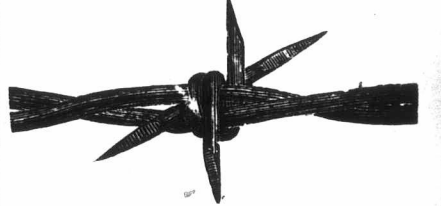


THE STANDARD of excellence throughout the GRAIN-RAISING WORLD.  
**MATCHLESS** for Grain Saving, Time Saving, Perfect Cleaning, RAPID AND THOROUGH WORK.  
**INCOMPARABLE** in Quality of Material, Perfection of Parts, ELEGANT Finish, and BEAUTY of Model.  
**MARVELOUS** for VASTLY SUPERIOR work in all kinds of Grain, and UNIVERSALLY known as the only successful Thresher in Flax, Timothy, Clover and all other Seeds.  
**ASTONISHINGLY DURABLE** and wonderfully simple, using less than one-half the usual gears and belts.  
**LARGEST Capacity** of any Separator made in Canada.

**STEAMPOWER THRESHERS A SPECIALTY**  
 36-inch Cylinder. 48-inch Separator.

For full particulars write for Illustrated Circulars of Threshers, Engines, Mowers and Reapers, which we mail free.  
 173-L

**-SHORT'S-**



**Recent Four-Pointed Steel Barb Wire.**

Weights 14 1/2 oz to the rod, and will stand 1,600 pounds to each line, before breaking. It is adopted by Railroads, Stock Raisers and Farmers, on account of its superior style of Barb, which passes between the two wires, firmly locking them together, then is wound around both, fastening the barb securely so that it cannot be moved, thus making the strongest, most durable, and cheapest wire in the market.

SEND FOR CIRCULARS AND PRICES.  
 SAMPLES SENT FREE ON APPLICATION.  
**Ontario Metallic Spinning Co.,**  
 WOODSTOCK, ONTARIO.  
 In writing, please mention this paper 179-1f

**\$66** a week in your own town. Terms and \$5 outfit free.  
 Address H. HALLETT & Co., Portland, Maine.