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the FARMER'S ADVOCATE

PERSEVERE AND SUCCEED.

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AND HOME MAGAZINE

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THE FARMER'S ADVOCATE

—AND—

HOME MAGAZINE.

WILLIAM WELD, Editor and Proprietor.

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

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4. Subscribers who desire to change their P. O. address will send both *old* and *new* address.
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We should be pleased to have the assistance of any and all of our readers in increasing our circulation, and shall esteem it an especial favor to have this number of the ADVOCATE shown to those who might be interested. Specimen numbers will be sent when desired.

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Our Monthly Prize Essay.

Our prize of $5.00 for the best essay showing the *advantages and results derived from the application of artificial manures to grain, grasses and roots*, has been awarded to W. L. Brown, of Hyde Park, Ont.

Our next prize of $5.00 will be given for the best essay on the *treatment of milk cows*. The essay to be from the actual experience of the writer, and must comprise the following subjects:

Treatment of cows running repeatedly.
" " before and after calving.
" " that don't clean at once.
" " that eat cleaning.
" " udder before and after calving.
" " calves if weaned.

The essay to be handed in to this office by the 20th May.

A prize of $5.00 will be given for the best essay upon *the home curing and best method of keeping hams and bacon*. The essay to be the actual experience of the female members of the families of our subscribers, and must be handed into this office on or before the 13th of June, 1883.

Our New Departure.

On another page of this issue our readers will find a list of useful and entertaining books for the old and young. We have procured them on favorable terms, and wish our friends to procure them as premiums for obtaining new subscribers to the FARMER'S ADVOCATE.

No household should be without a copy of "The Every Day Doctor," and all the boys and girls will win one or more copies of our Popular Tales.

The Russian Mulberry.

The demand continues so great for these young trees that we will continue to mail them as long as they can be kept in good order this spring, and then book for fall deliveries. From this date three young *Russian Mulberry* trees will be presented and mailed free to any old subscriber who sends us in one dollar for one new subscriber. You cannot procure these trees in so easy and cheap a manner in any other way.

FOR ADVERTISERS.—THE FARMER'S ADVOCATE is an unrivalled medium on account of its large circulation, its high reputation for conscientious principles, and the character of its readers.

All our premiums have been duly mailed. Any subscribers, whose premiums have not been received, will kindly notify us when money and new names were sent in, and give what premium was chosen. If now too late to mail, the premium will be duly entered for fall or spring delivery.

Our new premium list will not be issued until about July, but will be especially attractive in all its features.

The Month.

The month of May is one of the most important of all others to our farmers. It is the month when as you sow so shall you reap. Owing to the lateness of the season the work will be crowded, and in the hurry our farmers are apt to do the work in a slip-shod manner. Labor is high, and good farm hands are scarce, and this should suggest the advisability of having more labor for the year around. Just when farmers want help it is not to be had, and when men are looking for it there is no work. The lateness of the season would also suggest that more attention should be paid to having the land in such a condition that work could be commenced as soon as the snow is well off. But such is the lack of proper drainage that the greater portion of the heavy soils remain wet and unfit for culture for ten days and two weeks longer than they should. A good deal of ditching might be done this month, and no doubt at present there would be, but men who can dig a satisfactory drain are scarce; and, also, drain tiles cannot be had.

Sheep shearing will be forward, and our farmers will find it to their advantage to wait until the weather is sufficiently warm, or not to wash the sheep, but the wool, which, in our opinion, is preferable, and which is generally admitted.

Work neglected this month will be behind the rest of the year, so be up and doing. Harrowing fall wheat, which appears to be almost hopeless, will greatly assist in spreading the roots, and a subsequent rolling will fix them in the soil. The meadows should be looked after, and a top dressing of barn-yard or artificial manures be given.

The Harvester.

No agricultural implement ever invented has been so rapidly improved as this machine. It is the implement of this generation. The change from the reaping hook to this giant is a wonder in itself, and now it is no experiment. The twine binder is destined to take the place of the harvester on large farms. Many different patterns are now being constructed in Ontario; four thousand will be made this year in this Province. We are frequently asked to give our opinion about different machines, and requested to say which is the best. We should exceed our duty if we condemned one and lauded another.

The Globe Harvesters, advertised in the columns of this paper, are highly commended by those who have used them. The firm warrant their machines. The names of the President and Vice-President of this firm ought to be a sufficient guarantee to the worth of the warranty.

The Industrial Exhibition Association of Toronto, Ont., have appointed Mr. H. J. Hill, Assistant City Clerk, to be Manager of the Fairs of the Association. Mr. Hill is admirably able to fill this position, and the Directors have made an excellent selection.

On the Wing.

On the 13th of April we went to Harriston, a thriving town in the township of Minto, on the W. G. & B. Railway. This town has an organ and furniture factories, grist and saw mills, and other important works. The inhabitants appear to be thriving and prosperous, and claim to have no poor among them. The land in this part of the country is fertile and the farmers are enterprising. One of the most noticeable features is, that the farmers have established and have kept up an annual dinner for the last twenty-four years. This we believe to be the oldest one in Canada. We formerly thought the Hullett Agricultural Society to have been the oldest, but their annual dinner has only been established for twenty years. The results of both these social gatherings have been in laying the foundations of enlightenment and prosperity to the farmers in these localities. The deliberations and discussions held at these dinners have been the means of establishing and maintaining agricultural societies and exhibitions, procuring land and erecting buildings, annual stock sales, and also a farmers' club. The agricultural societies have been doing good service to the country, but the debatable question arises, Which are likely to do most good, farmers' clubs or agricultural societies? The latter supported or aided by Government taxation, the other maintained entirely by voluntary means. One must always be more or less under the control of the partizans of those who are in power, and favors granted to partizans have been felt in some instances to have been used to the apparent advantage of party, and to the detriment of perhaps those more deserving. In farmers' clubs the partizan feelings have, we believe, been less influential, and we trust that rules and regulations may be so framed and carried out that they may never supercede the true object for which they are established, namely, the advancement and interest of the farmer.

The members of the farmers' club met in the evening. One of the most important subjects mooted was introduced by Mr Moor, of Waterloo, one of the members of the Board of Agriculture, and a member of the late Agricultural Commission, and is a very successful hop-raiser. He proposed the appointment of a veterinary surgeon for each county, to examine, approve or condemn any stallion for service in the locality, and the placing of a tax on all stallions. Nearly all the proprietors of CLYDESDALE stallions approve of placing a tax on stallions; but the appointment of Government veterinary surgeons at a salary of $500 per annum each, for each county, was not approved of by the majority of the farmers. We quietly asked the Vice-President, a plain, practical farmer, his opinion about the matter (the President being absent, having met with an accident). He considered that it would be better to leave the choice of stallions to the farmers. This we believe nearly every practical farmer would approve of, for just as soon as the Government takes the control, some particular class would be favored to the detriment of the other classes. The country is large and varied, and the requirements are for all classes The general purpose horse must always be in the greatest demand, but not being thorough-bred or pure-bred animals, that class would be rejected by the combined influence of associations. The great demand at the present time appears to be for heavy draught horses; the prices they command are such as to turn the attention of farmers and importers to them and to the establishment of registers. This is a good plan if kept from under the control of the Government. The Secretary of the Board of Agriculture, whose salary has been thrice doubled, introduces a new Clydesdale stud book. If the Government does not pay him sufficient for his whole services let them double it again rather than to allow our farmers to be injured as they have been by the Government control of the Shorthorn herd book, which has caused much loss and has cost us far too much, and is now worthless as a record—condemned by our breeders. If money is granted for agricultural advancement, it should be under the control of practical farmers in the township, not to please members and speculators.

The horse, bull, and seed show was well attended by spectators, but few exhibitors. Owing to the almost impassable condition of the roads many who would have shown seeds were prevented from doing so. The entries in this class were few. The grain was very good. Some of the horses and cattle were fine animals. The judges apparently gave satisfaction to all except some of the exhibitors who failed in receiving prizes in accordance with their own judgment, Mr. Bell and Mr. Adams indignantly refusing to take any second prizes.

The following is a list of the prize takers:

HORSES.

Imported heavy draught stallion, 1st, R. Leitch; 2nd, L. Bell.

Best Canadian draught stallion, 1st, C. Valentine—only one entry.

Best general purpose stallion, 1st, J. Brady; 2nd, W. Adams.

Best draught stallion under three years, 1st, R. Leitch—only one entry.

BULLS.

Durham bulls, two years old and upwards, 1st, Jas. Moore; 2nd, P. Fife.

Durham bulls, under two years old, 1st, R. & W. Scott; 2nd, E. Atcheson.

SEEDS.

Best four bushels white Russian wheat, 1st, A. Patterson; 2nd, T. Grills.

Best four bushels barley, 1st, P. Fife; 2nd, T. Grills.

Best four bushels white oats, 1st, P. Fife; 2nd, T Grills.

Best four bushels peas, 1st, T. Grills—only one entry.

The following were the judges:

For horses, S. McKenzie, Huron; Geo. Moore, Waterloo; J. McNab, Ayr; and James Alexander, Guelph.

For bulls, Wm. Thompson, and W. Dickison, Carrick; and James Slemmon, Peel.

For grain, G. Anderson, W. Hinds, and James Cummings, Harriston.

The Root Crop.

The cultivation of roots is one of the main stays of successful farming in a country where stock raising and feeding takes such an important stand as it does at present in Canada. Root culture should be considered, besides, as one of the essentials in a proper rotation of crops. We are fully persuaded that the average farmer does not pay sufficient attention to this branch of industry. In any rotation roots and corn should be prominent. What pays better than a good crop of potatoes, mangolds, turnips and carrots? Not only do they pay as a crop in themselves, but the culture fits the ground for a future crop. The present month should see the land prepared, and in the case of carrots, mangolds and potatoes, the seed should be sown. Preparation and thorough culture are the main points in successful root tillage. Fall plowing and manuring at the same time is the most commendable course. Where the majority of farmers fail in their roots is the bad condition of their land, and the manuring in the spring with probably half rotted dung. To produce the best effects from manure, it should be thoroughly incorporated with the soil to become available to the plant. Fresh barn-yard manure thrown on this spring cannot produce the best results, as the process of decomposition will not be sufficient to obtain the greatest amount of plant food.

Carrots should be sown as quickly as possible, as the seed takes a long time to germinate, and the plant makes but slow progress in the early part of the season. The growth, however, may be accelerated by soaking and then mixing with dry sand; indeed, this way is preferable, if only to get the seed evenly sown. Carrots are the best paying root crop we have, and are less cultivated than any other.

Mangolds should be sown as soon as the frost is out of the ground, and on well manured land. As a food crop they are superior to turnips, especially for milk cows and horned stock. There is another advantage that mangolds have, and that is, they are not subject to the ravages of insects, and on any kind of ground in respectable tilth make an abundant yield.

Turnip land should be well worked, and preparation made to get them in by the 20th of June. But more about this next month.

Potato planting should be attended to, and as so much has been said in our prize essay for last month, it is needless to go over the ground again.

Agricultural College for the North-West.

We notice that a Winnipeg paper advocates the establishment of an agricultural college in the Northwest. We would advise every farmer who expects to be taxed for such an institution to enquire closely into the working and results of agricultural colleges and model farms that have been established, both in Canada and the U. S. Do not listen to those interested individuals who intend to make their money from the tax-payer, and are expecting fat offices. Agricultural colleges in themselves, if properly managed, and were necessity demands, are beneficial. But what would be the use of going to the expenditure of thousands of dollars to build an institution in a country where any man who can turn a furrow can raise a crop from the virgin fertility of the soil? Such an institution we certainly consider premature in a new country, where the main object of legislation should be to keep the taxes at a minimum, and thus enable the farmer to lay out money for the necessary improvements on his land. The argument that land would be increased in value in the immediate neighborhood of the college by the expenditure of Government money, is so absurd that it is undeserving of further comment.

From our own observations for the last 20 years, agriculture has been more benefited by private enterprise than by Gevernment grants. The establishment of these institutions in Canada has, in our opinion, tended more to the injury than to the benefit of the practical farmer; and the parties having control of positions and power, have, perhaps unintentionally, attempted to check any kind of private enterprise that would have tended to do as much or more good than Government officials have done. Leave the farmers alone and at liberty to act as they please with regard to agricultural affairs. Keep down the taxes. Let not our farmers listen or heed the paid subservient tools of speculative office-seekers. Let our farmers take a greater interest in the legislation of the country, by electing representatives from amongst themselves, and they will have a controlling voice in matters pertaining to agriculture. Then we shall have continuous prosperity in the country.

But, on the contrary, if these institutions are established, and officials with high salaries are to be paid out of the farmers' taxes, then the farmers must become as the serfs of Russia.

The *real* farmers of Ontario and Quebec never asked for model farms to be established in their Provinces.

We say again, Northwest farmers, act with caution, and do not check private enterprise!

More Thoroughbred Bulls.

Really first-class breeding stock is scarce in the country at present, and it may be safely said that in Shorthorn bulls there are not half enough to meet the demand. Young bulls, not of fancy pedigree, fit for service, readily bring from $100 to $150, to cross on common animals for raising steers. Our farmers have found out that it costs no more to raise a good class of stock than to raise scrubs; and that a well-bred animal at two years is as far advanced as common stock is at four years. Besides, it is quite evident that stock raising will become a paramount industry in the older portions of this country, where the fertility of the soil is required to be continually kept up, by returning to the soil what was taken away in crops.

Although good bred bulls are coming to the fore, and there is an increased demand for such, yet, if the herds of our farmers are looked at, there will be found that only about one in ten claims to have good grade stock; and about one in a hundred even a few pedigreed animals; and there is not one in a thousand that *claims* to be a breeder, and there is not one in ten times that number that *is* one. Every farmer in the country cannot become a professional breeder, and support a large herd of well bred cattle, but every farmer can use well-bred sires to improve his stock.

In the majority of neighborhoods where there is one pedigreed bull kept now, there might be half a dozen. Besides not being enough bulls kept for common breeding stock, there are not enough first-class men who understand the business of breeding as such, and the consequence is, even amongst our thoroughbreds, there is a lot of poor stock, and where there is one first-class breeder now, three times as many could make handsome profits. Well-bred bulls will always be in keen demand, so long as new areas of stock raising country are being opened up in our Northwest and the different States of the American Union. To make two pounds of beef where only one was before is the true economy of stock-raising, and in no better way can it be done than by increasing the number of shapely, good-bred animals in our herds The improvement of our stock would add immensely to the general advancement of the country, and to the individual wealth of our farmers at large. As the dairying interests advance and enlarge, there will be an increased demand for both well-bred sires and also females of good milking strains; and thus, with the two leading branches of beef, butter and cheese raising, good stock will always be a good paying investment.

The Wheat Prospects.

As far as we have heard, the prospects of fall wheat are not so bright as they were a year ago. The winter has been severe, and five months of steady snow and drift has smothered the plant out completely along fences and hollow places. Even where so much snow has not been the plant is sickly in the majority of places, and gives no promise of becoming a strong, healthy plant. The fact is, last fall the sowing was too late, and it had no chance of a vigorous growth before winter set in. Again, the condition of our fields at the present time argues strongly for better drainage and culture. Where wheat was put in early and on land in good tilth, it looks well; but where one field was properly put in last fall, two were sown on stubble or land which had no previous preparation. The successful crops of the last four years induced farmers to sow all their available land in fall wheat, whether the land be in condition or not. Such farming may do for a while, but finally the day of reckoning comes, and during a bad winter and unfavorable weather, the plant has not sufficient strength to withstand the attacks of such seasons. Without good farming it is a risky crop, and every condition, such as thorough drainage, plant food and tillage, conducive to the growth of the plant, should be fulfilled. It is plainly evident from the appearance of fields side by side, the one green and luxuriant and the other completely killed, that early sowing, drainage, and culture, are the main factors in a good crop of wheat, notwithstanding the weather has a powerful influence in determining any crop.

United States Letter.

Washington, D. C., April 20, 1883.

This spring has been the most backward we have had in this latitude for many years. As a consequence the fruit buds will escape late frosts, and we have promise of a good yield of fruit. The short apple crop of last season gave us the spectacle, last winter and this spring, of seeing oranges selling in our streets for *one-half* the price of fair apples.

Among the interesting and instructive addresses delivered before the Convention of Agriculturists, which met at the U. S. Department of Agriculture in this city last winter, that on Swine, by Col. F. D. Curtis, of Charlton, N. Y., was among the best. As it never has been published, I here, by permission of Hon. Geo. B. Loring, Commissioner of Agriculture of the U. S., make a few extracts. He said that the methods of feeding swine in the great pork-producing districts of America are not conducive to the production of parasites in the flesh of swine, nor is it a resultant effect of climate; but the opposite. Corn, the great staple, is the purest kind of food, and ranging in the open air, on the naked ground, is also more productive of healthful growth, as compared with the system of style rearing and feeding so common in other countries. *An excess* of corn feeding undoubtedly causes injurious effects in swine, but not in the way of producing parasites in the flesh, and constant exposure in the opon air undoubtedly decreases the profits; but by no law of cause and effect would it produce trichina or other parasites in the flesh.

Pig raisers, he alleges, have adopted a system of condensing a pig, as far as possible, reducing the bone, muscle and other parts to fat, so that the modern improved pig has become little else than a mass of animated lard. Such pigs are not desirable food, and people show their good sense by not desiring to eat them. This kind of improvement has lessened the demand for pig meat in cities *one-half*, and lessened its use very materially in farmers' families. Since the human stomach cannot digest lard four inches thick, we had better reduce the four inches, and grow *meat* instead of *lard*, and try to produce food more palatable, digestible and eatable. There must be more muscle and less fat; more length of body, and less clumsiness; more exercise, and less stuffing, which latter condition now characterizes pig raising too generally. The *rich* food must be kept from the pigs, or fed in very moderate quantities, until the mending up time just before slaughtering. My idea is that the body should be made first and the fat added afterwards. This will make healthier meat and more palatable, than to keep pigs in a continuous condition of over-fatness. To feed pigs *exclusively* on corn produces a feverish and unhealthy condition, and lays the foundation for bodily ailments. It creates inflammation of the bowels and disorders the stomach, which may prevail in a herd so as to be considered contagious, and leading to the erroneous conclusion that hog-cholera prevails.

The best remedy for bowel disorders lies in *prevention* rather than *cure*. Hogs should have the range of a clover-field, or be fed liberally with corn-stalks or the early maturing sorghum, and roots in their season, with plenty of pure water. When this is done the injurious effects of eating a large quantity of corn will be obviated, and even young pigs will keep healthy. If this system was adopted, there would be less of so-called hog-cholera and more lean meat in proportion to fat, which would help to create an increased demand for pork. He said, also, that to feed hogs *exclusively* on corn gives to the pork a peculiar oily flavor, and that waste-fed hogs make very oily and rank pork.

Mr. Edwin Moffat, the special agent of the U. S. Department of Agriculture in London, Eng., in his late report to Commissioner Loring, says that from 1842—prior to which year the importation of horned cattle and sheep into Great Britain was prohibited by law—to 1882, the number imported into Great Britain increased from 4,264 head of cattle, including calves, and 644 head of sheep (in 1842), to 363,700 head of cattle, and 1,124,391 head of sheep (in 1882).

The supply of horned cattle from the northern ports of Europe has fallen to the minimum of 1865. Spain and Portugal still ship in decreased numbers, while some have entirely ceased. The trade in sheep is lively, and a large increase, due to the fact that farmers in Germany and elsewhere are unable to realize remunerative rates for raw wool, on account of the enormous supply which Australia sends to the European markets. He shows, by tabular statements, that the decline in the importation of cattle from continental Europe to Great Britain is more than made up by the vast increase in shipments from the United States and Canada. Fifty per cent. (one-half) of all the cattle now imported to Great Britain, come from the U. S. and Canada. Ten years ago, but 7 per cent. came from America.

He states that, of late, American buyers of fine bred, live-stock for breeding, have exhibited great activity, and the exportation is rapidly increasing. He reports that at the public sales of live-stock, the pick of the flock is taken by American buyers, who bid too high for local purchasers. The English farmers and the press are complaining that American (which includes Canadian) buyers are carrying the best stock from their shores. As they get fabulous prices they should not complain. He adds that within the last six months over twenty companies have been formed in Glasgow, Edinburgh and London, for the purpose of buying western ranches in America and developing our cattle resources.

LOTUS.

How to Sow and Plant in the North-west.

Red Fyfe wheat is the best wheat to sow, being the most certain crop, and it also commands a higher price than other varieties. Last year it yielded at the rate of 29 bushels to the acre in most places. Black side oats give the best results, and last season yielded on an average 58 bushels to the acre, and 38 lbs. to the bushel. A correspondent, writing to an exchange, says:

I do not think that the chance is even fair for an average crop, not to say a good crop, unless the land is backset. I travelled over a large portion of this country last season, also the previous season, but did not see anything like an average crop where the grain had been sown on the sod.

Potatoes do well planted or ploughed in on the sod, requiring no further cultivation after planting, but as to sowing grain on sod I have not seen an exception where there was a fair crop. My opinion is that if a new settler centres his entire efforts on breaking and backsetting the first year, he will be financially further ahead than the one who endeavors to get a crop the first year. Many new settlers miss the first season by building when they ought to be breaking. Usually breaking cannot be continued later than the 10th July; the land by this date is hard and dry, making very hard work for the teams. Nor does the sod rot nearly as well when the breaking is done late. My advice to a new settler would be to tent or put up a rough shanty until he has got through breaking; he would then have July and August to go on with building or other work; the breaking would not be ready to backset before the 1st of September; the longer the breaking is left the better, so long as it can be done before the frost sets in.

Sorghum Culture.

There appears to be an increased interest taken in the growth of amber cane for the purpose of manufacturing into syrup. As there are plenty of lands admirably adapted to its growth in Ontario, we are fully persuaded that handsome profits can be realized from its culture.

The progress of this industry is slow, and the growing of sorghum for sugar and syrup is yet in its infancy in this country. Since the first experiments were made in the U. S., it has taken about thirty years to produce good crystalized sugar from it. The original kinds of sorghum experimented with proved a failure, from the fact that in a northern latitude, such as Ontario and the Northern States, they were too late in ripening, and the consequence was the syrup was dark and of an unpleasant taste. Attempts to grow it were generally abandoned, and only about ten years ago was a kind produced—the Early Amber—which would succeed in a northern latitude. This will ripen in any latitude where Indian corn matures, and there can be no trouble in raising it in any part of Ontario. The best soil for growing Amber cane is a good corn soil. Like corn, it requires thorough culture and similar treatment, but should be planted a little later when the soil is well warmed up.

One of our esteemed correspondents, Mr. James Allen, who is now manufacturing sorghum at Tilsonburg, Oxford Co., Ont., is probably one of the pioneers in this part of the country. In 1878 this gentleman experimented with one eighth of an acre, with seed obtained from Wisconsin, and the product of this land was 37 gallons of syrup. This did not keep well, from the fact that it was not boiled enough and was too thin. The next year he planted an acre or an acre and a half, and produced over 200 gallons of syrup, although it was a bad season, as the stalks were blown down by a heavy storm. Between the first and second year's trials Mr. Allen found there was a great waste, resulting from the way in which the cane was crushed. The second year's crop was raised from his own seed; it cost him 20 cents a gallon for making, and he sold the syrup for 50 cents a gallon. The third year the factory was started, and he planted one and a half acres and had an enormous crop, the stalks of the cane being 10 feet high. From this he had 300 gallons of syrup per acre; his neighbors had similar results, of thick syrup. But taking even 150 gallons per acre, at 50 cents a gallon, a crop of sorghum would pay.

Of course the success of the crop will depend to a great extent upon culture and the nature of the land. Mr. Allen's experience is that low land is not suitable, and that the best results are produced on high lands that have been previously under corn culture; he considers that fresh barn-yard manure is fatal to the crop, owing to the predominance of certain salts, which affect the flavor of the sprup. He does not consider as much can be made from a clay soil as from land of a lighter texture.

It appears from Mr. Allen's account that the apparatus for making syrup is not so costly as might be imagined, as he considers that an evaporating pan and press may be had for about $90, for say a pan 4x8 feet, by 7 inches deep, set in brick. He considers after the cutting that five men and two spans of horses can make 75 gallons of syrup a day. Good thick syrup will yield 14 pounds of sugar to the gallon, and it takes from one to two months to granulate by itself, but by an improved process it can be granulated in 15 minutes. Mr. Allen's experience is that perpendicular rollers are preferable to horizontal ones.

Strawberries should be mulched before they begin to grow. Coarse straw is a good material, if free from weed seeds, and it is all the better if from the barnyard and saturated with manure water.

Road Making.

Good roads are the exception and not the rule in this country, and with the exception of a few main gravel roads, the majority of them are almost impassable, excepting during good sleighing or when they are dried up during the summer. If the loss to the farmers was counted in the shape of extra wear and tear on wagon, harness and horse-flesh, it would be found to be enormous. Good roads pay a large interest on the investment to the general public, and money used this way is well spent.

We unhesitatingly assert that the main cause of so many bad roads is the misdirected labor of the statute labor system. When the country was new and the population sparse, no doubt it served a good purpose for the time, but in the majority of the closer settled townships it should have been abolished years ago, and some more effective system adopted. On roads that have statute labor performed on them for the last 20 or 30 years, there is but little improvement, from the fact that the work was never done right. Labor enough has been performed, but has been misdirected and futile. On roads that have been worked at for half a century, they are just about as far from what a road should be as when the work was commenced; in fact the greater part of the work would have to be undone in order to make a road that two teams could pass without upsetting or getting into the ditch. The first great mistake in building roads that has been made is to pile the dirt in the centre of the road, and have it sloping at an acute angle to the edge, instead of having an oval road bed, so that the travel, if required in turning out, can go clear to the bottom of the grade. Of course the starting point of having to have a narrow cone road, was to have the centre high, so that at least some part of the road would be dry, instead of all of it. The cheapest and most efficient way to make a dry road is to make ditches that will take the water off. Any road will become dry that has proper ditches, and nothing short of this would make a dry road.

Defective drainage is what is the trouble with all our roads, and instead of pathmasters trying to make a road by filling up mud holes, they should have started to make good drains on each side, and then dry roads would have followed as a natural consequence.

This statute labor system is inefficient and fails to meet the increased demand for better roads. No one can fail to see that this road-work and pathmaster business is a complete farce, as men do not go on the roads to work, but to loaf in their time as best they can. We venture to say that at the tariff rate of 75 cents a day for each man, that 25 cents a day is not realized to the benefit of the roads. The truth is, keeping up roads by statute labor is a thing of the past, and we are certain if the same amount of money was expended yearly at 75 cents a day for each man, and the work let by contract, double the benefit would be derived.

Let every municipality have road commissioners to look after the work in each ward, look after the culverts and ditches by contracts, &c., and see that the work is satisfactorily performed, and in a little time there will be but few complaints of bad roads. Besides the advantages which would accrue from the judicious expenditure of money in building roads, the Ontario Government has offered a liberal inducement to every land owner to add to the appearance of the country by allowing for every tree that is planted on a public highway. How much would property be enhanced by having first-class roads, good fences, and ornamental rows of shade trees along our public highways?

Farmers, there is nothing will add more to the value of the land in your township than good roads, and see that you have them.

PRIZE ESSAY.

THE ADVANTAGES AND RESULTS DERIVED FROM THE APPLICATION OF ARTIFICIAL MANURES TO GRAIN, GRASSES AND ROOTS.

By W. L. Brown, Hyde Park, Ont.

A knowledge of the preparation and application of manures to the soil is the key to a farmer's success, especially in the older soils of Ontario, which have been partially exhausted of their virgin fertility. And to treat this subject intelligently will require a certain latitude to be allowed in the use of scientific terms. No person can avail himself of the researches of modern science in the advancement of agriculture unless he is more or less familiar with the technical language of chemistry and kindred sciences. You cannot start at the elementary part of artificial manures without using more or less terms that are not common in every-day talk with our farmers; and to commence to simplifiy and explain this language would only lead to obscurity and confusion, and likely to inaccuracies. I therefore shall avoid all unnecessary technicalities, but I shall be compelled to use them where accuracy of expression and scientific exactness require them.

I shall now consider what the composition of manure is—that is, manure in its general sense—and then proceed to show that manure has a special application as it is used for different cereals and roots. The essential plant-food elements in any manure are the ash constituents and the compounds of nitrogen; but laying aside all analysis and mention of several constituents of the ash of a plant, I shall only consider three,

NITROGEN, POTASH AND PHOSPHORIC ACID,

as the most important and essential elements in relation to artificial manures and which require investigation in the practical relations of the farm. Experience and science have taught us that land employed for agricultural purposes should be supplied with these to produce a luxuriant vegetation, and that we must restore these to the soil in sufficient quantities to restore the waste going on by the removal of crops. This waste must be supplied from the elements I have mentioned either in combination or singly, or whether they be supplied by farm-yard manure—which contains these elements of plant-food in a greater or less proportion,—or whether they be supplied in the shape of artificial manures. After first ascertaining the relative quantities of each required for various kinds of crops, the next important consideration is how can they be produced at the least cost. We will now take a glance at these elements of plant growth separately.

NITROGEN.

Nitrogen as an element is a gas, and combined with hydrogen and oxygen to form respectively ammonia and nitric acid, it acquires agricultural qualities; and I may say experience has pretty conclusively shown that nitrogen does not become active as a manure until it has been oxydized; or, it is clearly shown in whatever form nitrogen is applied to the soil, nitric acid is the resultant. As applied to land in the form of a nitrate, such as soda or potassium, the nitric acid washes away in the drainage and is but feebly retained by the soil. Reference will be made to the loss of this element of manure by washing from the soil, further on. When nitrogen is applied in the form of a salt of ammonia (such as a sulphate), which form it is in in barn-yard manure, it only escapes as fast as it changes into nitric acid through chemical action operating in the soil. It has been suggested by Pasteur that natural supplies of nitrogen are obtained by plants through a process of nitrification due to *bacterium* or a low form of vegetable ferment which takes place only under certain conditions of temperature, moisture, and supply of oxygen. Hence the great importance of manure to cultivated soil. Nitrogen is one of the most essential of all the elements that compose our artificial manures, and one of the most costly, as it is so liable to waste through the process of nature, and is continually in danger of changing its condition after being applied to the soil. As atmospheric nitrogen is not under our control, it does not concern us in this essay, and hence I shall not touch upon this point.

PHOSPHORIC ACID

forms part of all fertile soils, and exists in three forms in combination with lime; such as three parts or atoms of lime, and one of phosphoric acid (tri-calcic); two parts of lime, one of water, and

one of phosphoric acid (bi-calcic), and one part of lime, two of water and one of phosphoric acid (mono-calcic). In the first state phosphate of lime is altogether useless, as the phosphoric acid is inert or insoluble; in the second state it is more or less soluble in water, and only in the last (combination) is it really directly available to the plant. Phosphoric acid, in this available state, is firmly held by the soil and does not evaporate or wash out like nitrogen, but it may change its relation with lime under certain conditions with the soil, and revert back to an insoluble state. Hence the need of its being continually supplied to the growing crops in a soluble form, and the necessity of its continued application to partially worn out land, in order that it may be diffused through the interstices of the soil which supply the roots with nourishment, and in order that it may be there in a soluble or active state. There is an abundance of this phosphate of lime in the mineral state, or apatite, both in Ontario and Quebec, but it is nearly all exported to England and the U. S. These mines should supply an almost inexhaustible supply of manure to our farmers. And, besides this, there is a constant supply of this element in bones, but, like the apatite, they are carted away to the U. S., and manufactured for the use of the crops of the American farmers. Mr. D. Lamb, of Toronto, said before the Ontario Agricultural Commission, that Canada was the only country in the world that exports bones, and further, that of all the material handled by him that could be turned into superphosphates, he exported 95 per cent., and only manufactured 5 per cent. for use in Canada. One hundred tons was for use here, and 2,000 tons of bone was annually exported. Why such a lack of interest is taken in the use of this manure I am at a loss to know, and certainly it does not reflect much credit on the advanced ideas of Canadian farmers. Experience has shown that the application of 350 lbs. of mineral superphosphate to the acre, has increased a crop of turnips nearly one hundred per cent. over the same land unmanured. A good profit could be had at $30 a ton, and our manufacturers charge $40. However, whilst mineral superphospates are amongst the most valuable of manures, yet they are not always attended with equally good results, as it is only when the soils are deficient in phosphates that they are beneficial, and the permanent effect, too, of these will depend greatly on the nature of the soil upon which they are applied.

On strong, calcareous soil, the lime is apt to absorb the sulphuric acid contained in the manufactured phosphates, and cause it to revert back, or to be changed to its original state of an insoluble phosphate or tri-calcic lime.

POTASH

is the next element, and, generally speaking, it is found in sufficient quantities for plant-food in the ordinary run of soils. Yet it is of the greatest importance that there should always be on hand a good supply, as there is no danger of waste, as it is held by the soil with great tenacity. These three elements of plant-food, besides their nutritive properties, appear to have a physiological effect on the structure of the plant, distinct from that of their action as nutritive materials. I noticed, last summer especially, an excessive leaf-growth in plants where there was an over-supply of nitrogenous material; phosphoric acid, again, in excess causes the production of fruit and the extension of fibrous roots; potash a determination of nutrient changes originating in the leaf. In short, any of these elements in excess, or where there is an undue proportion of the one over the other, the plant has not a normal growth. Artificial manure, then, that will supply these important elements in due proportion, would appear to be the one that should be of the greatest value to the farmer. But then there is no such thing as a universal manure which is equally good for all crops, any more than there is a cure-all medicine. And this results from two causes. First, that different plants require different food, and different soils are not similarly effected by the supply of these elements of plant-food. This is an important consideration—What relation does the soil bear to the manure? Or, does the soil always bear the same relation? Is the physical and chemical condition of your soil always the same? And is there an unvarying relation between the fertilizers applied and your land? No; the soil has never a settled equilibrium; it is never in the same condition at any two periods. There is the action of water on soluble material, such as the washing out of nitrates, referred to before, and carrying them to the sub-soil, or into drains. (Lawe calculates there are from 12 to 14 lbs. per acre carried away in a year in drainage). Then there is the oxygen of the air, which is constantly in action, to disintegrate and form other chemical combinations. Each change of temperature, evaporation, rainfall, etc., so affects the condition of the soil that no definite rule can be laid down for the preparation and application of artificial manures, and the effect of such on growing crops. (I have seen fields of wheat, last harvest, where everything necessary—as far as plant-food is concerned—was in the soil, but, unfortunately, through the modifications and changes undergone by the soil since last fall, the crop was a complete failure). Hence the position of a farmer with regard to plant fertilization, or the application of artificial manures, is a most difficult one; for he has—in the first place—to apply elements to his soil which are subject to change as soon as they come in contact with the soil, and to a soil which itself is undergoing a continual series of changes; and it is only by experiments that our farmers can arrive at anything like a definite knowledge of the effects of artificial manures on certain crops. And this brings us to consider that certain crops require different proportions of the plant elements—nitrogen, phosphoric acid, potash—that we have mentioned; for instance, it is found that in varying proportions certain plants require more of one of these elements than another, and that some plants are more exhaustive upon soils than others; some plants abstract a large amount of potash; another exhausts the phosphoric acid, and a third is dominant in the amount of lime it uses up; and to make an intelligent application of artificial manures, and get the full benefit of the same, a certain knowledge of these classes of plants is necessary, and the kind of plant-food most required. There are but few farmers but know that they must manure their land, or feed the plant, but the question is, how? It is certainly not in the haphazard way, so commonly followed by our farmers, of putting on a certain amount of superphosphates, lime, salt, or anything else, without considering the effect that it is desirable to produce, or without reference to the value of the crop. I am fully persuaded that between those who apply manures injudiciously, and those who do not manure at all—a large proportion of all the farmers—that the former is the greater loser in his crops. The practice that is to bring success to our farmers in the application of manures, is that which brings certainty with use, and which reduces waste in the application of their manure, and which allows of the largest net profits.

All manures or plant-food have, or should have, a commercial value, and must cost so much, and, as I have said, the plant feeds upon the soluble part of the soil of which but three elements require to be supp ied.

To give the chemical preparation and proportion of these to different crops would only be repeating the vague and unsatisfactory experiments of a number of agricultural chemists, and would be of little importance in an essay like this, as all the formulæ for preparing manures for different crops can be easily bought, and this by the eminent French chemist and agriculturist, M. Ville. It could hardly be supposed that a farmer in Ontario could even approach the subject of the preparation of manures, with the limited means he has at his command, and to do justice to the subject. Barnyard manure is about the only thing he wants to thoroughly understand at best, and from a proper knowledge of this he will be enabled to know just what is lacking in this plant element. If a Canadian farmer has found out, after a proper rotation of crops and system of farming, and economizing the dung pile, that there is yet something wanting to make his crops grow, then he is in a fit state of mind to follow a higher class of farming and experiment for himself in artificial manures, and in the application of the three important elements of plant-food, potash, nitrogen and phosphoric acid.

The dung pile, then, is the starting point, and let us see what elements it contains and what it supplies to the soil. A ton of well rotted barnyard manure only contains a little over 11 lbs. of nitrogen, 10 lbs. of potash, and 6 lbs. of phosphoric acid. Now, for most crops this is only an imperfect manure; take wheat for instance, and with this ratio the composition of the manure and the wheat (grain) and straw does not correspond. For, in 30 bushels of wheat, say the product of an acre, there are over 76 lbs. of nitrogen, 19 of potash, and 15 of phosphoric acid taken off in the crop, and to supply this waste it would take nearly 7 tons of manure for the nitrogen, but there would be an excess of and a needless expenditure of the other two elements in the number of tons; but by a slight calculation we find two tons of barnyard manure will supply the dose of potash; but in that we shall only have 21 lbs. of nitrogen instead of 76, and 11 lbs. phosphoric acid instead of 15 lbs. Now, if we apply sulphate of ammonia, say 157 lbs., or less of nitrate of soda, we should make up the supply of nitrogen required per acre; and if we further add 31 lbs. of superphosphate of lime of a good per cent. of purity, say 26 per cent. of bone—earth soluble—we shall make up 15 lbs. of phosphoric acid. Thus 2 tons of manure, chemically, would do the duty most efficiently of 7 tons, supposing they could be evenly distributed over so large a space as an acre. This illustration is only suggestive and leads to the consideration of artificial manures in a strictly scientific sense—given the composition of a plant, and the elements that produce that plant, to raise it at the least cost. I need hardly say that tables of analyses have been compiled by men like Voelcker, Wolf, and Ville, which proximately show the amount of food required by each plant and also the per centage of plant food contained in several kinds of manure. These tables are a species of agricultural arithmetic similar to interest tables, but not applicable under all conditions and in all cases. It would hence be foreign to an essay of this kind, to give formulæ for the preparation of manures, when such are already furnished by such eminent experimenters as Ville, March and Wolf. The individual experience of any person who competes for this prize could hardly, without a great amount of egotism, be brought forward to establish one fact. The subject is of such wide scope, and embraces so many considerations, that the best a writer can do is to offer suggestions, and place before his readers a few well-established principles. The best of our scientific agriculturists, however, who have spent a life in careful study and investigation, offer only a few generalizations. On the farm-yard manure questions, take the experiments of Dr. Lawes for 32 years on manured and unmanured land, and without giving the different experiments for this length of time, they may be epitomized thus: That he raised the productive power of a field by applying 14 tons of barn-yard manure every year, from 12½ bushels to the acre to 35½ bushels. Or, in this time there was an average of 18½ bushels to the acre. But to accomplish this it took a ton of manure to produce a bushel of wheat; or, in other words, producing wheat at a greater cost than it was worth. And this should be the great consideration of a farmer, *profitable fertility*, or producing the greatest results from the least expenditure of capital and labor. Now, this experiment of Lawes shows plainly, that but about one-fifth of the nitrogen applied was recovered in the crop increase, about one-seventh of the phosphoric acid, and but one-thirteenth of the potash. Again, it shows that it is only through the continual application of barn-yard and artificial manures that the highest maximum effects were reached and the best results obtained.

[To be continued in next issue.]

By the Way.

In Ohio the farmers have abandoned the old plan of working out the road tax. The roads are kept in repair by contract, and the result is much better roadways, really costing no more money than under the old system.

If there are thin places in the meadow or pasture a little grass seed sown now and harrowed in will greatly improve the future yield. Covering with a light dressing of manure and harrowing once or twice will also help improve the yield.

Cane sugar and syrup are no longer exclusively tropical products. The increase in the sorghum industry promises to make it a leading crop with northern farmers. It is a fact not generally known that the amber sorghum cane is best in northern latitudes. It ripens in ninety to 100 days, and during this time the farther north it is grown the more sunlight it gets per day.

A correspondent of the *Rural New Yorker* says he tried the plan advocated by a contributor to that journal, of cuttng his seed potatoes five weeks before planting, dusting them with plaster, spreading them four inches deep and shoveling them over once a week. When he planted them the sprouts were fully started. They came up, he tells us, in ten or twelve days, and he thinks he gained a week in earliness.

The Dairy.

Sweet or Sour Cream for Butter?

BY L. B. ARNOLD.

"It is admitted by all that souring is the beginning of decay, and, reasoning upon it, sweet cream ought to make better keeping butter and better flavored butter than sour cream, but practically, in both respects the reverse is true. At any rate, it has always been so in my experience. Can you give me any light on this apparent inconsistency?"

The above quotation from a private letter well expresses what puzzles a multitude of reading and thinking dairymen, and the publication of the answer may have something of interest for some of the dairy readers of the ADVOCATE.

In the first place, it is *not* true that the longest keeping butter is made from sour cream, nor is it true that the finest flavored butter comes from sour cream; but it *is* true that under the common practice of converting all grades of cream into butter, the sour-cream butter generally comes out ahead.

The butter fats are not improved by the souring of cream, either in respect to flavor or keeping. It is rather impaired in both these qualities. The Danes have opened a considerable market for butter on the south side of the equator, and the butter they take there is all made from sweet cream, because they find that sour-cream butter will not stand the long journey across the torrid zone. Nor can we safely send our sour butter there. The Danes have that market all to themselves, because of their long-keeping sweet-cream butter. When acting as judge of butter at the Centennial, I had an opportunity of examining quite a number of samples of Danish butter. Among them were several packages which had been exhibited three years before at the Vienna Exposition, nearly all of which were still sound. How long it had been made before the Exposition I did not learn, but it was enough to demonstrate its good keeping quality that it lasted from one exhibition to the other.

The keeping of butter depends more upon the perfection with which it is freed from other matters—particularly casein—than upon the fact of having the cream sweet or sour. The Danish butter was entirely freed from all foreign matter by rendering, and then excluded from the air. The fact that sour-cream butter, treated in the same way, would not stand the torrid zone, furnishes pretty clear proof that it is not benefited by souring. The difficulty with sweet-cream butter lies chiefly in its not being as well churned as sour-cream butter. The former does not churn as easily as the latter, at the same temperature, and the operator generally raises the sweet cream up to a degree that will make it churn about as soon as when sour. Cream which is a little sour will, if the churn is a good one, churn well at 58°. If the rate of speed is such as to bring the butter in an hour, it would take from two to three hours to bring cream taken from milk twelve hours old, which had been refrigerated by ice-water, and only raised to 58° as it was put into the churn. This makes tedious work, and the workman, to facilitate the operation, generally warms the sweet cream up to 62° to 65°, when it will come in about the same time as sour cream. The higher the temperature at which churning is done the more adhesive will be the butter, and the more will the casein, which has become curdled by churning, stick to it. The warmer cream is churned the lighter colored it is, by reason of the adhering casein, and the shorter lived such butter must be, whether sweet or sour, when exposed to a temperature at which changes can occur. In warm churning the larger fat globules, which churn sooner than the smaller ones, will, from their soft and adhesive inclinations, unite and form into a mass before the smaller ones are churned, and the latter are left back in the buttermilk and lost, unless the buttermilk is churned over again. At a lower degree the gathering would not occur till all was churned. Warm churning, therefore, occasions loss in quantity of product, and an increased amount of casein mingled with the butter, which leads to rapid decay. These are the usual sources of defect in churning sweet, and rather than to endure them it would be better to let the cream sour a little, and churn easily at a low temperature, thereby increasing the product and diminishing the quantity of cheesy matter taken in with the butter. Though this does not make the best grade of butter it is possible to make out of a given quality of milk, it is, perhaps, the best course for the average dairyman to pursue. There is one very marked advantage in souring, provided the change is not carried beyond the first stage of acidity. Souring is infectious. If a churning is made up of different skimmings, some of which are sweet and others varying in sourness, the infection from the sourest portion will strike through the whole mass, and bring the different skimmings all into the same condition of the sourest part, if the mixture is allowed to stand at 60° for ten or twelve hours, thus causing the whole to churn easy and alike. In this way all the churnable cream will be converted into butter, securing the largest possible yield, and a reasonably good quality. It is a circumstance unfavorable to churning sweet cream, especially for single dairies, that a batch of cream made up of a mixture of skimmings of different ages, does not all assume a uniform condition like sour cream. The oldest cream will be the ripest and will churn the soonest, and so down to the newest skimming. If there is much difference between the first and last skimming, there will always be a liability of leaving a considerable part of the newer cream unchurned, and, of course, causing loss. In creameries this objection does not lie against sweet cream. The churning is as regular as the reception of milk, and one skimming usually fills several churns, so that the cream is all alike, or very nearly so. By giving it a good airing and keeping it as long as it can be and remain sweet, the churning will be easy and complete, and the flavor as fine as the milk could make, and the keeping of the most desirable character. Though the finest flavor and longest keeping are developed by thorough airing and churning just before souring, but while it is yet sweet, such a course is not well suited for our modern creameries. Under the practice of deep setting and low refrigeration and rapid creaming, which economy in operating creameries compel their managers to adopt, it is hardly possible to depend on maturing cream properly by airing. Coming from the milk so fresh and sweet, with but a faint exposure while rising, it would require too much labor and room to spread and air it to be practical; besides, it would hardly be prevented from souring before a sufficient airing could be effected. Milk or cream which has been chilled to near freezing, sours very soon upon warming to 60°, as it must be to have airing of any essential value. Airing cream much below sixty degrees is of very little use. If not in every respect the best thing that is possible, a little souring is, therefore, the cheapest and readiest way of preparing cream for the churn, and is the way in which the average dairyman will be likely to produce the best and most uniform results. The great difficulty with souring is that almost everybody sours too much. Just acid enough to be perceptible is all that should be allowed. To go beyond this is to lose rapidly in quantity, quality and keeping as the souring advances.

The Yesterday and To-morrow of Butter Making.

BY JOHN GOULD.

It is really an open question whether or not people need educating in respect to betterments in home dairying, or in the direction of massing the crude material in the form of milk or cream; and the production of butter and cheese upon the co-operative plan. In the States, the co-operative system of cheese-making is, in some one of the forms, universal, and farm dairy cheese are now about as rare as are Bob Ingersoll's endorsements of orthodoxy. The wonderful success of the cream gathering plan, not only in the Western States, where it has about superceded all other methods of butter making, but its rapid inroads in older and well established cheese and butter territories, like the Western Reserve, makes it extremely probable that the butter of the future will be made at the creameries almost exclusively. And why not? For to-day (April 19th) dairy butter is selling at 17 cents, and co-operative creamery butter at 30 cents, a difference that is sending cream, in some shape, factoryward with a "rush," for the butter made at home and at the factory, each from milk alike in all its conditions, results in a difference that the dairyman cannot stand, and the matter of manufacture is being as rapidly settled as was the manufacture of cheese after the advent of the factory system in 1863-4.

Under this condition of things, it seems almost useless to take up the question of home creameries for private dairies; and yet it may, if not profitable (for the reader), be of service, for any improvement once introduced begets others, and even "all talk" eventually leads to some innovation upon old customs, and consequent improvement and increased revenue.

The plan of all the cabinet creameries for farm use, as hinted at in the March ADVOCATE, is upon one system—rapid cooling of milk, the patents being upon apparatus designed to accomplish the result, rather than upon the principle; hence we find at least 50 different creameries advertised as "all the best," as the circulars will abundantly prove. The specific gravity of milk is but a trifle below the butter fats which it contains, and as cold will soon contract and cause the caseinous matter to become yet more dense, *i. e.*, heavier, much more than fats which are effected but slightly, the principle sought is to reduce this temperature suddenly, and, by this rapid change, throw the cream up by making the heavier matter press into its place, by the simple law of gravitation. The first attempt to do this was, I think, secured by L. L. Hardin, of the States, who employed ice, placing it in a rack over the milk, the cold air thus falling down upon the tall, slender milk cans. The variations then were fast announced, and the Swedish plan of surrounding the milk with very cold water was employed, instead of ice-cold air, as attempted by Hardin. There is no end to the variety of these cans or the principles employed to get the greatest extent of surface acted upon by the water in proportion to the milk. A glance at the illustrations in a dairy journal will give a fair insight into the plans worked out by which to evade each other's patents. One plan is to entirely submerge the can in water; another is to cut a channel through the can so that the water may act immediately upon the centre of the milk; yet another fashions his cans with covers larger than the can and coming well down the sides, so that if the can is placed in water to half its depth the rim of the cover is below the surface, and the milk within is "water sealed." Other cans are so set in double partitioned boxes that ice is placed about the upper half of the can and the lower part of the same can setting in a well of water cooled

by the ice above, giving two temperatures and gravities to the milk, which is supposed to be doubly beneficial. Some inventors place great stress upon ventilation, while others contend that this is not necessary, and so close the can perfectly. Yet other cans have a tube extending from the bottom to near the top, with a smaller branch pipe communicating with the water at the side of the can, the point being that the cold water coming up into the tube, will become warmed, and will therefore rise, and finds escape by the smaller outlet, thus establishing a current. Some of these cans with attendant apparatus are very simple, others quite complex and demanding quite a knowledge of the laws of heat and cold to fully comprehend and control their workings. Some need to have the cream dipped off with little conical shaped dippers; others have faucets near their bottoms, and the milk is drawn out from under the cream, the can then being reversed and the cream turned out.

There is one admirable feature about any of these creameries, and that is economy of space and the dispensing with especial milk rooms, the "cabinet" being a perfect milk room in and of itself, besides many other little conveniences that become apparent after using. Two things make their use really a matter of economy, the one being, that taken one month with another, a larger per cent. of cream and weighed butter can be obtained by the cold water process than can be secured by open setting; and second, that as ice and water always will keep milk at a uniform temperature, and that at a point far below the point of open air setting with its fluctuations of hot and cold air to influence the milk, the butter product must be uniform, so that if the dairyman will so order the feeding of the cows that a uniform quality of milk can be secured for the year, a butter of extremely uniform grade, and hence enhanced prices, will be secured at a trifling expense and greatly diminished labor.

As has been stated, the quantity of cream obtained upon the rapid cooling cans, is apt to be misleading, as its quantity is seemingly in excess of that obtained from pans in the open air, but the increase of butter will not be proportionate, but yet above and slightly superior in quality, and very marked if a very superior milk room is not secured in which to set the pans. After all this talk, which we hope is not all "sound," we go back to our original proposition, and yet think whenever within a radius of a few miles travel 200 cows can be secured, the very best plan for these dairymen, is to establish a co-operative butter factory, and take the butter making out of the house, and with the same advantage and profit that attained a like departure in cheese making.

Valancey E. Fuller's Jersey Test.

The following is a statement of the weekly amount of milk and butter given by the Jersey cow, Oaklands Cora, 18853, A. J. C. C., owned by Valancey E. Fuller, Hamilton, Ont., beginning on the morning of the 7th of March, 1883, and ending on the evening of April 6th, a period of thirty-one days (two weeks of which were under the supervision of Mr. John Easterbrook, acting on behalf of the Canadian Jersey Breeders' Association):

		lbs.	oz.
Weight of	milk in first 7 days	155	8
"	cream in first 7 days	49	9
"	butter in first 7 days	17	6
"	milk in second 7 days	165	0
"	cream in second 7 days	54	13
"	butter in second 7 days	17	7
"	milk in third 7 days	165	0
"	cream in third 7 days	56	13
"	butter in third 7 days	18	9½
"	milk in 2 days	47	0
"	cream in 2 days	16	14
"	butter in 2 days	5	9
"	milk in fourth 7 days	169	0
"	cream in fourth 7 days	59	4
"	butter in fourth 7 days	19	9½
"	milk in 30 days	701	8
"	cream in 30 days	237	5
"	butter in 30 days (unsalted)	78	9
"	milk in 31 days	725	8
"	cream in 31 days	246	8
"	butter in 31 days (unsalted)	81	5½

REMARKS.—Supervised and sworn to as correct by Mr. John Easterbrook, on behalf of the Canadian Breeders' Association.
WM. T. MORTON.

Stock.

A Chatty Stock Letter from the States.

[From our Chicago Correspondent.]

Lately there have been some very valuable fine stock sales at Dexter Park, Chicago, among which were several in which Canadian herdsmen were the sellers.

On April 4th, Geary Bros., of London, Ont., sold a draft of Polled Angus cattle from their Bli-Bro Farm; 33 cows and heifers at $135 to $925 per head, averaging $451; and 17 bulls at $165 to $1,150, averaging $468.

Upon the same day, Geo. Whitfield, of Rougemont, Canada, sold a lot of bulls that were all right as to breeding, but showed poor, having been poorly kept, as they were in miserable condition. Four Galloway bulls sold at $160 to $275, averaging $215; eleven Hereford bulls at $70 to $305, averaging $198; and 10 Shorthorn bulls at $70 to $150, averaging $107 per head.

On April 17th occurred a great combination sale of Shorthorn cattle, owned jointly by R. Gibson, of Ilderton, Canada, and Rigdon, Huston & Son. The cattle were all thoroughbred, mostly imported, and presented a fine appearance. The cattle sold were of the Darlington, Gwynne, Silence, Barrington, Kirklevington, Oxford, Wild Eyes, and Waterloo tribes. The sale upon the whole was deemed the most successful Shorthorn auction that has ever occurred at Chicago, and most of the breeders present went home feeling happy over the unabated interest which is kept up in Shorthorn cattle of deserving quality. There were 32 cattle sold for the handsome sum of $35,665, making the grand average of $1,114.53 per head, for bulls, cows and calves. The 1st Duchess of Hilldale, bought by C. C. Judy for Charles De Graft, of Winona, Minn., for $6,000, was got by 22nd Duchess of Airdrie, 1st dam 6th Duchess of Hillhurst, 2nd dam 10th Duchess of Airdrie. This cow has produced over $300,000 worth of descendants, and has thus become permanently famous in Shorthorn history. It is but natural to expect that she will stamp her character on her descendants. Hence the disposition shown by the different bidders to carry off the best prize of the day at even what seemed to be extravagantly high figures. Wild Eyes Lassie, a beautiful roan cow, calved Oct. 16, 1877, sold to W. Murray, of Canada, at $1,650. Does it not seem a little like carrying coals to Newcastle to send fine cattle back from here to Canada? It is a fact, however, that Canadian breeders are among the quickest to detect individual merit in an animal, and it is not surprising that several of them captured and carried back choice Shorthorn prizes. John Gibson, of London, bought a young bull, Wild Eyes Legrand, at $425.

H. Y. Attrill, of New York, sold here at public auction 20 Shorthorn cows and heifers, at $150 to $510, making an average of $413 per head; and 8 bulls at the wide range of $170 to $4,750 per head, making an average of $785 per head. Without the two-year old bull, Grand Duke of Connaught and Ridgwood, which sold to Bronson Bros. at $4,750, the prices would not have averaged more than $220. Col. John Hope, of Bow Park, Canada, bought Princess of Springwood, a fine red cow, calved June 16, 1879, at $500.

On the 19th, L. Palmer, of Sturgeon, Mo., held a sale here, and disposed of 64 Shorthorn bulls, cows and calves, at an average of $376.

Horsemen who have imported horses from England have not been doing very well, and there is some complaint on the part of Canadians upon the same score. A sale of 8 imported Shire-bred horses was commenced on the 19th by Wm. Rexford Rowland, but after selling the fine young stallion, Duke of Buckingham, at $700, and failing to get what he considered a reasonable bid on the others, Mr. Rowland stopped the sale and sent the horses to the stable.

The demand here seems to be largely for Clydesdale and Norman horses, but at the same time there does not seem to be any buyers willing to pay fancy prices. This is from the fact that nearly all of the horses are wanted and taken to the West for crossing with common mares.

I learn of a Wyoming man who is breeding 1,700 to 1,800 lb. Clydesdale stallions upon 700 to 900 lb. Nevada mares of the most ordinary quality. There are those who deem it not safe to couple animals of such disparity in size, but the experience of many shows that it is practicable and safe.

Recently a lot of 758 mixed calves was bought in Michigan, at an average of about $3 per head, and sent to Billings, Montana Territory, for store stock. This seems a most singular thing, that young stock should be sent so far into the Northwest.

Prices for fat cattle here are now $1 per cwt. lower than a year ago, and bitter is the disappointment among stockmen in many quarters. Drovers have made heavy contracts at last year's rates, and are suffering heavy losses, but what is their loss is the farmers' gain in this case. LEIGH.

Feeding Stock and Early Maturity.

There is an undeviating law of animal growth, that the older and larger an animal grows, the more food is required to make a pound of growth. It is partly a question of size as well as of age. The heavier an animal is the larger the machine to run, and the more force or food is required to run it. I have for years (writes Prof. J. W. Sanborn to the American *Journal of Agriculture*) kept the growths of domestic animals, and find that a small, or, rather, young animal, will grow as fast or faster than an old one. So much more food does it require to run the animal of large size, say of 1,000 pounds weight, than it does a small one, say a calf of 400 pounds, that I can and have made a constant growth of a pound or more on the calf for less food than would be requisite for the maintenance of a 1,000 pound steer. For ten pounds of hay, or its equivalent in other foods, or on less food than named, I can grow a calf one or one-and-a-half pounds per day, while eighteen pounds of hay would be required to maintain the existence of a 1,000 pound animal without any growth. Few farmers understand the proportion of the food given that is required to maintain existence without growth. This first eighteen pounds of food given as the food of support for a 1,000 pound beast accomplishes nothing without the nineteenth pound. It is only the excess of food above this eighteen pounds for such a beast that becomes productive food. In the application of this fact, let us suppose our steers are marketed with an avert age weight of 1,000 pounds for their existence from calfhood up to disposal. If we market at four years of age, or are four years in attaining this weight, when it might be completed in two years, then we have lost maintenance fodder for a 1,000 steer (eighteen pounds of hay daily) for two years. This affects very materially the cost of our beef.

In years of experimental inquiry I have accumulated many facts that bear on this question of the economy of early maturity. We have just weighed off some pigs for sale, that I found on the place, which are sixteen or more months old. I find this the common method or age of disposing of the swine herd, and also that the system is universally defended. I have gathered from experience a conviction that about one-half the age named is quite enough for profit. The pigs in question were a year in making about one hundred pounds. In the one case, they used up the food of support of two days, in round numbers, to gain two-and-a-half pounds. In the other, the food of support was used only one day to gain two-and-a-half pounds.

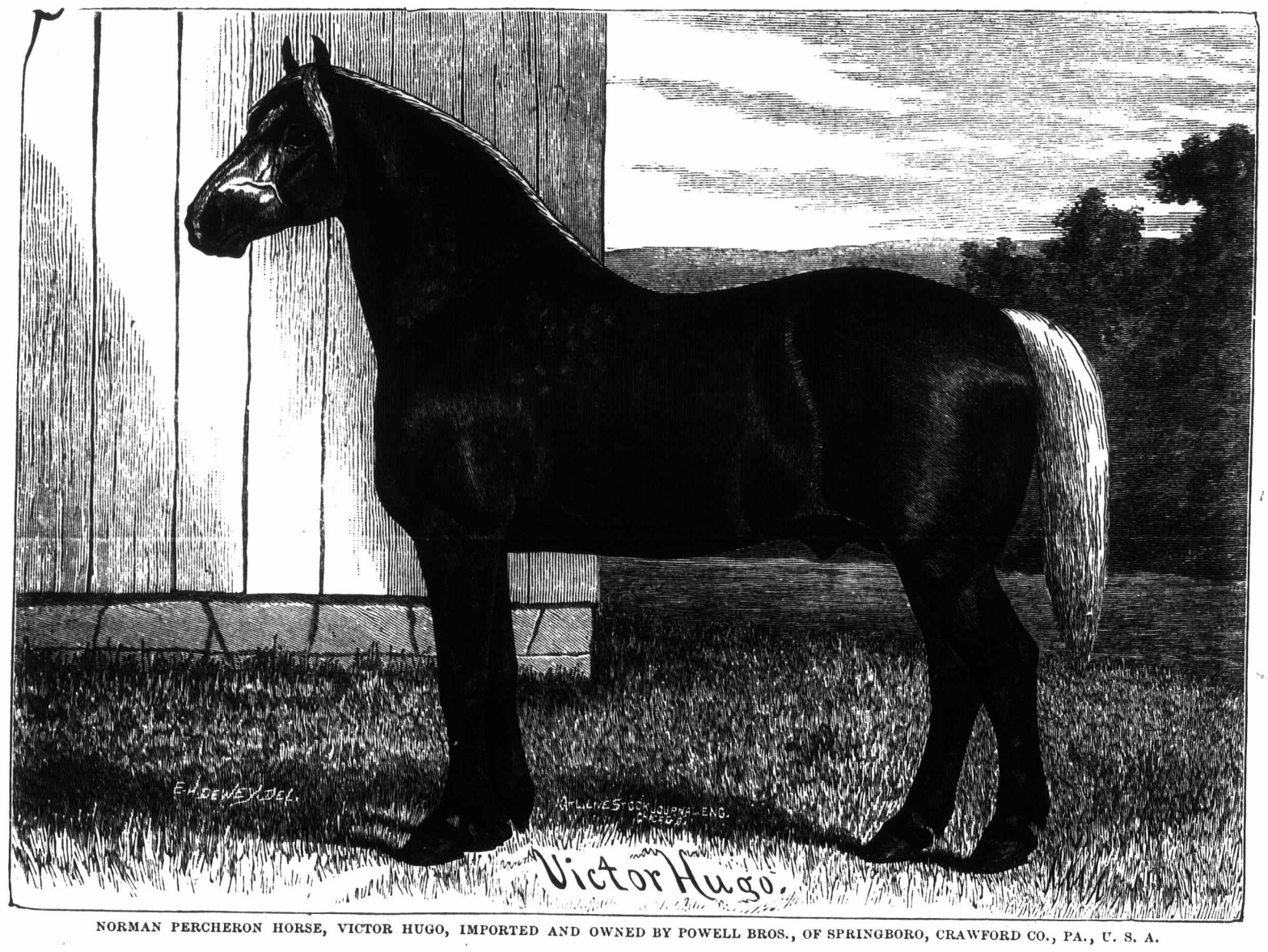
Now, if it requires two pounds of food a day to constitute the food of support of a one hundred pounds pig, then for nine days eighteen pounds of food were used for the food support while getting two and-one-half pounds of gain. In the latter case, when two-and-one-half pounds of gain were

made in one day, two pounds of food were used as food of support to produce it. As the two pounds of gain required but little over two pounds of excess food for each pound of gain, it will follow, when the figures are carried out, that the first pound used nearly three times as much food for a pound of growth as did the last.

The only defence that can be made of such a system is the one made, that in the first instance cheap food was eaten, namely, grass. But grass has a value for neat stock, and would appear to be attended with less waste in animal nutrition; but if the point is uncertain it would seem to be certain that if his pigship was put through in eight months by the addition of a little concentrated food, this prolonged use and waste of the food of support would be obviated. Of one fact I am entirely confident, unless scales are cheats and "mathematics a lie," that it takes much more food to make a pound of growth on pigs the second eight months than it does the first, which fact I am prepared to demonstrate. This fact being admitted, the policy of pork producers is clear, that is, to have the pigs dropped early in the spring and fed in sufficiency to attain within eight months a growth of 250 pounds, when they should be ready for the market.

Norman Percheron Horse, Victor Hugo.

The accompanying engraving represents the Norman Percheron horse, Victor Hugo, imported and owned by Powell Bros., of Springboro, Crawford Co., Pa., U. S. A. This horse has been pronounced by good judges as one of the finest specimens of the breed that has ever been imported into America. Messrs. Powell Bros. write us that within the past few days they have had visitors from all parts of the continent to Shadeland, and that their sales have been most extensive. They have just added a magnificent importatiou of over fifty choice animals to their already large collection, in order that they may be at all times prepared to meet the demand for all kinds of stock.



NORMAN PERCHERON HORSE, VICTOR HUGO, IMPORTED AND OWNED BY POWELL BROS., OF SPRINGBORO, CRAWFORD CO., PA., U. S. A.

Dr. Sturtevant's experiments in feeding cows at the New York State farm in Geneva give extraordinary results. Richer milk was produced from shorts or gluten meal than from corn meal. It is probable that the corn makes the globules of cream larger and more readily separable from the milk than when wheat, bran or shorts are fed.

Any cause that interferes with the condition of the cow after calving may produce milk fever. Exposure, too much exercise or nervous excitement are sufficient to bring on an attack, and a recovery is rare. It is the "ounce of prevention" in this case, as in so many others, that is worth the pound of cure. Keep the animal quiet for a week before and after calving, and nurse her well.

To Soften the Hoofs.— The New York Times says horses' hoofs become brittle because they are too dry,—possibly from a diseased condition of the feet, or from the use of grease or oil or tar, which removes the water for them. Horn should contain about 30 per cent. of water when in a healthful state. It is then elastic and will not break. Cold water will generally restore the hoofs when they become too dry. It may be applied by means of wet bandages in the day-time, and in the stable by providing a puddle of clay or wet muck for the horse to stand in. All other remedies are injurious.

The first two or three days after putting horses to farm work in the spring, the team should be rested frequently, and the collars eased from the shoulders to admit air. A little care at the beginning in preventing galled shoulders will save valuable days' work during the season.

When to Shear Sheep.

J. L. Thompson, in the *Indiana Farmer*, advises as follows:

"From last season's experience, I think we must shear earlier than we have been in the habit of doing, as there was a great deal of trouble on account of maggots, and a number of sheep lost which can be avoided by early shearing. And in order to do this we must discard the practice of washing the wool on the sheep's back, as this cannot be safely done in this latitude much before the 1st of June, and by the time the sheep are dry and the oil has sufficiently raised, it will be the middle of June before shearing can be safely done. I would therefore recommend shearing without washing, and as early as the season will admit of with safety to the sheep, say from the 1st to the 25th of May for the general farmer. And breeders that make a specialty of sheep and have stable or sheds for them, will find it to their advantage to shear still earlier. Especially ewes that are suckling lambs, as the lambs do much better after the ewes are shorn, as they give much more milk after being shorn, on account of the extra heat tending to dry up the flow of milk. And ewes that have lambs lose considerable of their wool if not shorn till the 1st of June. Shearing earlier we get a greater growth of wool, as April, May and June are the best growing months for the fleece. This gives the sheep a good protection for the hot weather of July and August, which is of more importance than we are apt to consider.

"Of course we must avoid extremes in this matter. If we shear early, we must house our sheep of cold nights and out of cold wind and rain storms; humanity demands this. And, in fact, early shorn sheep can stand the same degree of cold better than later shorn ones. As Randall very truly says: 'The change to them is not so great or sudden as when cold storms follow shearing after they have been sweltering in their fleeces in hot weather.'"

Turning Cattle Out to Pasture.

Formerly it was the custom to turn the young cattle out to pasture as early in the spring as possible, under the impression that every pound of hay saved at the barn was so much gained; but many farmers of to-day believe that nothing is gained by turning cattle into the pasture before the weather gets warm and the grass is well started, and that there is a double loss, first, by reducing the condition of the cattle, and second, by greatly injuring the summer and fall growth of grass. Even sheep had better be kept out of the pastures until the grass be well started; it is better for both the sheep and lambs, as well as for the pasture.

Occasionally as we ride through the country we see a farmer who clings to the old practice of keeping his cattle in his mowing fields, when there is no snow on the ground, during the fall and winter, until nearly the first of May; but this is such a wasteful practice that most of the farmers have abandoned it. It is quite time that all should.

The farmer who desires to turn his cattle off early should take measures to secure early feed. This may be accomplished by sowing winter rye in September; by sowing early it gets a good start in the autumn, so the roots are strong and in a condition to make a very early growth for young stock, but there may be some doubt if it is more economy to feed it than to let it stand until the middle or last of May, and then cut and dry it for fodder.

While most, if not all farmers believe it desirable to turn young stock and sheep out to pasture six months of the year, many believe that milch cows, on some farms, can be kept to as good, if not better advantage, by feeding green fodder to them at the barn. The number is every year increasing who believe that they should not be turned out to grass until the first of June, and that it is economy to grow some green fodder crops and feed them night and morning during the entire pasturing season.

The time seems to be rapidly approaching when we shall be as careful to keep our pastures in good condition as we now are to keep up our mowing lands.

It is a well settled fact among intelligent farmers that it pays quite as well to manure pasture land occasionally as it does to manure mowing lands; by so doing the feed is not only increased in amount, but very much improved in quality. The better the condition of the pastures, the earlier can the cattle be turned into them, and find sufficient food to keep them in good condition.—[Mass. Plowman.

A Common Mistake.

An English exchange has the following: It is odd that Shorthorn breeding seems to be thought of necessity to be *bull* breeding. It was not so at first; and, if it answered the purpose of land occupiers fifty years ago to establish a herd of carefully-bred cattle to supply the meat markets from, it certainly will answer the purpose now.

Looking through the early volumes of the *Herd Book*, one sees entry after entry with all the male produce steered; and the families thus used are now among the choicest we have. This was a sound and safe way of establishing a herd and a name. The disappointments which occur among modern Shorthorn breeders are very commonly due to the neglect of this preliminary stage. Our forerunners began by using the cattle they possessed in the ordinary manner of well-managed farm stock, until they got familiar with the tendencies of each of their tribes. They won their rank from the butchers and feeders in the open market for fat cattle, before they appealed to breeders at all And when they did, they had both experience of their own cattle and character as judges of good beasts, to make their recommendation trustworthy. Too many of the breeders of to-day think, because they have got a cow which some collector of repute has judged it expedient to re-sell, and have put her to a bull (which has a paper pedigree in accordance with fashion) that they are at once in a position to look down on the Collings'; and to compete for the hundreds of guineas which certain breeders can regularly command. Mistaken ambition!

It would be wiser, far, to have begun by winning a name for good beasts always ready when beef is scarce; and for nice little steers—or heifers occasionally—agreeably surprising the buyer, by weighing fully 50 lbs. more, when he had got them to the slaughter house, than he had laid them at. A return of actual weights attained, and prices realized by well-bred Shorthorn steers (the ages and keep being correctly stated), would be one of the most useful contributions to Shorthorn intelligence.

Nicotiana Affinis.

We are indebted to Mr. George McBroom, seedsman, of this city, for the loan of the engraving of this new variety of the tobacco plant. It is a very fine and highly remarkable species attaining about 20 inches in height, and producing freely, at the extremities of very long hairy tubes, large pure white flowers. They are in full beauty mornings and evenings, and emit a delicious fragrance; in this respect, indeed, few flowers can vie with them. This novelty deserves the most extensive dissemination, and as it is grown from seed, every garden should contain this beautiful flower.

Plants in Hanging Baskets.

Some persons seem to imagine that almost any plant ought to do as well in a basket hanging in the window as it does in a pot on the plant stand. Acting on this belief they use whatever they take a fancy to for a basket plant, and generally meet with failure. The reasons are obvious to any one who has had much experience with plant growing. In the first place, a plant hanging as high as one's head gets a much warmer, dryer atmosphere to breathe than those four feet below it. In the next place, a plant hung up is much more difficult to get at when water is being given to other plants, and generally such a plant gets an inadequate supply, or is neglected, and on account of the dryness in the air all about it, it soon suffers and the leaves drop. If the fact could be borne in mind that such plants need more water than those below it, and this need properly attended to, and with regularity, there would not be so much failure with basket plants. Once every two days in summer is often enough to water plants on the stand, but plants in baskets should have water every day, and enough to penetrate the earth in which it grows. In planting anything in a basket, I always leave a hollow in the soil around the edge of the basket. If filled evenly with earth, the water applied to the surface of the soil will run off, or considerable of it, at least, before the crust is soaked enough to render it absorbent.

In putting up hanging baskets I would advise you not to have the cords or chains attached to the basket extend to the hook in the ceiling, (if the hook to hold the basket is placed there) in one piece. I would have the three or four chains or cords attached to the basket meet about a foot above the basket and there hook on the one chain dependent from the ceiling. My object in so doing this would be to facilitate taking down the basket whenever occasion demanded. You will need to take it down quite often if you would have good success with your plants.

Hanging plants, like all others, turn to the light, and unless the basket is shifted about they will soon present an unpleasantly one-sided appearance. If they are connected with a chain or cord, as I have suggested, it is an easy matter, by mounting a chair, to unhook the basket, turn it about and rehook it to its support. If your ceilings are high or moderately so, it is not so easy a matter to take down a basket attached to cords three or four feet long.

Another reason why they should be often taken down is, they necessarily get very dusty from their elevated position, and in order to have good success with them they should be kept clean. If it isn't too much of a job to take them down and give them a good washing by dipping them in a tub of water, most persons who grow them, and really care for them and their welfare, will, at least once a week, give them this needed attention. But if hard to get at, as plants suspended from long chains or cords are, they will quite likely get only a sprinkling of water, and this, instead of washing off the accumulated dust, will only make it stick the closer and help to make the poor plant uncomfortable.

Another source of failure with very many, especially amateurs, in growing plants in baskets, is they do not use baskets large enough to supply the plant with the necessary amount of earth. Most of the baskets sold are too small—too shallow. They should hold as much as an ordinary six-inch pot, if you would have your plants flourish. Remember that while some plants bloom better when in small pots, no plant can be grown successfully for foliage unless its roots are given plenty of room and earth to spread in. Now, you always aim to have plenty of foliage and growth of vine in a basket plant; if you do not have you fail in reaching success. Therefore when you buy a basket for any hanging plant, be sure not to get a shallow one. Plants in a small basket will need watering twice a day in hot weather, while they must think themselves lucky if they get a drink once a day. On this account as well as on that of room, you should not buy too small pots.—[American Florist and Farmer.

What is more attractive than beds of verbena when in full bloom? An open situation is best for verbenas, and a rich soil. A situation where the morning sun will not strike them before the dew is off is best, as this is one cause of the mildew or rust which so often saps the vitality of the leaves.

Garden and Orchard.

The Oak Tree.

BY HORTUS.

The great interest lately taken in the subject of forestry by the different nations, and results and reports of the Forestry Congress, recently held in the States, lead us to pay attention to the merits and value of our own leading forest trees. The deciduous trees may, for convenience sake, be divided into two classes, viz.: the hard wooded and soft wooded. First, in the hard wooded we would class the hickory, oak, beech, maple, elm and ironwood. In the soft woods we place ash, birch, basswood, poplars, willows, &c. As the oak is our subject this time, we note its exceeding value for all purposes requiring durability and strength. No tree is more historical, or with which so many important events in the past are connected. Absalom, the son of David, was caught by the hair of the head and hung in the branches of the oak. King Charles, of England, hid in the branches of an oak tree when pursued by his enemies. All this and many other stories are well known to students of history in connection with the oak tree. The wood of the oak is greatly prized in ship building, and for making furniture and articles requiring strength of wood. We have in Ontario several varieties. The principal kinds are the white and red oaks, the white oak being the most valuable. The growth of the oak tree is characterized by great sturdiness and ruggedness, and its gnarled boughs and rough bark always make it an object of interest either in summer or winter. The oak grows rapidly and easily from its acorns, and soon makes valuable timber, though some writers on trees state otherwise. The oak thrives in strong clay loam, and once planted soon becomes an interesting tree. The acorns should be sown as soon as gathered in rows, covering thinly and mulching with leaves or dry manure; thin shelled nuts, as chestnuts, beechnuts, and in fact all kinds, may be treated just the same way. Tree-planters generally ignore the oak, thinking it being of too slow growth and difficult to transplant; we say it grows rapidly when the quality of the wood is considered. A hedge of oak trees, grown where the acorns were planted, would, in ten years, make enough axe handles for a county. Gray mentions in his Forest Botany about twenty-one varieties as being indigenous to North America. A stroll through the woods would make the observer think there were a great many more varieties than that number; and, in fact, to experienced eyes, there really appears an indefinite number of kinds. This is explained from a tendency of the tree to sport in the foliage. Climates in the temperate zone seem only to encourage the most useful plants, trees and fruit; this seems also true of its people, generally the most active, hardy and industrious. The vegetable and animal kingdom thus seem to agree in comparison and contrast to tropical climates, where only ornamental trees and luxurious fruits are grown, and where the people and nations are indolent and unintellectual. To return to our subject, we consider the oak tree does not receive the attention its value deserves. It is exceedingly ornamental, and a group of oak trees in a pasture field afford comfort and shade to the stock during the noonday heat. The tree lives to a great age; but as yet in Canada all attention has been paid in the past to the clearing off the forest, and the life and age of any particular trees have received no interest. Here is a subject of interest for our foresters to make notes of the girth and dimensions of noted trees, and give any little history in connection with them. In the old country many interesting things are written and told of famous trees which would interest the reader, but which we have not the time or space to relate. Everyone knows the value and usefulness of corks, the product of the bark of the cork oak which grows in Spain. The lightness and elasticity of this article make it exceedingly useful, and it would be difficult now to enumerate the number of articles and the uses to which it is employed. The process of removing the cork, or bark, is an operation of skill, as it is so removed that it will not injure the tree, and after a rest of several years it may be removed again. The oak also possesses many useful properties, required in chemistry for dyeing and medicine. We have thus briefly drawn attention to the oak, and we recommend the attention of the planter and farmer to appreciate it more than it has been in the past, and leave space in the plantations to be occupied by the oak.

THE OAK TREE.

Pots containing flowers should be washed as often as any mould or fungus growth appears.

Thyme will grow anywhere, but it prefers a dry, poor soil. If the ground is rich, the plant will grow two luxuriant, and lose its aromatic qualities

Hybrid Perpetual Roses.

[Essay by John B. Moore, of Concord, before the Massachusetts Horticultural Society in Boston.]

The land on which most of his roses are planted has a slight inclination to the south; the soil is a sandy loam with a loose sandy subsoil, and most of it is quite dry. The chief fault was that it was subject to drying up too quickly; but it had excellent natural drainage, too good, indeed. The remedy applied was a dressing of a material often found in sand banks and improperly called marl, but really a dried or consolidated quicksand. About one inch in thickness was spread on the rose border when dry, and worked in with a harrow and cultivator, and every rain carried the minute particles into and intermixed them with the soil, changing it from a porous, leachy, to a retentive soil, fairly suitable for the purpose intended. There was then applied a dressing of stable manure at the rate of ten cords to the acre; this was plowed in very deep, and the land afterwards levelled with a harrow, which completed the preparation of the land. The roses were then planted in rows four feet apart and three feet apart in the rows, so as to work between them with a horse. One-year-old plants, mostly on the manetti and briar stalks, were chosen; part were set in Autumn and part in Spring, but both succeeded equally well. The after cultivation has been to keep the ground clean and free from weeds, and in the Fall to bank up the plants about a foot high with earth from the spaces between the rows. When the earth is removed from around the plants in Spring, they are pruned, the weak, poor wood being cut out, and the slow-growing varieties cut back to six or eight inches, while the stronger growers should be left ten or twelve inches in length. In giving water to roses or any other crop, there is no better way than to imitate Nature and wet the land thoroughly, and then stop until it is needed again. You must furnish food constantly to make new wood. He gives a dressing of stable manure after covering in the Autumn, after the ground was frozen, and it keeps the ground from freezing and thawing. Afterwards he gives potash and brine, and if he applies liquid manure, gives it weak, but often and early.

The insects preying upon the rose or its foliage must be exterminated. First of these is the rose bug, which can only be destroyed by hand picking. A gentleman in Wellesley had informed Mr. Moore that he had destroyed them by means of whale-oil soap, but Mr. Moore felt doubtful of this. The rose slug can easily be kept under by dusting the plants with powdered hellebore in May and early June, two or three applications being sufficient. There are, also, two or more varieties of beetles, about the size of a curculio, with long snouts, that eat into and ruin the buds, and a few green worms; these are always to be crushed. The rose hopper has not done material injury. Like all other novices, Mr. Moore began with planting a great many kinds, his information concerning them being what he could get from nursery catalogues and the few works on the rose, which told all about their good qualities, but none of their bad ones. He considered hardiness, vigor of growth, beauty of form and color, fragrance and constancy of bloom, as indispensable requisites for a hybrid perpetual rose for general cultivation in the garden. It is hard to find all these qualities in any one variety, but the nearer any one comes to them the better the general cultivator will be satisfied with it. So-called hybrid perpetual roses are made up in various ways; some are crosses of the China and Damask, and may more properly be called Hybrid China, which bloom but once in the season.

W. C. Strong spoke of continuous fertilization for roses. He had made a bed for roses in the house, of one-third stable manure and two-thirds loam, and the growth is prodigious, and the roses

have been uniformly good, and there is now a heavy crop. With that experience he dressed a bed in the Fall with stable manure and almost ruined it. A year ago, he watered a bed with a solution of horse manure and injured it. The time when roses are fed is very important; liquid manure may be given freely while they are in growth, not very strong but constant. They want daily food, and it will produce wonderful results. Cow manure may be applied more freely than horse; he had seen the roots of roses run into green cow manure without injury. It is more difficult to apply cow manure in liquid form than horse manure. The thisp, futter or hopper is a serious injury to the rose, and he doubted the efficacy of hellebore, though he had not tried it fully. Whale-oil soap may be applied before the roses are in bloom. He wished to emphasize the effect of green horse manure; it is good at the right time, but will injure the roses if it leaches to any extent while they are in a dormant state.

Marshall P. Wilder said it is an established rule not to give liquid manure to plants in a dormant state. It should be very weak. Mr. Mechi's rule was that the water should be just colored. The speaker uses cow manure because it is so mild; he puts a gunny-bag full into a great cistern, and never uses without dilution, and it has a most sensible effect on all his plants. Mr. Moore said that his method of making liquid manure is to get a large tub and place two strips of board across it, and on these to put a flour barrel filled with manure, and having holes bored in it. Water isthen poured into the barrel and leaches through into the tub. It must be diluted for use.

The Raising of Salsify.

A contemporary has elaborate directions for growing salsify, or the oyster-plant. Among other things it states that the sowing of the seed may be deferred until June. We fear that many will give up the growing of this really excellent winter vegetable on account of the labor and care necessary to succeed with it. We will say, however, to all who may desire to grow it, that it is as simple as any other garden crop to raise. We have not been without a good supply of salsify for twenty-five or thirty years, and we have it now in the garden, where it has been all winter, and as fresh and good as at any time. The seed is drilled thinly in rows in May, the rows being fifteen to twenty inches apart to admit of cultivation, in any fair garden soil, and if it should come up too thick, thin out when five or six inches high, and that is about all there is to do with it. Of course it can remain in the ground all winter; but some can be taken up and covered with soil, where it will not freeze, to be handy for immediate use.

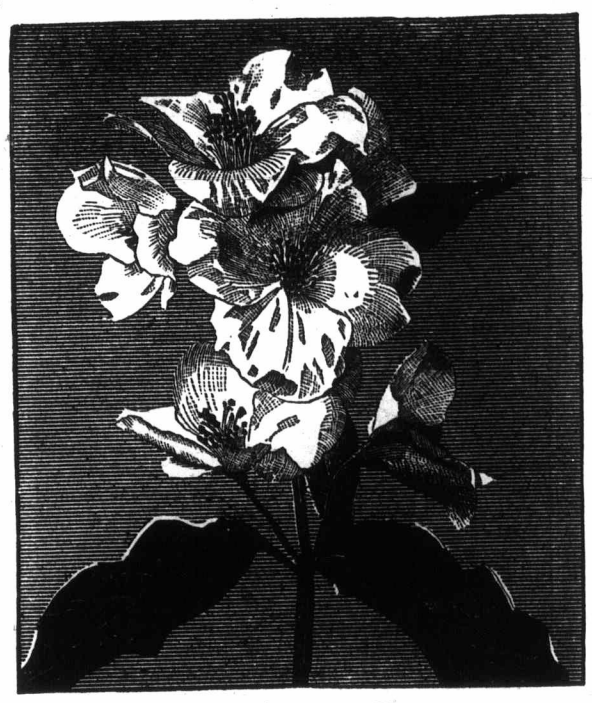
To check the ravages of the cabbage worm Joseph Harris dusts the plants, while the dew is on, with a mixture of plaster and superphosphate, say two of the first to one of the last. Whether or not this treatment lessens the number of worms, it certainly stimulates the growth of the plants, especially if the mixture be hoed into the ground around each plant. The only practical remedy he has ever tried is heavy manuring and thorough cultivation, and the setting out of plants by the thousand instead of by the hundred.

MILDEW ON ROSES.—A French journal gives the simple remedy of syringing both the upper and lower sides of the leaves with a solution of a fourth of an ounce of salt in two gallons of water—which strikes us as a rather weak application. A stronger wash is made with a pound of flour of sulphur and a pound of fresh lime in five quarts of water, repeatedly shaking the mixture, and then after settling putting it into well-corked bottles. For using, a gill of this mixture is put in three gallons of water, and the plants syringed with it.

ROSE INSECTS.—Vick's Monthly states that a good remedy for the insects which infest the rose, is to syringe both surfaces with a solution of whale-oil soap, using one pound of the soap to one gallon of water. Another remedy is kerosene mixed with an equal quantity of milk, a spoonful of the mixture being then stirred in a gallon of water for syringing. In a few hours wash off either of these applications by syringing with clear water. Caution is recommended in the use of carbolic acid on plants, as it will destroy them if used too freely. It is advised to mix a few drops in soap-suds made from soft soap, and try its strength on weeds.

A Hardy Plant.

THE PHILADELPHUS.—All are familiar with the old and favorite Syringa or Mock Orange. For hardiness, profusion of bloom, vigor of growth and ability to take care of themselves under neglect, few shrubs are more desirable. The flowers are very fragrant, of creamy-white color, borne from

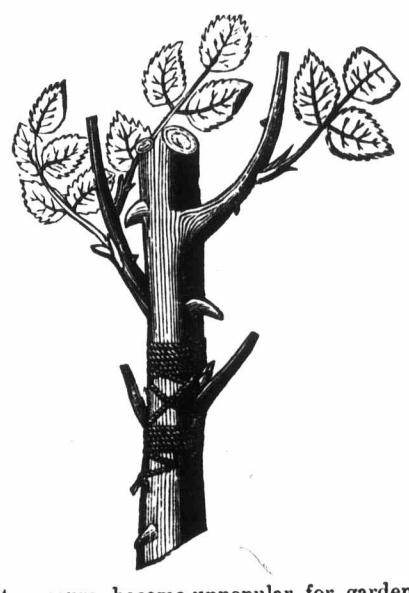


THE PHILADELPHUS.

June 1st till about the 20th, varying somewhat with the season. The Garland Syringa (P. coronarius) is one of the best, while P. laxus, the subject of our sketch, bears larger flowers and blooms as freely as any of the several kinds.

Budding Roses.

Among the many new and desirable roses lately introduced, there are quite a number which are not very vigorous growers. These frequently disappoint the amateur, and it is certainly anything but pleasant to have fond anticipations too long drawn out. To increase the vigor of the weak-growing varieties of roses, or to bring the hardy-blooming sorts forward, we have only to bud them upon strong-growing kinds. Formerly, this system of propagation was far more extensively practiced than at present, as budding roses have, in a



great measure, become unpopular for garden culture, mainly because if the top winter-killed the plant became worthless. Secure some good, thrifty rose-stocks, and if the free-growing *Manetti* cannot be procured, then take strong suckers of the old Damask or Blush rose of most country gardens. Sprouts of last season's growth are better than older canes. Dig these up and trim off all long roots, and carefully remove all buds or short sprouts which are starting from the roots or stems below ground. Cut the canes back to about a foot of the ground, and then plant in good, rich soil, one or two feet apart. Now, these are the stocks upon which we propose to work (bud) the choice, tender and feeble-growing monthly roses, consisting of Teas, Bourbons, and other kinds which come under this rather general name.

If the varieties which it is desirable to multiply are growing in the house, so much the better, because buds suitable for inserting upon the stocks in the garden can be obtained from them much earlier than from plants growing in the open ground.

Now, we will suppose the stocks have commenced growth, and, by making an incision through the bark, we find the latter can be readily separated or lifted from the wood; if so, they are in proper condition for budding.

The implements and material required for this operation are, first, a budding knife. Some bass bark will be very handy and useful for tying in the buds, but woolen yarn or cotton candle wicking will do almost, or quite, as well.

Supposing that everything is in readiness, we cut off one or more branches containing the buds to be used. The thorn may be rubbed off to prevent pricking the fingers, and the nout off the leaves, but leave the leaf stock which partially surrounds and protects the buds. Roll these half denuded branches in a damp cloth or paper, if they are to be carried any distance, or to protect while being used, for they will soon wilt if exposed to the sun and air. If there are several varieties, then each should be labeled when cut off from the parent stock when the buds are inserted. We will now suppose the operator is beside the stocks with buds, knife and tying materials in hand.

The first operation is to make a perpendicular incision, about an inch long, through the bark of the stock, and at the top of this a cross cut. Then take one of the twigs which are to furnish the buds in the left hand, and the upper or small end towards the body; insert the knife blade about a half inch below a bud through the bark and slightly into the wood, bringing out about the same distance above the bud, while the bud is kept from falling by pressing the thumb upon it.

The bud should now be tied-in by winding the stock above and below the bud, as shown in our engraving, covering the incision in the stock, but not the point of the bud. All that is requisite is to hold the bud firmly against the wood of the stock, until a union between the two occurs, which will usually be within two weeks, if at all, when the bass should be removed, or, at least, loosened, in order to permit a free circulation of the sap.

Gardening.

The present month is one which should be a busy time in preparing and putting in all kinds of garden vegetables. A good vegetable garden is of the greatest importance to every farmer's household, and vegetables in their season should form a greater part of their diet. If the various kinds in their season are cultivated they make a pleasing variety and give a relish too. As a general thing, however, a good garden is rarely to be met with among our farmers. The work is generally left to the female of the house, and a bed of beets, onions, tomatoes, and a few hills of beans, compose the majority of the gardens. By little attention nearly all standard vegetables could be cultivated by a one horse scuffler, and half an acre could be as easily tilled as a few straggling beds, were the land clean and in good tilth. The following are amongst our more useful kinds, and which will be found to be seasonable :—

ASPARAGUS.

Every garden should contain a bed of asparagus, not only because of its healthfulness, but because it is one of the earliest spring vegetables. The idea that it is very difficult to establish and maintain a good bed is erroneous, for we think there is scarcely a vegetable on our list that can be produced for a term of years so cheaply and easily as this, and any one following the directions given below will be almost certain of success.

If you wish to raise your plants, prepare a light, rich spot as early as possible in the spring. Soak the seed twenty-four hours in warm water, and sow in drills one foot apart. When the plants are well up, thin to three or four inches in the row, and

give frequent and thorough cultivation during the summer. The second season prepare a bed by deep spading or trenching, working in a large quantity of well rotted manure. Dig trenches four feet apart and twelve to sixteen inches deep, and spade in at least four inches of well rotted manure in the bottom. Set the plants in the trench eighteen inches apart, covering them with about two inches of fine soil. After the plants are up, gradually fill up the trenches, and give frequent and thorough cultivation. The second season, early in the spring, spade in the heavy dressing of manure and about two quarts of salt to the square rod. Cultivate well. The next season it may be cut for the table two or three times, taking care to cut *all* as fast as it appears. After the final cutting, spade in a liberal dressing of fine manure and sow one quart of salt to the square rod. The next season, and ever after that, the bed should give a full crop, but should be annually manured after the last cutting and well cultivated through the remainder of the summer. The tops should not be cut until *dead ripe.*

BEANS.

Under this name are classed all the low growing sorts, called in different catalogues *Bush, Bunch, Snap, String* or *Dwarf Beans.*

They are so extremely sensitive of frost and cold, that it is useless to plant them before the ground has become warm and light. Stir the ground often, but only when dry, because earth scattered on the leaves when they are wet with dew or rain, will cause them to rust, and greatly injure the crop. Plant three to five seeds in hills two and a half to three feet apart, or six seeds to the foot in drills the same distance.

BEET.

Culture.—All the varieties succeed best on a deep, rich, sandy loam. Sow as soon as the ground will admit, in drills fourteen inches apart, and thin to six inches in the row. Soak the seed twenty-four hours in luke warm water before planting, and sow in freshly prepared ground.

CUCUMBER.

This is one of those vegetables which can be grown to perfection by anyone who can control a few yards of soil which is fully exposed to the sun, and the fruit is so much better when gathered fresh from the vines than it is when obtained in the market, that every family should be supplied from its own yard.

Culture.—Form a low, flat hill of very rich soil by digging a hole some three feet across and six to twelve inches deep, and fill this with rich, black earth from the woods. If such earth cannot be obtained, mix a portion of the soil thrown out with an equal bulk of *well rotted* manure, so as to form a flat hill some three feet across and four to eight inches high. On the hills thus formed, scatter, and cover one inch over them. As soon as the plants are up, they will be liable to attack by the striped cucumber beetle. These may be kept off by frequent dusting with air-slacked lime, soot, or sifted ashes diluted with fine road earth; care should be taken not to use too much, for if too strong, any of the above materials will kill the vines. When the plants are well established, thin to three plants to each hill. In gathering, pick all the fruit before it begins to ripen, as the vines will cease setting fruit as soon as any seed commences to mature. It should be remembered that these plants are very tender, and if it is desired to have them early, provision should be made to protect them, not only from frost, but during *cold* nights.

CABBAGE.

There is no vegetable which may be cultivated with more certainty of success than this, and few if any that are so generally useful, as it may be made to follow other crops, and will give *some* return no matter how poor the soil or how negligent the cultivation, while it responds so readily to better care, that it claims a place in the finest garden, and the attention of the most skillful gardener.

The requisites for complete success are: *First*, good seed; there is no vegetable where the seed has more influence on the quality of the product than in this, and gardeners should invariably select the best procurable. *Second*, rich, well prepared ground. *Third*, frequent and thorough cultivation.

For cabbages, the ground must be highly manured, deeply dug or plowed, and thoroughly worked to insure good, full sized heads. A heavy, moist and fresh loam is most suitable. The early sorts should be sown very early, in hot-beds, hardened off, and transplanted eighteen to twenty-four inches apart, early in the spring. In transplanting, *they must be set in the ground up to the first leaf, no matter how long the stem may be.*

All through the season the ground should be cultivated *as often as possible*, as success will depend largely upon faithfulness in this particular.

The late autumn and winter varieties may be sown in a seed bed, from the middle to the last of spring, and transplanted when about six inches high, three feet apart each way. Shade and water the late sowings in dry weather to get them up. It is important that the plants should stand thinly in the seed bed, or they will run up weak and slender, and be likely to make long stumps.

Cabbages should be hoed every week, and the ground stirred deeper as they advance in growth, drawing up a little earth to the plants each time, until they begin to head, when they should be well dug between and hilled up. After they are partly headed, it is the practice of some gardeners to lay them over on one side. Loosening the roots will sometimes retard the bursting of grown heads.

CAULIFLOWER.

The cauliflower, although one of the most delicious of vegetables, is little known outside of our large cities. It needs, to bring it to perfection, a cool, moist atmosphere, and if this condition occurs when the plant is about to head, fine, large heads will result, while if the air is hot and dry, failure will result in spite of the best of seed and cultivation.

Culture.—Sow about the middle of spring, and transplant like winter cabbages. In dry weather, water freely, and as they advance in growth, hoe deep, and draw earth to the stems. After they begin to head, they should be watered every other day. On the approach of frost, those plants which have not headed may be set out in a cellar, where they can be aired in mild weather. In two or three weeks the strongest will begin to form flower heads, which will be very tender and delicious.

CELERY.

Celery is one of the most popular salad plants used in this country. Succeeds well.

Culture.—Sow the seed, which is very slow to come up, early in the spring, and pick out the small plants into boxes or a seed bed to stay until they are six inches high. Prepare trenches four feet apart, a foot wide, and ten inches deep. Fill in five or six inches of well rotted manure, and mix it thoroughly, half a spade deep, with the earth at the bottom. Cut off the tops and some of the roots of the young plants, and set them eight inches apart; keep the ground well stirred until the plants are well grown, then draw the earth about them, taking care that none falls into the centre of the plants. After a few days repeat this until only a small portion of the tops of the leaves is visible. A light dressing of salt applied when earthing up is very beneficial.

LETTUCE.

There is no vegetable which is more universally used than this, and yet few people know how inviting and appetizing it is when brought to the table fresh and unwilted, a condition in which it is rarely, if ever, found in our markets, and which can only be secured by growing the plants in one's own garden. So we earnestly urge all our readers who can possibly do so, to grow their own lettuce.

Culture.—The qua ity of lettuce depends largely upon rapid and vigorous growth; and to secure this, we need very rich, and mellow soil, frequent surface cultivation, and an abundant supply of water. Sow seed in drills fourteen inches apart, and thin out as wanted for the table until they stand eighteen inches apart. Give frequent hoeings, and if possible, water during any dry time. The Cos varieties should be tied up seven to ten days before using, in order to blanch the inner leaves.

MELON.

Cultivate as recommended for cucumbers, except that the hills should be six feet apart, but avoi l planting near those plants, as they will mix with and injure the quality of the melons.

PARSLEY.

A most useful vegetable for flavoring soups and stews, and for garnishing. For flavoring, the green leaves are used, or they may be dried crisp, rubbed to a powder, and kept in bottles until needed.

It requires rich, mellow soil. The seed is slow in germinating, and should be sown as early in the spring as possible, and when the plants are two inches high, transplant. The oftener the plants are transplanted and cut back, the finer the leaves will be.

SPINAGE.

The spinage is very hardy, extremely wholesome and palatable, and makes a delicious dish of greens, retaining its bright green color after cooking. Should be planted in very rich ground, the richer the better. Sow in drills one foot apart, and commence thinning out the plants when the leaves are an inch wide, and all should be cut before hot weather, or it will be tough and stringy. For early spring use, the seed should be sown early in autumn, and every two weeks thereafter if a succession is desired.

TOMATOES

Do best on light, warm, not over rich soil, and success depends upon securing a rapid, vigorous, unchecked growth during the early part of the season. Sow in boxes; when the plants have four leaves, transplant, setting them four or five inches apart; give plenty of air, and endeavor to secure a vigorous, but steady and healthy growth, so that at the time of setting in the open ground they will be strong and stocky, about as broad as high. A slight check while the plants are small, will materially diminish their productiveness. Set out of doors as soon as danger from severe frosts is over, but before doing so, harden off the plants by gradually exposing them to the night air and the withdrawal of water until the wood becomes hard and the leaves thick and of a dark green color. Transplant carefully, and cultivate well as long as the vines will permit. The fruit is improved in quality if the vines are tied to a trellis or to stakes.

An exchange says: The chemists say that carbon in the soil is of little or no value as plant food, the carbon in the plant being taken from the atmosphere through the leaves. Yet in practice farmers well know the advantage of having the soil filled with a good proportion of vegetable matter. It serves other purposes quite as important as feeding the plant, in making the soil porous and friable. Perhaps carbon in the soil will parallel the old conundrum about the noise of a wagon, which is something that always goes with the wagon, is of no use to the wagon and yet without it the wagon never could go.

Veterinary.

SIR,—Two of my young pigs have for some time past lost the use of their hind legs, and are apparently growing worse. Can you tell me what is the matter with them and whether there is any cure for the disease? A SUBSCRIBER.

[Give them a dose of purgative medicine (castor oil), according to the size; give sulphur and saltpetre in the feed; keep them in a well ventilated place; allow them plenty of exercise.]

SIR,—I lost a calf the other night; the cause I cannot account for; it acted as though it was choking; it was in good order until a few days before it died, and then wasted away to a skeleton; it frothed at the mouth, but didn't seem in any pain; I opened its mouth but found nothing. Please let me know in your next issue, and oblige, yours truly, P. B., Marmora, Ont.

[We could not, from the description that you give, say what was wrong with your beast. If you have any more troubled in the same way we would advise you to call in some competent veterinary surgeon.]

SIR,—I have a horse that cribs, but in rather a different way from the most of crib-biting horses; he places his lower jaw near his mouth on the manger, then presses down, giving a grunt. Can you tell me the cause, and a remedy. And, also, can you tell me what it would cost to buy a thoroughbred Holstein cow, six years old, in calf by a thoroughbred bull of the same stock, cow to be delivered at Grimsby station, Grimsby township, Ont. G. M. B., Smithville.

[1. We cannot give any cause for cribbing; it is a vice; you might partly prevent it by putting a wide strap around the throat, pretty tight. It is best to keep him in a loose stall where there is no manger or rack that he can press against; feed him on the floor. 2. We are not acquainted with any Holstein breeders in Canada. There are several in the United States; but what prices are asked we are unable to tell.]

The Farm.

The Best Method of Cutting Potato Seed.

Through the courtesy of Messrs. Hiram Sibley & Co., Rochester, we are able to present a drawing and a diagram showing the method for the best cutting of potato seed according to the result of the Station experiments for 1882. The upper figure is intended to be a diagram of a section of the potato showing that there is an internal structure to the potato tuber, and that the method of cutting to single eyes should take cognizance of this structure. The lower figure represents a potato marked for cutting into single eyes. As the potato eyes are arranged in a spiral upon the tuber, it fol ows that if our cutting is commenced with the stem end at the first eye and then the potato be rotated so as to bring the next eye under the knife, that in this manner we can readily and quickly divide the potato tuber into pieces containing each one eye, and each piece is cut through the centre of the potato in the proper way, provided we take the precaution of holding a knife at the angle indicated by the structure in the section.

We desire to call the attention of our farmers to this method of cutting the potato, as under equivalent con ditions, all kinds of seed being used, even including the whole potato, there were none which showed the same influence on crop of 1882 as those which were cut after the method illustrated above. If our results shall stand the test of verification, it follows that by this method of cutting we are not only saving a large quantity of seed per acre, but we are also gaining an increase of crop.

There are various circumstances which, however, in a trial of this kind, require to be kept in mind. One is that the seed is but the factor of the crop. Poverty-stricken soil, neglect in planting and during growth, and a season extremely unfavorable, may offset any advantage which the seed may have to offer. Where all must fail one seed can not be classed agriculturally as superior to another. On the other hand, fertility in excess, prime condition of soil and treatment, may offset the influence of seed, so much so that the poorer seed may show as the better. Thus, single eyes cut small and shallow on an extremely rich garden soil, may produce a crop perfectly satisfactory to the grower, while the same seed planted in the field under field conditions shall fail entirely.

The experiment which we desire to suggest to those farmers who are willing to co-operate with us in determining the value of our experiment and the verity of our conclusions, is as follows :

1. Select a piece of land of but moderate fertility and of moderate condition, for the reason that under this condition differences to be ascribed to the seed become more marked than under more favorable conditions.
2. In clay soil, plant upon moderate ridges ; in sandy, open soil, use level culture.
3. Use single eyes, cut according to the illustration, and whole potatoes of the same size from which the eyes were cut, or ordinary cuts, as seed.
4. Plant in drills, three feet and a half apart, two seed in a hill, every twelve inches apart.
5. Cultivate and hoe in the ordinary manner or as preferred, treating the various trials alike, and keeping free from weeds.
6. Report the result of the harvest, together with particulars of treatment, to the Station or to this newspaper.

n cutting a potato it seems, so far as we at present know, to be advantageous to prepare the seed a few days in advance to use and to place in such a position that their cut surfaces shall, to a certain extent, become dry.

Those farmers who will co-operate with the Station in testing Station results, by so doing will confer a favor upon themselves as well as upon the public, as thus the Station efforts may become more immediately available as they become more generally tested and verified. Hence, we have prepared this circular for distribution among the farmer associations, and we trust that some effort will be made by parties who are interested in progressive agriculture to test and pronounce upon the validity of our experimental conclusions. E. LEWIS STURTEVANT, Director.

Geneva, N. Y., Feb. 1, 1883.

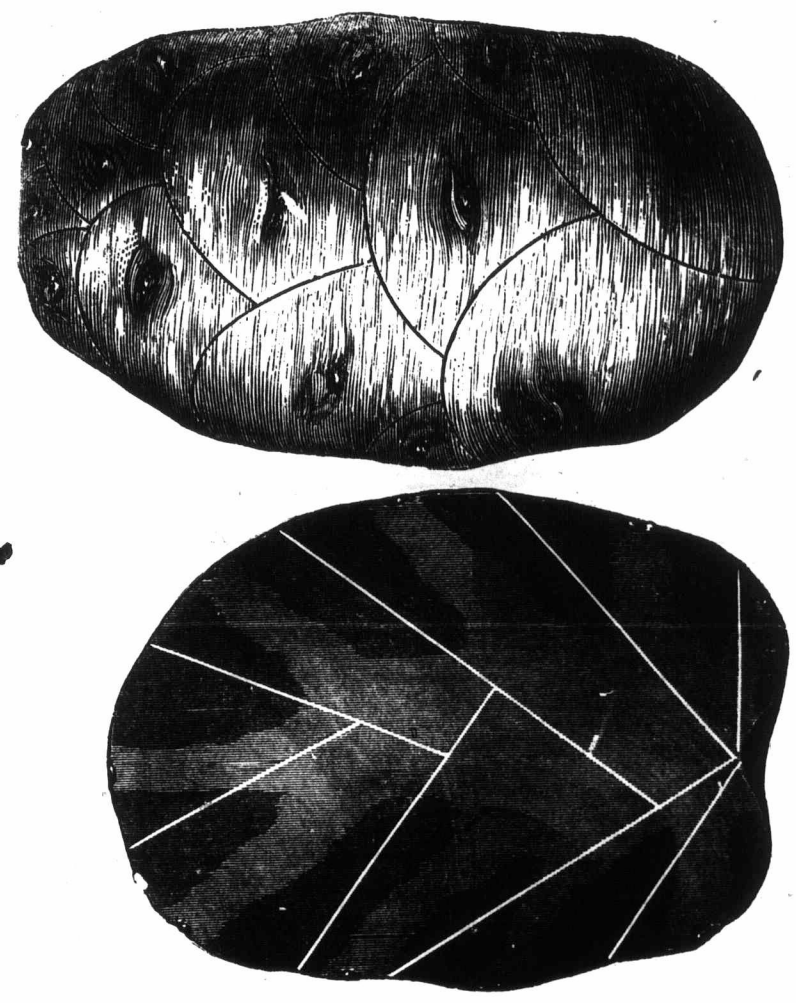


DIAGRAM FOR CUTTING POTATO SEED.

Experiment in Growing Corn.

An experiment in corn-planting, by the Iowa College, last year, in three separate plantings, all put in on the same day—May 6—each plant being 160 square yards, resulted as follows : The plot in which the hills were 3 feet 10 inches by 12 inches apart, with one stalk in a hill, produced at the rate of 69.06 bushels per acre ; the plot planted 3.10 by 20 inches apart in the hills, and two stalks to a hill, produced at the rate of 57 bushels to the acre ; and the third plot, planted 3.10 each way, with four stalks to a hill, produced only at the rate of 50 bushels to the acre This is an important fact to know. The experiment was conducted with the utmost care for the express purpese of deciding a question which has always given rise to a great deal of discussion, alike as to the proper distances between the hills and the rows, as well as the number of stalks in a hill. Twelve inches distance between the hills would be almost equal to four grains in a hill at 3 feet 10 inches apart, and practically amounts to drilling, which of course would demand additional labor in removing the weeds and cultivating the soil between the hills with the hand-hoe, as the crop could be harrowed only one way. Whether the extra bushels would pay the additional cost of labor, we do not pretend to answer, though the established belief is that it will not, and that is the reason why so few farmers adopt the drilling system.

The farmers of every county should organize agricultural clubs and send members to that convention from between the plow handles. Let them choose a presiding officer from their own ranks, and not permit the position to be usurped by broken-down politicians, as a stepping-stone to office.

Draining.

BY C. G. ELLIOTT.

(Concluded.)

COST OF DRAINING.

The first cost of draining is what frightens many farmers when the subject is brought to their notice. Draining should be regarded as an investment of capital. The farmer's land, his necessary stock and implements, and his yearly labor are regarded as his capital. All that he can make by the management of these is the profit of his buisness. But to drain, cash capital is required. If the farmer does not possess this, and can not get it at a reasonable rate of interest, he can not drain. If he has been prosperous, and, as a result, he has in his possession a little cash capital, he does not hesitate to use it in adding to his facilities for increasing his profits. Nor does he hesitate long to pay a reasonable rate of interefst for money with which to add to his working force, if he can see that there is a fair prospect of making a much lar ger profit than the rate of interest he is obliged to pay.

Without naming a definite number of dollars and cents, let us take this general statement, which is admitted by all who have drained to any extent, that on ordinary farm land that will produce but one-fourth to one-half a crop, the total cost of draining will be met by the additional crop that will be produced during the next two years after draining. The cost of cultivating drained land is less than for wet land, as all who have tried both will admit. By this investment the farmer will get fair wages for what work he does upon his land, his money will be in his pocket again at the end of two years, and his land drained and ready to return his money every succeeding two years. Many farmers cultivate land which, in reality, does not pay them a fair remuneration in the crop they get from it. Their profits come from land which is in good condition and will produce good crops. Very often they would make more to wholly discard the wet land and give more labor to that which will give some return for it.

Where land is worth fifty dollars per acre, it will pay a large return to drain wet land. It is true that much farming is done on cheap land where it is the custom to cultivate a part of the farm, which is naturally surface drained, and use the rest for grazing purposes. Draining under such conditions will not pay, because the farmer has not the facilities for using the good land he already has in his possession. Such farming, however, is fast coming under the more advanced system in which "more work and less land" is the motto.

The cost of draining, like any other enterprise undertaken upon the farm, will always vary with the price of labor, yet farm products usually bear a price commensurate with farm labor, so that the relation of the two will be about the same. There are two things which will vary the expense of draining, whatever may be the relation between farm products and farm labor.

These are : the main drains, which will necessarily vary in size, length and depth, and the degree of thoroughness with which draining is done.

COST OF MAINS.

It will be easily understood that a field or farm may be so situated that very little expense will be required for large mains into which to discharge the laterals. It may be for the reason that the field is near some large open ditch, or some stream which is easily reached. Draining will then be reduced to a minimum expense. There are often cases where a main drain of considerable size must be long and laid deep in order to give the necessary outlet to the field.

It is the custom of ditchers to dig ditches and lay tile by the rod, though a more convenient unit would be the foot or one hundred feet. As a basis, we will say that ordinary diggers can be had

for $1.50 per day, and good ditchers at $2.00 per day. For a main drain, laid at different depths and with tile of different sizes, the expense per one hundred feet is as follows:

Cost of Five-inch Main per One Hundred Feet.

Depth of Ditch.	Cost of Digging and Laying.	Cost of Tile.	Cost of Filling Ditch.	Total Cost per 100 feet
3 feet.	$1 50	$3 00	30 cents.	$4 80
4 feet.	2 00	3 00	42 cents	5 42
5 feet.	3 00	3 00	60 cents.	6 60
6 feet.	4 50	3 00	75 cents.	8 25

Cost of Six-inch Main per One Hundred Feet.

Depth of Ditch.	Cost of Digging and Laying.	Cost of Tile.	Cost of Filling Ditch.	Total Cost per 100 feet
3 feet.	$1 50	$4 00	30 cents.	$5 80
4 feet.	2 10	4 00	42 cents.	6 52
5 feet.	3 00	4 00	66 cents.	7 66
6 feet.	5 10	4 00	78 cents.	9 88

These tables give a pretty close estimate of the cost of mains in general, when wages are two dollars per day for good ditchers. To this should be added the cost of boarding the men while they are at work, and of hauling the tile from the factory or station to which they are shipped. The estimate for filling the ditches is made on the basis of part being done by hand and part by team work. It is often the case that ditches can be filled with but little expense by using a steady team with a plow and scraper. When it is necessary to dig the ditch five or six feet deep, the risk of striking rocks hard clay or quicksand makes the estimate more unreliable, and it will be found in such cases that the cost of digging the ditch and laying the tile will run over, rather than under, the estimate

It should be clearly understood that these items of cost will vary greatly with different years and in different localities. The cost of tile and labor are not the same for two years in succession, hence the foregoing estimate must be varied with such changes.

The actual cost to the farmer may be greatly diminished by "taking time by the forelock," getting his plans well laid, and when his farm help is not rushed with work, let them devote their time to the drains. There are winters which are often so free from cold weather that ditching can be done to good advantage if the tile have been previously hauled. Help is then plenty and cheaper than during the summer months. There are other seasons of the year when the forces of the farm can be used with economy in carrying on drainage work.

COST OF BRANCH DRAINS.

Branch drains, laid from three feet to three and a half feet deep, in ordinary farm land, which will spade easily, will cost $2.00 per one hundred feet for digging the ditch, laying the tile and filling up the ditch. Three-inch and four-inch tile cost from $1.32 to $2.00 per one hundred feet respectively. Add to this the cost of boarding the men while engaged in the work, and of hauling the tile to the ground, and we have a close approximation of the cost of draining per one hundred feet. There are a few incidental matters, such as protecting the outlet tile, silt basins, if any are needed, and surveying, which should be taken into account.

The actual cost per acre will depend upon how many rods of drain are laid upon an acre. A field having several wet places and always troublesome to cultivate in the spring, to say nothing of the loss incurred, can often be drained out in good shape at a cost of about five dollars per acre for the whole field.

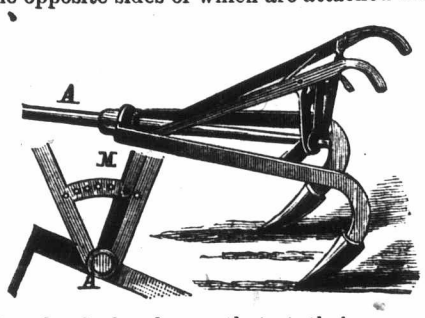
PROFITS OF DRAINING.

Enough has been said incidentally, in the foregoing chapters, concerning the profits of draining, to satisfy owners of wet farming lands that it is better to reclaim such lands than to invest capital by buying new farms. After having arrived at the probable cost of the work, it will be easy to estimate the increase of crops by comparing the field to be drained with one which is naturally drained, and whose productive powers have been well ascertained. If the land is in such a condition that it will produce nothing without draining, the entire crop, after deducting the cost of producing, will be profit. We will suppose that an undrained field will produce twenty bushels of corn per acre. If well drained, the same labor and expense in cultivating will produce fifty bushels of corn per acre. Here is a gain of thirty bushels per acre, which, at forty cents per bushel, will be twelve dollars per acre as profit. The labor, which in the first case produces eight dollars, in the second brings twenty dollars. Other crops can easily be figured in the same way, and such results are realized every year by farmers who have drained in an economical and thorough way. The farmer will have more confidence in his work if he investigates and figures for himself. Let him estimate the cost carefully and compare it with the expected gain. We do not advise any one to go at this work blindly, or because others say it is all right. Count the cost and the expected increase fairly, and then shape your course accordingly.

We can give in a sentence the condensed evidence of scores of farmers upon this subject of profit, viz: that *draining pays from twenty-five per cent. to fifty per cent. on the investment.* The writer regards it as almost superfluous to publish individual statements regarding this subject, as they can be found in almost every paper published in the interest of farmers. The aim of the author has been to tell how to drain in such a way that the best results may be obtained. The profits will be assured if the work is adapted to the case in hand and well done.

An Improved Cultivator.

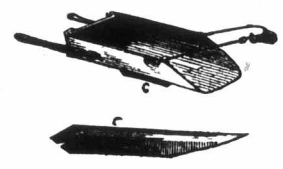
An improved cultivator, in which devices are provided for guiding and controlling the plows when using them on side hills, is shown in the accompanying engraving. To the middle part of the drawbar, A, is attached the forward end of the plow handles, the rear ends being connected and held by a round, and they are supported by braces attached to the rear end of the drawbar. The braces are connected by an arched bar, M, in which are a number of holes. In front of the handles upon the drawbar is placed a loose collar, to the opposite sides of which are attached the for-



ward ends of plow beams that at their rear parts are curved downward and have shovels attached to their ends. The beams are connected by a cross bar which has a hole through its centre to receive the rear end of the drawbar. To the centre of the cross bar is attached an upwardly projecting bar that serves as a handle for adjusting the plows. This bar is held in any desired position by a spring catch pin that works in the holes of the arched bar of the handles, and can be swung to either side to bring the plows into such position that the handles shall be upright while the plows are working upon the side of the hill.

Earth Scraper.

We give an engraving of a novel earth scraper which combines maximum lightness, strength, and economy of construction. The body of the scraper is made of one piece of sheet metal, which is cut out in the flat, by suitable dies, and afterward bent into proper shape, and the joints are locked together by hooked shaped flanges, one edge being turned outward and one inward, and the two are then engaged, and rolled or otherwise flattened, forming a firm lock joint. The handles are attached to the scraper body by open rings riveted



to the sides of the scraper in which they are clamped. Two metal shoes, *c*, are applied detachably to the bottom of the scraper. The shoes are tapered toward their rear ends, and have side grooves. Wings are formed by slitting the bottom of the scraper lengthwise and crosswise, and bending the portions thus outlined downward at an acute angle. The shoes are attached by inserting their rear ends between the edges thus formed, and are then forced back until they come in contact with the ends of the grooves.

Manuring Corn in the Hill.

It seems scarcely creditable that such a good old-fashioned ctstom as manuring corn in the hill should be called in question; but we see that quite a lively discussion occurred recently, and there was a disposition to decide that it was better to spread the manure all over the land equally, then plant the corn in the hills and let it take care of itself. If one has a good supply of manure, and can afford to give the whole ground a thorough dressing, it may do very well to let the hills alone; but we are quite sure that where the supply of manure is limited, it will be found far better to put a part of it at least in the hill before dropping the corn, and we have little doubt but that even when the whole surface is abundantly manured, it would still pay in many cases to manure in the hill.

We noticed some time ago the experiments made in one of the German experimental farms on small and large seeds. Small seeds, like small potato eyes, never produce as good crops as large seed, although the ground in quality may be equally rich. If even the mere size of a seed gives it an advantage in its first start in life, how much more valuable must be a good stock of nutritious food ready to hand as soon as a young plant is in a condition to use it? It is indeed their first early start in life which makes all the difference between a good crop and a poor one. If plants once get behind, it is very hard for them to pull up again. There are but a few months of growing time, and a good start is a great gain.

For the same reason, it is an error to bury manure in the ground at any time, when the crop is an annual one, to be sowed in the spring and taken off in the fall. And yet this is a very common practice. Manure is spread on the surface, plowed down and the seed sown on the surface with the manure several inches away. It would be far better in most cases to plow the ground first, and then spread the manure on the surface and harrow it in before sowing the seed.

It is probable that most persons are aware of this, and would follow the practice were it not for the additional labor involved. By manuring in advance, the hauling can be done when we are not busy; in the other case it must be done at once, no matter how badly work may drive us before we can sow the seed; and then it is so much easier to haul over solid ground than over newly plowed. It is therefore good farming very often to sacrifice a little of what in some senses may be the best plan, for that greater principle—economy of time, which is often of far more importance in farm profits. So with this discussion about manuring corn in the hill. Whether it is a good policy to manure corn in the hill, is altogether a practical question; but as to actual advantages of the practice in itself, we think there ought to be no difference of opinion whatever.—[Germantown Telegraph.

STREET REFUSE AS MANURE.—The value of street sweepings as a suitable material for use in the preparation of manure, seems hardly to obtain the recognition it demands. Made into a compost with wood ashes, such sweepings have been known to give particularly satisfactory results. Their exact value will, of course, vary much with the nature of the material of which the roads or streets are made, but a considerable admixture of organic matter, derived from the droppings of animals and decomposed vegetation, must always be present. In many parts of Switzerland the road scrapings are sold by the local authorities, at remunerative prices, and the continued demands for them seem to indicate that purchasers are not disappointed in the fertilizing effects expected of them.

In buying farms it rarely pays to purchase one badly run down, with the idea of improving it. The cheapest improvements are always to be had ready-made. If the owner goes to work to improve the run-down farm he finds a never-ending job, and himself an old man before the farm is fitted to suit his ideas.

Nearly every Northern State has a cane grower's association. More than 9,000,000 gallons of sorghum syrup were made in 1882, and 800,000 pounds of sugar. Of the latter more than half was made in New Jersey, where a State bounty of one cent per pound was offered for home-grown sugar, but none for syrup.

Correspondence.

NOTICE TO CORRESPONDENTS.—1. Please write on one side of the paper only. 2. Give full name, Post-Office and Province, not necessarily for publication, but as guarantee of good faith and to enable us to answer by mail when, for any reason, that course seems desirable. 3. Do not expect anonymous communications to be noticed. 4. Mark letters "Printers' Manuscript," leave open and postage will be only 1c. per ½ ounce. We do not hold ourselves responsible for the views of correspondents.

To Our Correspondents.

During the past two months we have received an unusual number of letters, many of them containing money, without names or post offices, rendering it impossible for us to pay attention to the communications. Any of our correspondents not receiving prompt attention will please oblige by writing again.

Treatment of Calves.

SIR,—You will remember the ten Ayrshire calves I exhibited at the Montreal Exhibition last September, with which I carried off the five calf prizes and a special prize by the judges for the best ten calves exhibited. I am so often asked how they were fed and cared for, I will give it to you for publication, in hope that it will induce farmers to pay more attention to young dairy stock: The calves that were dropped in January, February and March, remained in the box stalls with their dams from 8 to 10 days, after which the dams were returned to their stalls; their calves were placed in smaller box stalls on the opposite side of the passage fronting the cows, and were let out to their dams twice or three times a day for 2 to 4 weeks; if the cows were great milkers the calves would not be allowed all the milk. As soon as the calf begins to exhibit signs of eating, place in its feed box cut roots with a little bran or provender shook on them, with a little fine cut hay; give little to begin with; do not leave it to sour; when the calf feeds, discontinue the drinking from its mother; begin weaning it by letting it to her every evening only, for a few days; if the cow is nervous and not willing to give milk, when milked in the morning let the calf drink from one side while you milk at the other. At 3 to 6 weeks old you can begin to wean the calf according to the weather and strength of calf, and begin to feed it with porridge and sweet skim milk twice a day; this with a little cut feed, as above mentioned, and a drink of clean water at noon, in hot weather, will bring the calves on well, till you can cut them fall rye or clover. Separate the sexes; give each lot a dark box stall of a good size, or unused parts of the barn or stable that open into a back straw yard, or small field to go into, weather permitting; hot sun and cold rains should be avoided; feed them at regular periods and leave them to rest; tie them up occasionally at the feeding rack or box, and clean them to accustom them to be handled. Give the boys or girls something to encourage them to attend to these little matters in a pleasant manner. The provender given on the cut feed and used to make porridge, consisted of 1 bag of oats, 1 of peas, 1 of barley, 1 of buckwheat, ground up together; every farmer can raise this at home. If you wish to exhibit calves, you will add to the porridge of each a handfull of ground oil cake or linseed, for about a month. When your roots are done, use instead cut rye grass, clover, vetches or hay, with a little provender on it. The porridge and milk to be given milk warm in the morning and evening; the cut feed at noon, and a little hay in the rack to eat when finished. Calves that come after March are better if kept a few days on the cow, but if new milk is valuable, after the first week they can be kept fairly on a small quantity of new milk or sweet skim milk, by adding some ground oil cake or prepared food, well scalded or boiled to form a thin jelly. As they become strong enough to eat they may be treated as above stated. In every case see that none of them get so much of any feed as to cause irregularities in the bowels; a weak calf can get a fresh egg or two in the morning meal. In no case should a calf be killed for use unless healthy and over about three weeks old. If one half the care was given to calves of dairy cows that is given to those for beef, there would be double the value in size and quality of dairy cattle in Canada. W. R., Plantagenet.

Pruning Apple Trees.

SIR,—In last month's issue the Fruit Growers' Association is reported as favoring, at their recent meeting in Toronto, the pruning of orchards in March. This surprises me. From the knowledge I have gained from experience and observation among successful apple growers, I am disposed to question this doctrine of the F. G. A. And as so many of your readers are interested in this matter of orchard pruning, I will state my views, and ask your readers to decide whether my views and their knowledge agree.

1st.—Early pruned trees—*i. e.*, before June—"break out all over," during the year of pruning, with young shoots, so that, unless the tress are visited weekly, an endless job, and the young sprouts rubbed off as fast as they appear, all the trees in the fall are feathered on every limb, and often on the trunks, with a crop of shoots from a foot to five feet in length, according to the vigor of the tree and the extent of pruning done. This is my experience. Is it the experience of the reader? Some may say, "I am bothered with sprouts and do my pruning when it is convenient, but it never occurred to me that a crop of sprouts depended on the time of pruning." Fruit growers to whom I have referred to get their experience, on reflection, say: "Yes, come to think, my trees *have* sprouted every time I pruned *early*." This sprouting is a result that is quite natural, and may be expected under favorable circumstances.

Every spring, previous to the opening of the buds, the tree "has made calculations" to sustain the top it has. If the top is partly removed before the forces of the tree have been expended in supplying sap for leaf and blossom for the top of the previous fall, a surplus stock of energy is the result, and buds are forced out on every limb that rapidly develop into sprouts. If the pruning be deferred until the top, as left the previous fall, has been allowed to leaf and blossom, no sprouting will take place.

2nd.—Pruning wounds the tree. The sooner the wounds are healed the better. Wounded flesh heals at any time. Wounded wood heals only during a certain part of the year. During what part of the year, then, does a *wood* wound heal? It will heal *only while the process of making new wood is going on in the tree.* This takes place while the tree is in leaf. The sap returning from the leaf of the tree deposits the material for wood. The growth of the tree in the extension of its limbs in length, as well as the enlargement of trunk and limbs, begins after the leaf is formed in the spring, and ceases early enough to allow the newly formed wood to harden before cold weather sets in. Prune in the fall after the wood-forming ceases, and the wounds remain exposed to the action of the air and the weather six months before any healing will begin, and the chances are that, owing to this long period of exposure, if healing ever does occur, the new wood will cover what will ever afterwards be a place of rottenness and a cause of weakness in the tree. To prune in March is less objectionable than fall pruning, in proportion as the period of wound exposure before healing begins is shorter. Pruning after the formation of wood begins leaves no time for exposure before healing begins. The wound heals while it is fresh. The new wood grows to the old, and no source of subsequent decay is covered up and hidden out of sight. The writer has seen limbs six inches through cut off about the 20th of June, and the wounds heal rapidly and completely.

As a result of my experience and observation, I would advise no pruning before the middle of June and none after the first of July. Does anybody agree with me?

GREENBOUGH, Woodstock.

SIR,—Would you kindly give me, in your next issue, the best method of cultivating bush beans as a field crop? Would you also give me the best plan of treating a colt to secure the most perfect development possible by the time it is one year old, with kind of feed, how often to be given, and what quantity at a feed?

R. M., Sarawak, Ont.

[1.—Cultivate in drills 2½ feet apart, or sufficient width to allow a one-horse cultivator to go through. It will take about 1½ bushels of seed this way; or they can be planted in hills 2 feet apart, when 8 to 10 quarts per acre will be sufficient.

2.—Give your colt about 4 quarts of oats a day, good hay, and a peck of carrots, with plenty of exercise.]

From the Bermuda Islands.

April 5th, 1883.

DEAR SIR,—In my former letter about Bermuda I promised in this to speak about the soil and cultivation, its products, fruits, grains, &c. Under this heading there is much to be said, and therefore I can only dwell lightly upon each part. In considering the soil of Bermuda, you must remember we have only a small quantity to speak about; though it is said there are five hundred islands here, yet the area of each and all combined is only 12,378. Of this not more than 2,500 acres are under cultivation, and probably that much or more might be cultivated, the balance being rocky and hilly, and of little value agriculturally. The soil is particularly mellow and fertile, and of a peculiar crumbly nature. Its depth is variable, from nothing to several feet; generally cultivated land has 3 or 4 feet of soil. Underlying this is coral rock, which is of so soft a nature, when not exposed to the air, as to be easily cut, and which forms a natural drainage, which is a great consideration in all cultures of the soil. To show the natural absorption of rain in this soil, I have known it to rain heavy during the night, and in the a. m. not the least sign of it could be seen; in fact in 10 or 15 minutes after a shower of rain it is all gone, and you never see mud here deeper than the soles of your boots, yet, as in the case of all well drained soils, it holds moisture well, and anything or nearly everything can be grown in it. While speaking of the soil, I will just mention, though the soil of itself is not deep, yet the coral rock underlying it is equally valuable for plant food, as all vines and trees sink deep down in it, and grow luxuriantly without any soil; it seems to be full of phosphates, and is a great desideratum in fruit and grape culture. The cultivation is ancient in the extreme. Very few plows are to be seen. The land is mostly all dug by hand with some most unmerciful forks and spades, which would be considered ancient relics at a world's fair. Horse or hand cultivators are not to be seen. Hoes as ancient as spades, even more so, and fingers are the instruments used in weeding, &c.; in fact I might say that fingers and hands do most of the planting and weeding without the assistance of any other instrument. The crops principally raised here are onions and potatoes; these two delicacies comprise the chief support of the Island; it is most astonishing the amount of onions sometimes raised off an acre. I have been informed that 1,000 boxes have been raised to the acre. A box contains 50 lbs. Last season there was shipped 250,000 boxes onions, 50,000 brls. of potatoes, 112,000 boxes of tomatoes; the latter contain 14 lbs. per box. These articles are principally shipped to the U. S. Coming to market early they realize high prices for their goods. At the present time onions are being shipped at the rate of 12,000 or 15,000 boxes weekly, and in the course of a couple of weeks the amount will be doubled; the flavor of these onions is very superior, quite unlike our strong, northern onion. The above mentioned articles include all the agricultural products shipped from Bermuda, with the exception of a few beets and a small quantity of arrowroot. The total value of these goods is estimated at £104,789—a little over $500,000, or $35 00 each for every man, woman and child on the Island. Fields of grain are unseen here; a little corn and an odd patch of oats is about all done in that way; they look for foreign supply altogether for these articles; also hay. In the fruit line a great variety grows here, but to such a limited extent it is almost equal to none at all, excepting bananas, loquests, and a few things that need little care. It is a failing of the Bermudian people that they have been so backward in studying the culture of fruits and raising them extensively. The policy here to a great measure is to put a shrub, or whatever it may be, into the ground, and if it grows well, and good, and if not it is the tree's fault; and in pruning and training it is the same way; if it grows and fruits, very well, and if not the verdict is, "They won't do here." This class of culture in a land blessed with many advantages for fruit raising, or in more advantageous circumstances, will not do. Proper culture training and care must be administered here or elsewhere to attain success. VIATOR.

SIR,—When is the proper time to sow the Mammoth Southern Sweet Corn for feeding green?

SUBSCRIBER.

[From the latter part of May to the middle of June.]

Washing Sheep.

SIR,—There is a communication in the last No. of the ADVOCATE from J. H. Stamford, with regard to washing sheep, giving his opinions as to the results of said process, and asking others to state their views. Now, sir, as you kindly offer an opportunity and invite others to have their say, I kindly embrace the privilege. For many years I have thought exactly like J. H., viz., that the process was injurious to the survivors, while I have seen many sheep die on the way either going, but principally returning from the washing place. For many years after I commenced farming I did not and would not wash, preferring to allow one-third off, which has been the rule practiced by buyers around here; and after the very cold and disagreeable weather we had last year (even into June), I made up my mind to abuse the poor animals no more, even if I had to allow one-half off. I did not wash my Southdowns last year, thinking them too valuable for such a risk, and still they fetched over a dollar and a half for each fleece. I saw a letter written by a Boston dealer two or three years ago, and published in some of the Toronto papers, in which it was very plainly stated that the practice was cruel to the sheep and of no benefit to the manufacturer, as he had to scour all the wool alike afterwards; besides he also plainly stated that dishonest persons took advantage of the practice to merely dip their sheep, while the evils from the long drive, dusty roads, sudden changes in temperature and cruelty and inconsiderateness in handling, were there all the same as if the washing had been well done. I never had any die directly myself, because I was very careful, and did not leave it to boys or hired help; but some of my neighbors have lost sheep nearly every year, while many of the survivors have never afterwards been well. I cannot agree with J. H. as to sheep being unprofitable, even though an odd one will die. I keep from 25 to 30 sheep on the hundred acres, and believe in care, such as salting and watering daily; had 28 this year, and they got nothing but pea straw and one pail of oats daily until 1st of April, when commenced to lamb. Have lost no lambs; ewes averaged one and a half lambs each. A. K., Winfield P. O.

SIR,—In renewing my subscription to THE FARMER'S ADVOCATE for another year, I, as a farm hand, would take this opportunity of expressing the high estimation in which I hold your magazine. If it would not be trespassing too much on your time and space I would like to say a few words to farm hands in general as to the advantages which might be derived by subscribing to your paper. In the first place it is a well known fact that the duties of farm work are attended with a great deal of hard work. Now I can safely say from my own experience that since I commenced taking an interest in the reading of your paper the fatigue of the day has been considerably lessened. One cannot read without bringing thought into requisition. The mind becomes enlightened, and instead of going about the work mechanically, the person will become so interested that it will become a pleasure, and an interested mind quickens the perfections, which I think would be a qualification even to the hired man. Wishing your paper every success, I am yours respectfully, RUSTIC, Lyn P. O.

SIR,—Would like to know through your paper if it is injurious to one-year-old cattle to have their horns cut off almost close to their heads; when and how is the best to do it? Intend to stable my cattle in pens, loose; hence the idea of cutting off their horns. G. G., Deloraine, Man.

[We do not think it would be injurious to remove the horns at one year old; but consider it would be very cruel to do so. Some breeders claim that by removing them as soon as they make their appearance it causes no more pain than does the docking of lambs tails. Be that as it may, it has been proved conclusively that Polled Angus and other hornless cattle, can, and do injure each other as much as cattle with horns; therefore, why put the animals to such useless pain?]

SIR,—What is the cause of young fowls eating their feathers off their heads? What will stop them? Answer in your next issue.

J. L., ROUNTHWAITE, P. O.

[The disposition of your fowls to eat feathers has been induced by depriving them of a proper supply of meat, green vegetables, bones, &c. The preventatives are plenty of food and plenty of range; but when the habit is once acquired it is difficult to break it up]

SIR,—Would you please give me the latest culture of cranberries, making the bog ready, &c.? Will it do to partially cover plants with sand that grow naturally, that is partly mixed with grass. Please give me full information in May No. and oblige. T. A. McD., Pictou, N. S.

[A complete treatise on "Cranberry Culture," by Joseph J. White, may be obtained from any respectable bookseller. The requirements for cranberry culture may be briefly stated. In the first place there must be a deposit of muck or peaty soil. In some localities this muck is not more than two feet deep, underlaid by sand, which may be brought to the surface by a system of trenching; but where the muck is six or eight feet deep, sand must be brought from elsewhere to cover the muck after the native growth has been removed to the depth of four to six inches. Muck and sand are essentials, but these must be so situated that they can be drained of standing water for 12 or 18 inches below the surface by means of ditching, and more than this, there must be a supply of water at command, by which the whole surface of the cranberry field can be flooded at once to completely cover the plants with water, and from which the water can be drawn off as suddenly.]

SIR,—Will you please tell me in your next issue if ensilage will answer the same purpose as turnips or mangolds? I am going to have a silo in the corner of a bank barn; how do you think it will answer? I intend to sow about seven acres of corn; how many cattle do you think that would feed for six or seven months? I purpose using plank for the inside instead of a stone wall; how do you think that will answer? Please say in May No. if possible. J. A. S., Mountain.

[Ensilage may partially answer the purpose of roots, but to produce the best results from its use grain and roots require to be also fed, but of course the latter in smaller quantities than when ensilage is not fed. A silo will answer in nearly any place, so long as you have a convenient way of excluding the air. Out of seven acres of corn you should have 105 tons of ensilage, and 25 lbs. a day is an average to feed to a matured animal, so you can judge for yourself how long this will last, and how many cattle it will feed.]

SIR,—Would you, in the next issue of your valuable journal, tell me which is the best way to manure sod land for the cultivation of potatoes, By spreading the manure on the sod in the fall before hard frost sets in, or in the spring before planting? I have tried the former and find that some years it does better than spring manuring, and some years not so well. What is the cause of it varying? Do you think by spreading the manure on the sod in the fall that the frost during winter destroys any of its gasses?

W. J. H., North River, P. E.

[The best results from the application of manure are derived by incorporating it with the soil as soon as possible, so that the escaping gasses may be arrested and absorbed. Frost would have no effect in destroying the gases, but, on the contrary, it would arrest combustion, or prevent the formation of gases. The better way to prepare your sod land for a potato crop would be to plow in the fall, and apply about twelve loads of short, well-rotted manure in the spring, having it as near the surface as possible. If you spread your manure, either in the fall or the spring, on your sod before plowing, you cover up your dung below where it would be available to the potato plant. Manure, to be of direct advantage to growing crops, should be as near the surface as possible, and not buried where it cannot come in contact with the feeding rootlets.]

SIR,—Please in your next issue inform me of the best remedy to prevent wire worms destroying corn; the land is new. I had a crop of corn in last year and it did well until about two inches high, and they destroyed about half the crop.

A SUBSCRIBER, Bertie.

[The best remedy for the destruction of wire worms is properly cleaning your land, thorough manuring, and a rotation of crops. Probably your corn was planted on an old pasture, which is invariably full of these insects. Salt, lime and other things are recommended, but it is likely if sufficient of these were put on the effect would be disastrous to the crop. It is also recommended to sow a crop of buckwheat.]

SIR,—I have a swamp of black muck three feet deep, no grit in it. I saw in the *Weekly Times*, of Moncton, that one ton of muck would make 40 lbs. of acid. If so, state how much would a still cost to manufacture it to acid?

J. W. G., COVERDALE.

[Since there are over 460 different kinds of acids, it is not quite clear to which of these our correspondent refers. The only acid which, from the composition of black muck or humus, could be made, would be *humic* acid, which is of no commercial importance, and would not pay. Humic acid is prepared by the action of alkalies on humus or black muck.]

SIR,—Last season we were very much infested with fleas, day and night. There were a good many pigs roaming about; could they have caused them? I shall be much obliged if you can suggest any thing that would remove them. They annoyed the former owner before we came.

J. S., MEAFORD.

[We do not think the insects you speak about had any connection with the pigs. There are certain localities which are constantly infested with these fleas, especially on sandy ground. Burning all the litter and rubbish, and anything in which they might be inclined to lay their eggs and hatch, is the only remedy we can suggest.]

SIR,—I have a large creek flat too springy to break up; it is very boggy. What is my best plan to seed it?

[If you can drain the flat it would be the best plan. It might be done in the dry season when the creek was low. If not, try sowing Orchard and Blue grasses, together with white clover.]

SIR,—Please inform me through your valuable paper the best kind of soil for growing a profitable crop of black barley; also its feeding qualities, and whether the straw is good or not, as it is comparatively new in this neighborhood; I have never seen any of it. A. B., Trafalgar.

[Any barley soil should be under good cultivation and well prepared, with a good supply of plant food in shape of barnyard manure. Black barley is an excellent heavy cropper, and makes an excellent feed.]

SIR,—Would you be so kind as to let me know in the next issue of your valuable paper if it is profitable to feed buttermilk to cows giving milk?

N. L., Onslow, N. S.

[We can scarcely see how a cow would be benefited by feeding buttermilk. From its composition, certainly the feeding elements are not conspicuous. We would advise our correspondent to try something more solid for profitable feeding.]

SIR,—Can you give me any information where a fruit evaporator is made in Canada, and one which you can recommend, and oblige, yours,

F. S., Morpeth, Ont.

[We must refer our correspondent to the advertisements which appear in our columns: J. A. & H. Bartholomew, Vanessa, Ont.; and J. J. Blackmore, St. Thomas, Ont., who manufacture evaporators which we believe are fitted for all the purposes which the manufacturers claim.]

SIR,—I find in the columns of the April number of the ADVOCATE, a stand taken by the directors of the Hamilton Exhibition, in fine wooled sheep, bred in Canada. This matter I consider is of very great importance to common farmers. Such has been the case for years past that both cattle and sheep have been kept only for the one purpose of taking prizes. Now, I am of the opinion that directors of our leading exhibitions should all take the same stand in petted-up animals for this purpose, only to stand in the show ring by themselves, and allow a class for the common farmers to compete together; then our exhibitions would be worth coming to see, and there is no doubt that exhibitors would be far in excess in numbers of what they are at the present time. Take year after year, and what do we see? The same animals and breeders only fighting together, and those who cannot compete with them have to keep their cattle at home; and none but will confess that this would be a stepping stone in the right direction to encourage more members to lay hold and give a helping hand in strengthening all our principal shows by allowing them a class for themselves to compete in. Yes, sir; and a good many of our leading show men might be surprised to see the cattle that would be turned out. G. L., Bruce County.

SIR,—Nothing having appeared relative to the Watson binder in your paper, in answer to my request of some time past as to your opinion of the working qualities of that machine, I would ask you as a favor to give me your private opinion, as I imagine that you are doubtless aware if it will give satisfaction from the fact that (if my memory serves me right) about two years this ensuing summer, you gave your opinion from having seen the machine perform work in some field in Western Canada, and in giving your opinion you stated that it required improvement before it would give satisfaction. We, here in the Province of Quebec, look to the FARMER'S ADVOCATE for all information regarding those matters. I can speak for myself; that is my principal object in subscribing for the ADVOCATE, and being unable to obtain the necessary information through any other source, I resorted to you from the fact that I attended the Kingston Exhibition last autumn expressly, and I come to the conclusion that I had not seen a fair test, from the fact that it would be necessary to see it perform the work on uneven ground; and, moreover, I have had considerable correspondence with the manufacturing firm during the past winter, and obtained very little satisfaction. Being anxious to purchase one of the separate binders, believing them to be preferable if they could be made to perform the work satisfactorily, as the combined, in my opinion, were unmanagable on uneven ground, I wrote to Mr. Watson, stating I would take one with the understanding that if it gave any reasonable satisfaction after a fair trial I would pay him and give him security to that effect, and he refused to give one on any other condition than that I would get one and run risk. He would not even send a man to start it, as he said it would cost too much money for merely the sale of one machine. That fact aroused my suspicion, as it appears to me a very strange way of introducing a new machine into any locality. Consequently, I now resort to you for information, as I feel confident it will be more reliable than coming through other parties unknown to me. Hoping you will give me the desired information. J. C., Bryson, P. Q.

[We are not aware of any alteration or improvement having been made in the Watson binder since the appearance of the article referred to, to cause us to change our opinion of it. There are binders made in Canada that will work separately upon uneven ground; but before purchasing a machine, no matter from whom, you should take care to have a properly written guarantee from the manufacturer that the machine will do all that it is claimed to be able to perform, and that it shall be put on to your farm in good order and ready for work.]

SIR,—On the morning of the 10th April a few black birds came around this section of the country. They had not been here long before a number of guns were heard in different directions shooting them, as well as other species of the feathered tribe which have been here for some time. This work has been carried on every fine day that there were a few birds to be got. I think that every farmer should watch these town and village stragglers who go out for a day's sport, trespassing over the fall crops and meadows shooting off the feathered tribe, and not allow this work to be carried on at any time during the year, as no farmer need allow any person to trespass over his property unless he likes. I do not believe there is one of those birds that is of no use upon the farm or other property, not even the crow. A great many farmers complain about the crow tearing up the corn. It is true that the crows destroy a great amount of corn, but they also destroy a large amount of grubs, which, if left within the field, would destroy more corn than the crows could. Almost every farmer has noticed, while plowing, the black birds following him in the furrow, picking up the grubs as the plow turns them out; then, gentlemen, is not this enough to show that they are of more value than to allow these boys to shoot them off for pot pies or mere fun? Last summer nearly every tree in my orchard had a bird's nest, some of them two or three, and unlike other orchards, it was green and nice, while some orchards were as red as fire with the codling moth or span-worm; whereas if these birds were not allowed to be shot off there would not be so much heard or seen of these worms and grubs. This work has been going on long enough, and I think it is time it was put a stop to.

J. K. H., Stamford, Ont.

SIR,—Should be much obliged if you or some of your correspondents would kindly furnish me with a good receipt for curing bacon and hams.

A BACHELOR FARMER, Otterburn, Man.

[To induce the wives and daughters of our subscribers to answer this, we will give a prize of $5 for an essay upon the subject, to be answered before the 15th June next.]

SIR,—Please inform me through your valuable paper the best way of subduing what we have here, a large white grub that works in the ground; they almost spoiled my potato crop last year by eating them up. When I was digging my potatoes I would find from ten to fifteen of these great large grubs; they would measure from half an inch to an inch and a half in length, white body, yellowish head, with two nippers, or hooks, on each side of the head. There were three of my neighbors that had their corn crop entirely spoiled by them; they eat the roots off, so none could lift the stalk up, and the corn died away. I was thinking of sowing plenty of salt; inform me if salt would kill the grub, and how much to sow to the acre, and inform me if corn ears are best to be cultivated or hilled up.

R. A., Glanford.

[The white grub referred to is the larva of the May-beetle or May-bug, as it is commonly called, a thick bodied brown beetle, nearly an inch long, which comes thumping against the windows of lighted rooms during the evenings in May and early in June. The grubs are two or three years in coming to their full growth, which will account for their being found of different sizes. Hogs are very fond of them, and when the grubs are plentiful they will root them up and devour them greedily; they are also eaten by domestic fowls and crows. It is very difficult to subdue them by the application of any remedy; but no doubt a liberal application of lime or salt would help towards reducing them.]

Poultry.

Practical Poultry Keeping.

BY R. A. BROWN.

The first requisites for profit in keeping poultry are: 1st.—Good, pure-bred stock. 2nd.—Good, warm and well ventilated apartments to live in. 3rd.—Good, wholesome food, and clean, pure water to drink. 4th.—Careful, regular attendance. This is the secret of keeping poultry profitably.

Now as to the breeds that pay best, they will have to be determined by one's own taste and decisions. If one is very fond of fowl for table use, it is much better to select from the large breeds something to your fancy.

If you desire to make a point of egg production, with no view to table requisites, then I say, By all means (according to my experience) try the Leghorns.

Some breeders, fanciers and farmers are very partial to the Spanish, Houdans and Hamburgs But after giving all varieties a trial, I very much recommend the Leghorns. My reasons are: First, the Spanish are too tender for general farm use; next, their eggs are thin shelled, and, though large, they smash very easily, and are considerably damaged while being taken to market. This last remark is the sole issue against the Hamburgs, while neither of the two varieties will lay as many eggs, according to feed given them, as will the Leghorn. The crest on the Houdans makes them unprofitable on a farm; they cannot see readily what is going on about them, and, consequently, become an easy prey to hawks, owls and enemies. Though they are not so defective in this respect as the Polands.

But the Leghorns are smart, active, hardy and very productive, and their worst fault is that they can fly higher than any other flowl except the Hamburg, and require high fences to secure them in confinement, of which they can stand equally as well as most fowls. I also prefer the brown in preference to the white, on account of their color, which does not spoil their appearance so easily when it gets soiled, and I think they (that is the browns) are a little hardier than the whites.

Some may say that they want a fowl that will lay, set and be good for table use when required, in fact, a general purpose fowl. Well, so far as my experience goes, and I have kept a good many varieties, I never yet had one (that is a breed) that could satisfy me. I have found, for this purpose, that two varieties paid better. The main trouble with one variety is that when you want an early setter, they are not to be had. The hens will want to set in the summer or late in autumn, when chicks are not wanted. Then, when eggs are scarce in winter and command a good price, your general purpose hen is recuperating for spring laying, and you get no eggs when you most desire them.

So to counteract this I have selected two varieties, namely: The Langshans and the Brown Leghorns; and in these two breeds I find all the wants of the farmer supplied. And, as to *fancy*, one can breed as high toned pets with either, or both of these varieties, as any other varieties on the face of the globe. The reason that pure breeds are recommended are plain. One is that if you have a fine breed you can sell a few settings of eggs at a "live and let live" price amongst your neighbors, and can sell also some stock at good, paying prices occasionally, and last, but not least, pure breeds eat less for production than mongrels, as the latter are great consumers and poor producers.

Their house should be warm in winter and cool in summer, with plenty of light at all times of the year, if it is for nothing more than to see to eat and to move about in. If hens are shut in a close place in winter, they ought to have light so they may walk around and keep their blood warm and healthy. If their house is warm enough in winter, so that water will not freeze in it, the fowl will not require so much food to keep up the animal heat A hen is merely a machine to transform the grain to eggs and animal tissue. It will take just a specified amount to keep up the animal frame, its flesh and heat, and the balance that is taken into the crop is manufactured into hen fruit (eggs). In the next place wholesome food *is necessary*; if one wants eggs that taste sweet, firm and good flavored, the fowls *must* be fed on wholesome food. As in a like manner that cows' milk will taste of the flavor of leeks, onions or turnips, from which the cows have eaten, so will eggs taste of the produce that formed them. And, this being so, why do so many allow their hens to eat of such filth that is often allotted them? I hope a word to the wise will be sufficient, and remember of what substance your hens were eating and drinking of for the past month, when you partake of your "ham and eggs," whether that is on Easter or "seed time or harvest."

To utilize the feathers of ducks, chickens and turkeys, generally thrown aside as refuse, trim the plume from the stump, inclose them in a tight bag, rub the whole as if washing cloths and you will secure a perfectly uniform and light down, excellent for quilting coverlets and not a few other purposes.

The Apiary.

Transferring Bees.

Transferring can be done on any warm day during a flow of honey, but the season of fruit bloom is considered the best time, as there are then less bees and honey in the hives than later. A bellows smoker is indispensable in the apiary. For transferring, a long, thin knife is needed; a wing or soft brush for brushing bees from combs; a saw and other tools for taking the old hive to pieces; a board, fifteen to twenty inches wide, properly supported, for a table, and materials for fastening the combs into the frames. This may be thin strips of wood, half an inch wide and a little longer than the depth of the frames, with some fine wire or strong twine to fasten their ends together when placed in pairs on each side of the frames, with the transferred combs between. I have found thorns thrust into the combs through holes previously punched or bored in the frames, very satisfactory. If this way of fastening is adopted, the holes should be about two inches apart on all sides of the frames.

A beginner will probably get along better to drive the bees first. To do this proceed as follows: Blow a few puffs of smoke through the entrance. Then set the hive a few yards away, bottom up, and over it place a box of about the same size. It need not fit closely. Now drum on the hive for fifteen or twenty minutes. By this time the queen and most of the bees will have clustered in the box. Set this on the old stand with the edge raised a half inch for entrance and ventilation. No other swarm should stand very near. Carry the hive with the few adhering bees into some convenient

room. This is to prevent robbing, and may not be necessary when bees are working very actively. Pry off one side of the hive, or split it open at such place as, from the construction of the combs, will give the best opportunity to get them out without breakage. If the grain of the wood runs up and down, a side can be easily taken off by splitting the two boards in which are the heads of the nails close to one side, having first cut the combs rom their attachments to it.

Now remove a comb and place it on the board or table. A few thicknesses of cloth under it will lessen the danger of crushing the comb. Lay the rame on and cut the comb so as to make a tight fit, and spring the frame on. Fill vacant corners with smaller pieces and fasten with the thin sticks, or thorns, and place in the new hive. By raising the edge of the board with the frame on it, the comb can be got into an upright position before fastening, without falling out of the frame. Pro ceed in the same way with the remaining combs, brushing all adhering bees into the new hive, as well as any which may have clustered on the floor or about the old hive. Be careful to save all the working brood, rejecting all drone comb and brood, and very black and imperfect combs. It is not material that the combs should be in the same position in the frame as in the old hive, except that the honey should be at the top. Carry the new hive to the old stand, and empty the bees from the box on the alighting board in front of it, and the work is completed, except that in about three days, if the combs have been fastened with sticks, they must be removed, as the bees will by that time have fastened them securely.

One of the most successful bee-keepers in the country has abandoned the system of transferring combs, and thinks it better to drive the bees into new hives filled with a wired foundation, leaving a few bees to nurse the brood in the old hive. At the end of three weeks these are treated in the same way, or are united with other colonies.—[W. B., in Country Gentleman.

We had made arrangements to insert a cut of a Clydesdale stallion, as well as that of a Percheron, but the delay in forwarding the cut has necessitated us in going to press without it.

The demand for heavy draught horses for exportation is at the present time unprecedented. We are frequently asked to give our opinion as to which class is the best. Both Clydesdales and Percherons have their ardent admirers, who claim for their favorites special features and good qualities. Both classes being so meritorious we must decline expressing an opinion, leaving it to our readers to judge what description of animal would be best suited to their locality. Besides these classes there are others, notably the Cleveland Bays and the English Shire horse, which are valuable to the farmer, and which it will be found profitable to breed.

NON-READING FARMERS.—A lecture was delivered at a meeting of the farmers in Yorkshire the other day on "Non-reading Farmers." The lecturer impressed upon his hearers the advantages to be derived from a close perusal of agricultural newspapers, and supported his views by enumerating a variety of subjects on which information was given in a newspaper which he picked up casually. "Knowledge is power" in farming as in other pursuits; but the knowledge must be of the right kind, and there was no reason to expect skilful farming from a non-agricultural mind. What was wanted in farming, on the part of the rank-and-file, was a little more general intelligence, combined with practical knowledge.

Capt. Ressor, the well-known southern Manitoba farmer, has resolved upon starting a 20,000 acre farm, after the style of the great Dalrymple Farm in Dakota, near Moose Jaw. He, in company with one or two other capitalists, last fall purchased twenty thousand acres of land from the Syndicate, four miles from Moose Jaw, which they propose to put under cultivation. He purchased 20 plows from Mr. Cockshutt, of Brantford, Ont., and is now on the way with 100 horses, 30 sulky plows, wagons, tents, etc., to begin farming operations in the spring. He expects to be able to break 4,000 acres this year. His mammoth farm at Silver Spring, near Rock Bay, comprises 8,000 acres, and upon it is probably the finest stock in the Province.

Farming for Boys.

BY THE AUTHOR OF TEN ACRES ENOUGH.

CHAPTER XII.

A great Brier-Patch.—Putting it to good Use.—Amazing the Neighbors.

On Spangler's unwieldy farm of a hundred acres there was a large piece of neglected land which had long been known as the "old field." For many years it had been grown up with common wild blackberries, which so completely occupied the ground that almost every other kind of plant was smothered out. There were a few straggling grape-vines among the dense mass of briers, but these could not have survived had they not been able to climb to the top of the blackberries, and so get up into the air and sunshine. Neither man nor boy had ever been able to traverse this immense thicket. Hence it was selected by the birds for building their nests in summer, and by rabbits as a hiding-place in winter. It was therefore a choice neighborhood for the boys to set their traps and snares, and many a fine stew for dinner did they secure by thus trapping its timid inhabitants.

One day in July, Uncle Benny and the boys were walking on the outside of this great brier-patch, and wondering at the immense crop of berries it was producing. The tall canes had shot away up above their heads, and were bending down with a heavy load of fruit, forming, with the old canes, a tangled mass of dead and living wood, into which no one could force his way. They could reach the fruit on the outside of the patch, and here they stopped, and began to pick and eat. This the boys and girls of Spangler's family had been in the habit of doing as long as they could remember, without any thought of turning the great crop upon the "old field" to any other use.

"Boys," said Uncle Benny, "there is a good deal of money in this brier-patch, if you only knew it, all of which is now going to waste."

"What do you mean, Uncle Benny?" inquired Tony King.

"Why," rejoined the old man, "have them picked, and sent to market."

Here was a new idea for the boys to entertain; for they had all their lives seen the great annual crop going to waste. But they followed the matter up, and talked it over, until they finally determined to take the old man's advice. The thing had to be made a partnership affair, in which all the boys and girls of the family were to be equally interested; so the Spangler girls were enlisted in the cause, they agreeing to assist in picking the berries, if the boys would see to having them taken to market. As these young people very rarely had any spending-money in their pockets, the prospect of making a dollar or two apiece was a great stimulant to exertion. If the boys wanted to buy any little notion, the girls were just as anxious to have some bits of finery for themselves.

The whole party were therefore up every morning by daybreak, picking blackberries. It was a rather scratchy kind of work, as the briers upon the untrimmed bushes lacerated their hands, and tore a good many holes in frocks and aprons. Each picker strove to push himself into the patch as far as possible, anxious to reach the fruit; but the farther he pushed in the worse it was for him.

They secured, nevertheless, a large quantity of berries, as the "old field" covered fully six acres, and it was a long stretch to go round it. Then they were able to do this three days during every week that the fruit was ripening. But it was very trying work, much more so than if the canes had been planted in regular rows, and trimmed and kept snug.

Uncle Benny had promised them he would see to taking the berries to market, and having them sold. This he did faithfully, as he was anxious to do all he could to train up these young people, girls as well as boys, in habits of industry and thrift. The very first week's picking produced a sum so large that every one of the party had over two dollars to his share. Then the next week did even better.

It was curious to see how this unexpected acquisition of a little money affected these young people. It filled a great gap in the longing heart of Tony King. They were so unused to having any, that they scarcely knew what to do with it, and appeared to think the only use for money was to spend it. A dozen different schemes were formed as to spending, as the idea of saving had not entered the mind of any one of them. But Uncle Benny cautioned them not to be in a hurry, and to hold on to their cash, at least until they had done picking. Some had desired him to buy one thing or another, and bring it home to them, but he never did so. He thought that, if they could be got through the first feverish excitement of success, they would be more manageable in future.

There are sections of the country in which this buisness of gathering wild fruit is an important item toward the maintenance of many families. They look to the blackberry harvest as a certain income. Entire households, men as well as women, abandon all other employments, and take to picking berries.

Uncle Benny knew all about these things, and was determined to make them contribute to what he considered a praiseworthy ambition of the Spanglers to make a little money for themselves. Some of the boys wanted books, and tools, and other juvenile notions, while the girls had a dozen matters of their own to be supplied with. He thought this "old field" might be turned to great account, and hence his recommendation that the boys should not be in a hurry to spend their money, as he had a plan of his own in relation to making the "old field" a really profitable affair to them. He was satisfied there was a fair chance by which to make the very beginning they had all been striving after.

When the blackberry crop had all been picked and sold, everybody on the farm was surprised at hearing that it footed up sixty dollars, clear of all expenses. It was really so much money found; for though the "old field" had ripened probably fifty crops, not a cent's worth had ever been turned into cash. What the family had not picked for their own use had been taken by the birds or wasps, or perished on the bushes. Philip Spangler was particularly astonished at the result. He said it would pay a half-year's interest on his mortgage.

"Yes," observed Uncle Benny in reply, "I can make this brier-patch pay the interest and principal too, if you will only allow me to do what I please with it."

Spangler readily agreed that he should do as he desired, and a regular bargain was made between them on the subject. Uncle Benny was to have entire control of the blackberry field; he was to get what he could from it, and, after retaining three fourths of the profit for the boys, the other fourth was to be applied to paying off the mortgage on the farm.

The history of this "old field" of six acres is so remarkable that it may as well be related now. It will be remembered that it was only from the edges or outskirts that any fruit had been gathered. All the interior of the field was filled with bushes nearly as productive as those upon the margin, but it was impossible to reach them. Uncle Benny made a calculation as to how many rows of canes he could make by cutting away open spaces ten feet wide from one side of the field to the other. He then compared the result with the length of margin from which they had been picking, and satisfied himself, that, if that had produced sixty dollars, he could get a sufficient length of picking surface to make the "old field" pay almost as good a profit as was made on half of the entire farm. There was the ground already planted with bearing canes, and nothing more was needed than to transform it from a field of wild blackberries into a cultivated one.

As before said, this immense brier-patch covered six acres of ground, about twice as long as it was wide. He engaged men to make openings ten feet wide clear across the width, leaving a narrow row of canes. They went in with sharp brier scythes, and rapidly cut down everything before them; though it was tearing and scratching work for hands and clothes, so many years' growth of dead and hard wood had to come away. Then the trimmings were piled on a cart, and brought out, and thrown into an immense heap, where they were burned. When this thorough cleaning up and trimming had been completed, every row looked as nice and snug as any of the great fields of the improved kinds of blackberries which are now so common. Where vacant places occurred in the rows, they were filled by setting in new roots. The spaces between the rows were then gone over with a double plough, which tore up thousands of old roots, and this being several times followed by a two horse harrow, it loosened and released a multitude of others,—so many, indeed, as to require the mass to be raked up and carted away.

But when these several operations had been as carefully carried out as Uncle Benny required them to be, the whole field looked more like a garden than any spot on the farm. It was really

beautiful to see how perfectly straight the rows of canes stretched across the field, and how mellow was the soil between them, not a root or weed being visible. It was with immense satisfaction that the old man viewed the complete realization of his plans. It took some weeks to carry out this regenerating process, besides costing considerable money,—all which he cheerfully advanced, on the credit of the next crop.

But he declared that the satisfaction he enjoyed at seeing a wilderness converted into a fruit field was compensation enough. It was a greater pleasure to him to spend money in improvements of this description than it could possibly be to others to hoard it.

Spangler had seen the operation going on, but said little, except dropping a remark occasionally about how much money it was costing. Improvement was altogether out of his line. But one day when Uncle Benny happened to be contemplating, by himself, this triumph of his ideas, he was suddenly accosted with :

"Well, well, what a spot of work this is !"

Looking around, he discovered their neighbor, Mr. Allen, who, until that moment, had seen nothing of Uncle Benny's operations on the brier-patch. He seemed confounded at the spectacle before him.

"Why, Uncle Benny, you beat me all to pieces ! This is the completest piece of workmanship ever done in the country. I give you credit for your good judgment, as well as for your courage, and, what is more, this thing is going to pay. It is a big job, I know ; but the more of it the better for you."

Spangler came up while Mr. Allen was thus speaking, but made no remark, though Mr. Allen's emphatic endorsement of Uncle Benny's work had its effect upon his generally slow perceptions.

"What a mass of manure you have in the bottom of this brier-patch !" he continued. "I have known it thirty years, exactly as it was before you reclaimed it. Thirty or more crops of wood and leaves have fallen and decayed on this ground, perhaps fifty; and, now that you have so thinned out the plants as to have only one to feed where there used to be fifty, you will need no manure for years to come."

But the fame of this undertakng spread all over the neighborhood, it being an unheard-of thing among the owners of brier-patches. Many persons came to see it, and various opinions were expressed as to what was likely to be the end of it. The principal anxiety was as to how much it cost. They could all understand about that, but not one of them could see that the money expended could ever be made to come back. As to investing money in new undertakings upon faith, that was not in their line. Generally, they knew too much about blackberries ; so that Uncle Benny never had the satisfaction of hearing that any one had pluck enough to follow his example.

(To be continued.)

The Household.

Home Toilets.

There are some women, too many, who dress at home in such a style that they are always ashamed to be seen by anybody but home folks. If a knock at the front door is heard, they run and hide, or wait till they have "primped up" before opening it. In their creed anything is good enough for home-folks; all nice things—nice clothes, food, dainties—must be saved for company. Any old calico or woollen dress is good enough to wear around the house. As a natural result of this theory, the parlor is always shut up save on great occasions, the sitting-room is rarely used, and the family life passes entirely in the kitchen It is no unusual thing for women who hold such theories and carry them out in practice, to find no time to comb their hair till after the dinner work is done, and go round with it in a frowse two-thirds of the day. This is perhaps the case with farmers' wives more than with any other class of work-people. The mechanic's wife has got her breakfast and told her husband good-bye for the rest of the day by 7 o'clock in the morning, but at that hour the farmer's wife sees no stopping place for hours to come. Milk, cream, butter, chickens, pigs, calves, children, hired help, keep her hands and her thoughts busy, too busy to think of how she looks while at her work. But how she looks is continually impressed on her children, her husband, her servants, if she has them, and this impression often results in the going of her sons to cities and into trade or mechanics rather than staying on the farm. It results in a preference on her daughter's part for professional men and mechanics rather than farmers for their husbands. Nothing is more natural.

To antidote this unfortunate result, a pretty and tasteful home toilet will be found very efficient. Calico of fair quality can be purchased at 8 cents a yard, and with a clean calico dress on and a nice calico apron, the housewife may be always dressed up while at her work. If she unvaryingly combs her hair before engaging in any morning task, her hair will be in order for the day, and a lesson of value will be set her entire household. A bit of edging in her neck may take the place of a collar, if the collar is too much trouble ; and nearly attired in fresh calico and whole shoes, she need not run and hide if there comes a knock at the door. The farmer's wife who is careful of her own appearance while at her work, will have a better opportunity for and more influence in persuading her husband to look no worse then he need to while at his work, than she who cares for none of these things. It is sensible and wise to dress according to one's work, but there is surely no reason in the shabby appearance seen in so many of our farmers' wives while at their work. A reasonable attention to externals fortifies one's self-respect and certainly does not lessen the respect of others.

Bookless Houses.

It has fallen to my lot on several occasions to be entertained in what, so far as I could see, were bookless houses. I use the word houses advisedly, for that does not seem to me to even approach an ideal home from which books are absent. One instance is vivid in my mind. My host was an active and prosperous business man. All the appointments of his house were the best He had official relations to the church in the town where he lived. But there was not in any of the rooms to which I as a guest had access, a book upon which I could lay my hands. There may have been a good library in my host's private apartments, but I saw no evidence of it. My visit was brief, and the time was fully occupied, so that I could not have done any reading to speak of even if there had been books to read. But their absence certainly made a lack in the atmosphere. It is something to see books lying about, even if you have no time to read them.

We are called a reading people. It is a fair question, however, whether we do not emphasize the newspaper at the expense of books. There is an important place, of course, that the newspaper fills. In these days one must know what is going on literally in the world. There is need for such periodicals as that in which I have the honor to write these lines. No household can claim to be fully equipped without its daily and weekly papers. But, after all, they do not and cannot take the place of books.

Especially where there are children, it is desirable that suitable books should be in the family library. I do not mean distinctively children's books. There should be a proper proportion of them certainly. But let the child quite early in life learn the meaning and use of the dictionary, the encyclopædia or gazeteer, the standard history. Let him learn the charm that is in the volume of poetry—English classic, or more modern. And let him at the proper time taste of worthy fiction, that he may learn instinctively to avoid that which is less worthy or base.

Of course this involves some care and thought on the part of parents. But is this not taking thought and care for their children, just what parents are for ? And, by the way, just here is the real key to this whole question of juvenile literature. After publishers, library committees, Sunday school librarians, or others, have done their part, it remains for parents to settle as to quality and quantity and specific character of what their children shall read. They can be masters of the situation if they will.

The gathering of a library in the household need not involve any large expenditure at one time. Indeed, it is far better to accumulate a library than to secure a complete one all at once. The process of accumulating books is an educating one. Books may be gathered at small expense as they are wanted, and it is wonderful how soon a really respectable library is thus acquired. The price of some needless dainties, or some worse than useless indulgences, will soon suffice to bring many permanently valuable books upon one's shelves. With ordinary care, and with a comparatively small outlay of money, an outlay at least made so gradually as scarcely to be felt, one can have the satisfaction of knowing that his home is not bookless.—*Illus. Chris. Weekly.*

Family Circle.

NORA'S SACRIFICE.

By the Author of "Seed Time and Harvest," "Abbotslyn," &c.

(CONCLUDED.)

CHAPTER III.

Mr. Raymond went away, and his poor mother passed Nora without a look when she met her.

Poor Nora ! She must have suffered martyrdom in those three weeks that followed ; and yet it was wonderful how peaceful and calm she was. She had hopes set higher than earth, and she was strengthened from above. At last the storm she had seen gathering in the distance fell upon us. Our last bright day in the old home dawned The last ! If one could know the future, what a torture life would be !

Algernon came to spend a long day with us, and we drove out in the morning; he told us of a panic in the city, and laughingly prophesied the failure of many a firm. My father had gone to business with an anxious face that morning, but he always kept his troubles to himself, and we thought little about it.

So we laughed and chatted, and returned to lunch, and sat in the drawing-room talking to my mother. Adelaide was recovering some of her spirits at the prospect of a coming grand choral service, and sat at the piano trying some chants. Harry was home from Eton, and had brought the twins downstairs from the school-room, and was telling them his school experiences. Nora was sewing, and joining now and then in the children's merry talk. She was their especial favorite.

We were thinking of dressing for dinner, when one of the servants entered, and in a low voice told Nora that her presence was required in the library. She rose and left the room, giving Harry's hair a playful pull as she passed. We went on with our merry talk, and I did not notice her when she came back till Algernon said to me—

"Look at your sister's face. By Jove, something has happened !"

She was standing at Adelaide's side, speaking in a low, hushed voice, begging her to accompany her to another room.

"Nonsense ; tell me here. What in the world's the matter, Nora ?" said Adelaide, pettishly.

"Nora, what is it ?" I asked, as I jumped up and went to her side. "Has anything happened ?"

"The worst," she said, with a trembling voice. "Be brave, Lottie. Think of our mother. We are fatherless, dear !"

Adelaide started up with a cry, but, taking strength from Nora, I put my arms around her, and kept her from rushing in her passionate grief to our mother. Nora presently knelt down beside her and tried to tell the news, which she had guessed before the words were uttered. The worst, indeed, had happened—not only death but disgrace. My poor father had been speculating wildly, trying to retrieve the losses of a few years before, and sinking deeper at every step. Now the crash had come, and the blow killed him. But we thought only of his death, so good and kind had he been to all of us. In my grief I turned for comfort to him who had won my girl's heart, but Algernon was gone, and I never saw him again for twenty years.

Oh, those dark days ! But for Nora, what would have become of us ? She was our stay, our comfort ; she transacted all necessary business, arranged everything, thought of everybody. My mother clung to her with passionate tenderness, and was calm and comforted only when Nora was with her, pointing upwards to the home where there is no more parting or sorrow.

As for myself, I was utterly prostrated—I was very ill for a week or two. Night and day Nora was ever ready to hear my slightest wish, and tenderly helped my poor little feet over the thorny road.

"Courage," she would say—"light always dawns, be the night ever so dark. Look up, Lottie -the stars of heaven are always shining."

All our household treasures were given up, all our jewels. Everything went but the little farm that had been my mother's dower, and now was standing without a tenant. The creditors could not take that, and paid us over a certain amount of ready money—little enough it seemed to me, but Nora talked of it as of a great fortune.

"We must go and live at Sidwell," said she.

My mother eagerly consented, though Adelaide declared she could never live in a place that had only a strictly Evangelical place of worship.

"We must go there," said Nora. "Edward has furnished the house—he can't do more, poor fellow—and James will help us to stock the farm, and Mary will give Lottie a piano. Oh, it will be very nice ! I know all the people."

"How ridiculous !" exclaimed Adelaide. "You and Lottie must take situations as governess, or open a school or something.'

"And starve genteelly ?" said Nora. "What would become of the twins and Harry ? You can't expect Edward or James or Mary to adopt them. Be sensible, Adelaide ; we were not trained to be teachers."

"But, Nora, who is to do the farm-work ?" asked my mother. "We can't keep servants, can we ?"

"One big girl and I can do it all. While I was at Sidwell I learnt to make the best cheese, which is rather a secret, you know ; and I can churn, and bake, and brew, and wash, and iron, and do heaps of things. Lottie shall teach the twins, and look after the garden and poultry ; you shall do the sewing, mamma ; and you, Adelaide——"

"I am going to enter St Mark's Convent as a Sister of Mercy," said Adelaide—a piece of information which I am afraid did not make us as sorry as we ought to have been.

It was arranged that we should go to Sidwell almost at once. A friend of my father's got Harry a presentation to a free public school, where he had a good chance of getting a college scholarship the aim of his ambition being to be a clergyman.

A sad party of five, we reached our new home in the chill, dreary autumn days. Adelaide had entered upon her novitiate at St, Mark's. The farm-house was well and prettily furnished by our eldest brother. A fair stock of cattle was browsing in the green fields, and hens and ducks were roaming about the yard. There was a piano—Mary's present—in the best parlor, and we had a number of books. A stolid-looking girl, in a blue skirt and short blouse, was in the kitchen, trying to make the fire light. The clematis over the porch was dead, the flowers were faded and sodden in the garden, the wind

came moaning round the house with a mournful cry. Everything was inexpressibly dreary and sad at that first home-coming.

What influence a bright, hopeful spirit has! Nora, after seeing my mother comfortably in her room, bustled about downstairs, and when we came down, after changing our damp things, a great fire was crackling in the parlor grate, and the table was laid for tea, with a big white bowl of chrysanthemums in the middle. The lamp was lit, and the room seemed to welcome us with a cheery smile. The twins were in high spirits at everything. The tea was tempting, and Nora's cooking was perfection. We all enjoyed it and our talk afterwards by the fire. Then Nora led the twins off to bed, and afterwards went to look after the handmaid Our mother read prayers with a quivering voice, and then we all went up to our own rooms to sleep.

I was up early, but Nora was up long before me, busy at work, dressed in the print dress that I remembered. She glanced at my crape, with a sad little smile, and then at her own dress.

"It isn't mourning," she said, in a choked voice; "but I can't work in black—and we don't need a dress to help our grief, do we, dear? I hope mamma won't mind this; I will put on my black for breakfast, though."

I begged her to let me help her, and was commissioned to lay the breakfast things. A sad muddle I made of it. Nora had to change everything afterwards. How I longed to know more about simple household matters, that I might help Nora! I tried my best, but was very *gauche*.

I volunteered to iron, but only burnt the clothes and my fingers; my cooking was unpalatable; and I could not sew a few consecutive stitches without making a muddle with my thread or breaking my needle. I gave up in despair sometimes, but Nora urged me to persevere, and the twins and I learnt together, both in school and out of school. We had a few visitors, the rector of the parish and his son among them. I quizzed them to Nora after they had left—such a queer couple they seemed to me, with thick shoes and without gloves.

"They don't look like gentlemen," I said.

"Wait till you have heard Mr. Luton preach, and Harold Luton talk," she remarked, stopping in her churning to answer me; "that clodhopper, as you call him, is a scholar and a gentleman."

"Which—father or son?"

"Both," she answered, adding, with a low laugh, "Harold is a great farmer in his way; he helped me wonderfully to understand things when I was down here last."

"What is he? What is his profession?" I asked.

"He is going to farm sheep in Australia; he has a cousin there whom he will join next summer;" and Nora went on with her churning.

Of course I was heart-broken, and could never forget Algernon; but somehow, as the winter days went by, life grew less dull in the little farm, and I began to look forward to Harold's daily visits. He came at all times, walking right into the kitchen, where I was cooking—for I learnt to cook at last—or into the dairy, to give Nora his advice about the cattle.

How solemnly we used to talk of grass and turnips and rinderpest, and the changes of the barometer, I with my arms white with flour, and Nora with her dress tucked up, flushed and pretty, and Harold leaning against the hearth ingle, like a young Hercules, attired in long gaiters and a rough brown suit, with his hat and his riding-whip in his hand, as he talked! Sometimes we stumbled on higher topics of conversation, and many an earnest bit of talk we had in that old kitchen, though Nora would soon hurry back to her work, and Harold would walk off round the farm to look after our property. In the evening he would bring a book and read to us while we worked busily with our needles.

Harry came home at Christmas, and was perfectly happy, wandering about with Harold, gun in hand. They kept our table supplied with game during the holidays, and many a pleasant dinner we had in the little parlor, with our mother's face—almost as bright as of old—at the head of the table. Christmas day was sad with memories indeed, but our grief was chastened and sober. I was forgetting the past—as far as it was connected with Algernon. Indeed, I was almost shocked to find how coolly and contemptuously I looked at a portrait of his which I came upon while rummaging in my boxes.

So winter passed and early spring came, and Harold brought a bunch of white violets and gave them to me.

"The first I have seen," he said.

I felt a strange delight that he had not given them to Nora. I had felt sometimes that he had cared for her most. Those sweet violets! They are lying in my desk now, beside a lock of hair from the baby head of my only lost darling, whose little grave is out in the Australian wilderness.

CHAPTER IV., AND LAST.

Among my sweetest memories is a bright spring day early in April, when my life took an exquisite color, and joy and happiness beyond all my dreams came to me.

I had learnt many lessons of humility and patience during the winter, and they had all been brightened and made light by the sympathy and love that ruled our humble home. With the violets blooming among the grass, and with the radiant days of spring, life had grown brighter, and the foolish fancy of my heart vanished, leaving not even a grave.

That April afternoon I was sitting alone in the porch, sewing Nora and the twins had gone to market, and my mother was sleeping after dinner. So I was alone when Harold came to the garden gate, with his fishing-rod over his shoulder, and a basket of speckled trout for tea. He came and sat opposite me in the cool shady porch, and in foolish unconnected fashion we talked a little about the weather and the farm.

Polly, our maid, came out to ask me to get the tea ready—an interruption not altogether pleasant to either of us—but I got the keys and put in the tea, and began to cut bread-and-butter at the end of the long kitchen table, while Harold stood by the hearth and looked at the sparkling flames. Polly came in and out for a time, but presently departed to the outer regions, and the silence was unbroken in the great kitchen—unbroken till Harold spoke, and I dropped my knife and listened with happy, throbbing heart. There was hardly need for words between us. I think we both knew each other's love long before that simple avowal.

Oh, I was so happy! I loved him so dearly! So good, so true, was Harold! I told him of that first light fancy of mine, and how quickly the idol was shattered.

"I will have no secrets," I said.

"Nor I," he responded. "I too had a first love, my Lottie. And it was your sister Nora."

I did not mind. I told him so. It was another tie between us, to think that he also loved and honored my dear sister; and I knew his heart was wholly mine, or the words he had spoken to-night would never have been uttered. So without a single regret we stood and talked by the kitchen hearth, where the kettle was singing, till Nora came back with the twins, who were very tired and hungry.

How glad Nora was, and what a happy tea we had!

Those bright sweet days—how swiftly they passed! Ah, earth is green and fair still, and Heaven is over all!

It was settled that I was to go with Harold to Australia in three months. I was very willing. I would have gone to the end of the earth with him. Quickly the days passed, and we were married by Harold's father in the dear old church.

The last thing I remember of home was Nora as she leant over the garden gate, waving her handkerchief to us as our carriage went slowly up the road, her brave bright face wearing a smile still to cheer us, though I knew the tears were close to those tender eyes.

"Heaven bless her!" Harold said, as the trees hid the house from our sight. And Heaven did bless her, and gave her a sweet reward, as it blesses and rewards all true hearts.

* * * * * * * *

A letter lies in my desk, yellow with age. I received it in my little home among the Australian pastures two years after Harold and I left England, when we were still young and struggling, and my first baby's voice had began to lisp, and his little feet to toddle.

I will copy the letter here. It will tell the rest of my story better than I can; it was a joint composition of the twins. They always were partners in every undertaking. Luckily they married brothers, and live within a hundred yards of each other. Here is the letter, with sundry corrections of spelling and diction:

"DEAR COUSIN LOTTIE,—We are so glad. It has turned out like the good fairy tales, and everybody will be happy ever after.

"You like things to begin at the beginning, and so do we—but not just now, as this beginning was very naughty. But sums are so horrid, and it was such a lovely day. Cousin Nora was busy in the dairy, so she didn't hear us go out, and we ran right away to Edgwell copse—don't you know?—and got a lot of daffodils and violets. We were coming back along the road, and Mr. Luton overtook us with a gentleman. He asked us to show this gentleman the road to our farm, and shook hands with him and went off.

"The gentleman came on with us, and we didn't know him a bit, but he knew our names and a lot of things, and we thought it so funny. He asked us about all sorts of things along the road, but when we got to the fields he never said a word; he was silent right on to the gate. He wouldn't come farther than the porch, but asked us to call cousin Nora. She was in the dairy busy, and we wanted him to come in—for she couldn't go up to change her dress without passing the porch—but there he stuck, and we went away and called Nora.

"She came right out when she heard us, and said—

"'You truants! Wait till I have spoken to the butterman!'

"'It isn't the butterman,' we screamed ont, but she didn't mind, and came forward in her print dress. It wasn't nice—was it?—not a bit romantic. He ought to have come when she was gathering flowers, or playing, or something proper. For it was Mr. Raymond; and he told us yesterday he had been going to marry cousin Nora for ever such a while.

"'Oh, Nora!' he said—for we couldn't help hearing just that, and seeing cousin Nora's face color up and look—oh, so strange and happy! Then we knew the prince had come, and we ran away upstairs to put the flowers in auntie's and cousin Nora's rooms.

"We like the prince very much—only we can't understand him sometimes, when he talks after tea about books. Cousin Nora does, though; and they walk up and down the garden path even when the stars are out. It is nice to hear him talk of his travels He said he was so miserable. We can't make out why he didn't come back before. He told auntie it was a letter from his mother about poor uncle that made him wish to return; but he got shut up among horrid savages, and was almost killed lots of times.

"We are going to live here when Nora marries, but at Dovelhigh Grange—and Nora won't make cheese any longer. Mr. Raymond says he is rich now, and has given cousin Nora such a beautiful diamond ring.

"Polly has a lover; he sings in the choir, and has curly hair She says she is going to be married and keep the lodge at Doveleigh. Everybody seems going to be married. We wish a prince would come and marry us; it would be better than living a strict old governess."

* * * * * * * *

Nora's letter, in which she told me of her happiness, I have beside me. No, I should not like to copy it; it was meant for my eyes alone, and the frank, simple, heartfelt words would lose half their meaning to others.

Arthur and Nora were married in the autumn, and they are very happy. Their fair home I saw last year; it was filled with happy children, overflowing with joy and gladness. Nora is the ruling spirit; she is empress of a happy household, the fairest domain a woman can have. A. K.

HUMOROUS.

"I think," said a fond parent, "that little Jimmy is going to be a poet when he grows up. He doesn't eat and sits all day by the stove and thinks, and thinks. "You had better grease him all over. He is going to have the measles. That's what ails Jimmy."

INGENIOUS.—A lady recently asked her servant how the mustard-pot had become cracked. The reply, made with all gravity, was that she did not know, but supposed it must have been that the mustard was so strong that it caused the fracture!

A Mississippi boatman with immense feet, stopping at a public house, asked the porter for a boot-jack to pull off his boots. The colored gentleman, after examining the stranger's feet, broke out as follows: "No jack here big nuff for dem feets. Jackass couldn't pull 'em off, massa, widout fraktring de leg. Yuse bester go back about tree miles to de forks in de roads an' pull 'em off dar."

Minnie May's Department.

MY DEAR NIECES.—We have received a letter from Florence Byrne, which she asks us to publish, in order that she may say a few words to her many cousins. We are delighted to hear from one so deeply interested, not only in the cousins, but also in our paper, and we gladly accede to her request, considering the subject a most worthy one, and trust our nieces will take an interest in, and give thought to the letter which we here publish.

We hope to hear again from Florence, as well as other members of our family, who may be encouraged to follow her example.

MINNIE MAY.

MY DEAR COUSINS:—

Now, I am just addressing my girl cousins; boys, if you happen to glance at this you can just put wool in your ears. Not that I cannot find anything to say to you, oh, dear no! If there is anything I can do, it is to talk to boys, but if I were to include you in this I fear Minnie May would throw me in the waste basket, or else be obliged to add a supplement to his paper. Now, girls, I am going to take for my text the following beautiful lines:—

"Be a woman, on to duty,
Raise the world from all that's low,
Place high in the social heaven
Virtue's fair and radiant bow,
Lend thy influence to each effort,
That shall raise our nature's human,
Be not fashion's gilded lady,
Be a brave, whole-souled woman."

Let us look over them carefully. In the first place, "Be a woman." How much meaning there is in those three little words! *Woman* is a grand name; to my mind it is far above *lady*, but it is often misapplied. And the next line tells us a woman's duty, Raise the world from all that's low. Surely this is woman's mission. How much we girl's can do in this way, we will never know, until we put our shoulders to the wheel. It is said that a nation will never be better than its women, and I believe it, As a worthy minister said: "A woman led the way out of the garden of Eden; surely she should be the one to lead the way back." I wonder if we girls ever reflect what a great work we have in this world to do, and what great responsibilities are resting on our young shoulders. I'm sure, but, after all, girls, it's a glorious thing to be a woman; as to virtue, let our criterion be very high; let us give it a very conspicuous place in the social heaven. The true purposes of social life are mutual good-will, sympathy, friendship, help, affection, happines; but how often the purposes are mistaken or forgotten, and society becomes an empty name. Our young gentlemen, if they are capable of making a remark beyond the inane sayings commonly supposed to be necessary at a party, do not think it worth their while to exert themselves particularly to entertain a young lady who bangs her hair till the existence of a forehead becomes doubtful, makes a fashion plate of herself, and giggles at everything without discrimination And too often our young ladies do not even know it. But let us not forget that society will be just what we make it—it cannot form itself. The people make the society, and let us lend our influence heartily to any effort that may be made in the way of improvement or moral or spiritual elevation. Do not think that our influence is so small as to be of no account; our example may help some one else to decide. "Small sands make the mountain, moments make the year, and trifles life," and above all, let us not make ourselves slaves to fashion Get just as good clothes as our circumstances will allow, and have them made as becomingly and even stylish as possible, always, of course, keeping neatness and good taste in view; but we need not become flower gardens and fruit orchards simply to be in the fashion. God never intended us to have the appearance of walking fashion-plates, or animated jewel cases. Let us be brave enough to defy fashion; let us be brave, whole-souled women. Ruskin says:—Queens you must always be, queens to your lovers, queens to your husbands and your sons, queens of higher mystery to the world beyond. But, alas! you are too often idle and careless queens, grasping at majesty in the least things, while you abdicate it in the greatest.

Dear girls, let us be up and doing—life is real, life is earnest. Woman, as well as man, is the

maker of immortal fates. Let us endeavor to the utmost to raise high and keep high the glorious name of "woman," that it may be said of each one of us, She hath done what she could.

"And when in the green kirk-yard,
With the mould upon my breast,
Say not that she did well or ill,
Only, 'She did her best.'"

I hope I have not tired you so that you will never want to hear from me again, and now I must not impose on Minnie May's good nature any longer, but will hasten to say adieu.

FLORENCE BYRNE.

Answers to Enquiries.

CINDERELLA.—1. Certainly it is quite as necessary to speak to an old gentleman as a young one, to whom you have been introduced, provided he gives you an opportunity of speaking. Gray hairs should never be slighted, and very often an old person is more pleased than one knows when a younger one takes the pains to speak or show them some little courtesy, and surely so slight a thing can be no trouble to you. 2. Upon being introduced it is quite unnecessary to make any response except a bow, even though such a remark weremade. 3. There could be no harm in your complianee, provided you know the young man to be of good moral standing, but it would be quite as good taste if you could, without offence to your escort, ask others to join you in your rambles. 4. The latest styles in hats are the peek-a-boo and poke shapes, in all the new shades, as crushed strawberry, terra cotta, etc., trimmed with feathers and ribbons to match or flowers. For dresses you must consult the April unmber of this paper.

SUBSCRIBER.—If a gentleman bows with whom you are not acquainted, it depends upon two matters, whether it be returned or not, viz.: If you have never seen the gentleman before, you may rest assured he has mistaken you for someone else, so, out of regard to his feelings return the bow by all means. But, on the other hand, if you have been in the habit of meeting him and perhaps carrying on a quiet flirtation, which has induced him to take the liberty, he must of course know that he has no right to bow. In such a case stop the matter at once by taking no notice of him, as such an acquaintance is no credit to any lady.

PATIENCE.—1. The meaning of the word "Mizpah" is a "watch-tower." 2. Curtains made of purple Swiss muslin are very pretty with a painted set, and quite inexpensive. 3. Undressed gloves are considered most suitable for mourning.

ENQUIRER.—It is bad form to take any dish from the waiter's hand, he should be allowed to place it on the table. Tea, coffee, or chocolate should be drank slowly from the cup. No one ever pours it out in the saucer now-a-days, and consequently cup plates are not used.

When you begin cleaning house take the upper rooms first. Take things easy—a room a day. The work will last longer, to be sure, and so will you.

Recipes.

VENTILATE YOUR CLOSETS.—Soiled under-garments or the wash-clothes should not be put into a closet, ventilated or not ventilated. They should be placed in a large bag made for the purpose, or a roomy basket, and then put in a well-aired room at some distance from the family. Having thus excluded one of the fertile sources of bad odors in closets, the next point is to see that the closets are properly ventilated. It matters not how clean the clothes may be; if there is no ventilation that clothing will not be what it should be. Any garments after being worn for a while will absorb more or less of the exhalations which arise from the body, and thus contain an amount of foreign—it may be hurtful—matter, which free circulation of pure air can soon remove.

THE AMERICAN CRANE.

TAPIOCA PUDDING.—One small teacupful of tapioca, one quart of milk, four eggs, a piece of butter the size of a chestnut, one teacupful of sugar, one small teaspoonful of salt; flavor with essence of lemon; soak over night in part of the milk, or in the morning two or three hours, in barely enough water to cover it; bake three-quarters of an hour. Tapioca is very nice soaked as above in water and boiled in milk. About a coffeecupful of tapioca to a pint of milk. Flavor with grated lemon-peel, and eat with cream and sugar.

PARKER HOUSE ROLLS.—Two quarts flour, one pint milk, one large tablespoonful of butter, one tablespoonful of sugar, salt, one cup of yeast. Scald the milk, then cool till luke-warm, make a hole in the centre of the flour, pour in the milk, yeast and sugar. Previous to making the sponge, rub the butter into the flour. Draw the flour over the sponge, let rise till morning, then mix in the flour and let it rise till light; within two hours and a half of baking, knead about twenty minutes, roll out nearly an inch thick, cut with a round cutter and lap a part over; bake in a quick oven.

BOSTON BROWN BREAD.—Two cups of cornmeal, two cups of Graham flour, half cup of wheat flour, half cup of molasses, one teaspoonful of soda, salt; sour or butter-milk enough to mix a soft dough. Steam 3 hours, then dry off in the oven for fifteen minutes.

PRINCE OF WALES CAKE.—*Dark Part*—Yolks of three eggs, one cup of brown sugar, half cup of butter, half cup of sour milk, one tablespoonful of molasses, two cups of flour, one teaspoon of soda, half tablespoonful of cloves, one tablespoonful of cinnamon.

White Part.—Whites of three eggs well beaten, one cup of white sugar, half cup of butter, half cup of sweet milk, one cup of flour, half cup corn starch, half teaspoonful soda, one teaspoonful of cream tartar.

These are baked in layers, and placed alternately with jelly. The dark part may be made the same as the white by putting in chocolate to color. This makes an exceedingly nice cake.

The American Crane.

The American or whooping crane, of which our engraving herewith represents a fine specimen, is a large wading bird of the order grallæ. Different genera of the species are found in Asia, Europe and America. The American crane furnishes an excellent typical example of the whole class. Its long bill is dusky, turning yellow towards its base; the top and sides of the head are of a brilliant red; the head small, neck very long, body rather slen-der, tibia bare to a large extent, feet black, plumage white, with the exception of tbe primary and adjacent feathers, which are brownish black. The length of the full-grown bird from the bill to the tip of the tail is often fifty-four inches, and to the end of the claws sixty-five inches; extent of wings ninety-two inches. The young birds are of a bluish-gray color, with the feathers tipped and margined with yellowish brown. Cranes are very shy and difficult to approach from the acuteness of their sight and hearing. When wounded they should be approached with caution, to avoid the blows of their sharp and powerful bills. They roost either on the ground or on high trees, according to circumstances. Their nests are usually made among the high grass, of coarse materials, flat, about eighteen inches in diameter, but little elevated above the surface. The eggs are two in number, bluish-white, and are hatched by the alternate attentions of both birds. Cranes become gentle and are easily tamed when captured and may be kept on vegetable food.

Old, clean newspapers are excellent for laying under carpets. Put a light layer of straw upon them. The dust will not arise when sweeping is done, but will pass through on to the paper.

How to Paint Upon Silk or Satin.

First of all, after deciding upon the object to be decorated, is to choose the design and then the silk or satin. A good close-made plain silk is the best; corded or ribbed textures are liable to be greasy. Select the color of the silk according to the use to be made of the article Always buy a little more than is needed, as a margin to stretch it by is required.

It is necessary to prepare the silk to receive the paint by removing all greasiness from its texture by a wash or sizing, which is applied after the silk is stretched, either upon a drawing-board or in an open frame. The latter is better to use, for the wash dries quicker. When the drawing-board is used, a piece of white paper should be put between it and the silk. Stretch the silk very tightly and fasten down with drawing pins, half an inch apart.

There are many recipes for sizing, and all the following are good, namely: isinglass, gelatine and white of an egg. For gelatine or isinglass, put an ounce of either in water enough to cover it and allow it to soak for an hour. Take it out and pour over it a pint of boiling water and mix until the isinglass is quite dissolved, and run it through coarse muslin, so that no sediment or undissolved matter is left in it. While still hot apply this with a sponge, rubbing it thoroughly over the surface, so that every part receives it, and an even coating is given. Dry the silk by rubbing gently down with an old piece of white silk. When using the white of egg, only take the liquid part, which sponge well into the silk so as thoroughly to penetrate, rub this dry, as any place left damp will change in color. When the surface is dry draw in the design, which should be done so that a spray of flowers starts from one side of the silk and flows towards the other, rather than always starting from the centre; but endeavor to place the greatest mass of flower or color near the centre, while upon the left plain, relieve any blankness by inserting a bird, butterfly, dragon-fly, or tufts of reeds and grasses.

Where simple water colors are used, put in all the shadows of the design with neutral tints, to which a little of the color of the flower or leaf has been added, then lay on a wash of each of the chief colors, and soften these into the shadows with the deeper tints of the flowers. Make the highest lights by mixing Chinese white with the color and deepen and bring up the darkest shadows.

In copying natural flowers, be careful that no hard and dark edges are given to leaves or petals, and always look for and paint the bright light to be found near a shadow, particularly where curves are made; and also be careful to show the underlight that will be found where a leaf curves over and the under part of it is in the shade. Most of the beautiful French fans are painted in this way, as the colors so applied will not crack and split. Put a little sugar into the water used, add a small quantity of gum water to any color that will not dry—never use gamboge—a drop of Eau de Cologne to colors that are too dry, and a little oxgall to bring up their brilliant tints; but in using the latter, care must be taken, as too much will deaden, not improve the shades. If gilding is to be added to any part of the picture, paint that part over first with cadmium, and then gild with the best cake gold or shell gold; no other kinds being good enough. Old colors are sometimes applied to satin and silk back grounds; they look well if only coarse and large work is attempted, such as sunflowers, bulrushes, foxgloves; but water colors are better for fine work. They are laid on as in oil painting, and require no preparation, turpentine being used for their medium.

To the Ladies.

During the coming summer and fall months there is a most excellent opening for young ladies to have pleasant and profitable employment in canvassing a few hours each day for the FARMER'S ADVOCATE. Let them work up the whole neighborhood around home, and they need not be away from home but a little while at a time. There is nothing to prevent a, smart intelligent young lady from doing well. Ladies are sometimes more successful as agents than men. Perseverance and energy will succeed. Expenses will be but trifling and the profits are quite attractive, permanent employment and good salary.

Send for extra copies, rates, etc., and commence a thorough canvass AT ONCE.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES:

Now is the time, boys, to begin your gardening in real earnest; let each boy have a plot of his own and all that he can raise or make off it for himself; he might thus acquire quite a lot of pocket money. Begin early, so as to have the first on the market, when you will realize the highest prices, then try and win some prizes at the fall shows for the biggest and best of your fruit or vegetables. Melons I know are a favorite fruit with all boys; now who is going to have the best next fall? Be sure when the time comes to tell your old Uncle Tom. The girls too must try and raise something, and of course you will have at least a flower bed, with some choice balsams, geraniums, pansies, heliotrope, candy-tuft, etc., etc., and such flowers that will come to perfection in a short time Some of you complain about your names not appearing in the April number, even though your answers were correct. The fault was yours, not mine, for they were too late. Surely it is not necessary to say every month, "your answers must be in before the 25th." When a mistake occurs on my side it is always rectified in the private list if not in the published. Hoping to hear from a good number this month. UNCLE TOM.

PUZZLES.

1.—TRANSPOSITION.

Ree in het hortnenr lgea hte musrem
Sersest of eht reset rea ogen,
Het owosd fo tunmua, lal
Ondura rou ealv, veah upt
Ehitr ogryl no.

H. S. TOMKINS.

2.—ILLUSTRATED REBUS.

3.—A carriage in England, troublesome though small, what you cannot do one word tell them all.

DAISY M. WALKER.

4.—Two n's, two o's, an s and an i,
To make a word from them your skill you may try.

H. A. WOODWORTH.

5.—DROP LETTER PUZZLE.

D-y-u-d-t-e-m-w-a-w-l-.

MAGGIE F. ELLIOTT.

6.—CHARADE.

My first is what you're doing now,
My second is procured from stone,
Before my whole you often stand;
But mostly when you are alone.

P. BOULTON.

7.—What word in the English language has all the vowels and can be divided into more words than any other?

GEO. S. TEARNEY.

8.—I am the terror of mankind,
My breath is flame, and by its power
I urge my messenger to find
A way into the strongest tower.

P. BOULTON.

9.—SQUARE WORD.

A native of a country in Europe.
An English possession.
Require.
The latter part.

MAGGIE F. ELLIOTT.

10.—Place four 9's in such a manner that they will equal 100.

HANNAH J. CORNWELL.

Answers to April Puzzles.

1.—He laughs well who laughs last
2.—Milton.
3.—Brink, Rink, Ink, In.
4.—
E A S T
A H O Y
S O A P
T Y P E

5.—
B aleari C
R ussi A
U ncl E
T hame S
U lic A
S tou R

6.—Dyn-a mite.
7.—Hair.

Names of those who sent Correct Answers to April Puzzles.

Geo. VanBlaricorn, Ellen D. Tupper, Maretta Ellis, H. H. Willson, R. J. Risk, James Watson, Florence Lazier, Fanny Burton, Louisa Tomkins, Lina Brown, Henry S. Lovering, Esther Louise Ryan, Elizabeth A. Riddell, Thomas Simpson, Ida Clemens, Joseph J. Finnemore, Robert Wilson, Richard Kingston, George W. Finnemore, Edith Grigg, Maggie F. Elliott, L. Carr, Maud Dennee, Reuben M. Shier, Robert Lawrie, Fred Werry, Fred. D. Boss, Minnie Tegart, Geo. Bickle, jr., J. Wm. Forbes, James H. Perry, Herbert W. Mackenzie, Addie V. Morse, P. Moulton, Harry A. Woodworth, Frederick Leon, Frank Booth, Daisy M. Walker, John S. Martin, Hannah J. Cornell, Eddie B. Tegart, C. Murray, Lea Moore, Frances Parker, W. J. Dowd.

The Taming of the Shrew.

Opposite a *Herald* man, at a table in a Cornhill restaurant, at a dinner recently, sat a man from Cambridge, who was a native of New Hampshire. Meeting an old acquaintance, the conversation soon turned on family topics, and the pair began to talk about their former neighbors in a most familiar way. "Yes," remarked the Cambridge gentleman, "Sam was in many respects different from the rest of the boys. You remember who he married? Well, when the old man, his father, found that he was shinin' round with her, he called him one day in the barn and said: 'Sam, d'ye intend to marry Beckie?' Sam never said a word, so the old man said: 'Me boy, ye know all about them; I can't tell ye nothin'. Ye know how the sisters have turned out, and not one of them is now livin' with their husbands.' Sam was as mum as a pantomime, and, just as soon as he was ready, him and Beckie got tied.

"They lived on a farm, and everything went on smooth for about a year, and it came to hog butcherin' time. Sam got all ready to have the usual party for the occasion, and just as he was sharpenin' up the knives Beckie came out and said: 'Sam I'm goin' home.' Sam protested in his quiet way, but it was no use, so he said he'd get a man to row her across the pond. It was about half a mile over. She said: "No, ye won't: ye'll row me over yerself!" Sam told her he couldn't, and Beckie fired up and said: 'Then I'll drown meself.' Sam said he'd go with her if she wanted to do that, so the boat was got ready, she got in, and they rowed out till the water was twenty feet deep. Then Sam stopped and said: 'Well, Beckie, this is a good place for ye to drown yerself!' She didn't open her mouth. He waited awhile and then said: 'Come, Beckie, I'm in a hurry to get back.' She never looked up. Sam put down the oars, caught hold of her and pitched her in. She grabbed for the boat, but he wouldn't let her get near it. When she was almost done out she said: 'Sam, let me in that boat and ye'll not hear anything more from me out o' the way.'

"So he pulled her in, and they went back home. She changed her cloths and entertained the guests. They're now nearly eighty and you never saw a happier old couple—did you? I don't think they ever spoke of that duckin' since the day she was goin' to drown herself."—*Boston Herald.*

After throwing eight boys over the fence, out of a water-melon patch, a Clay Co., Mo., woman charged them thus: "Now, see 'ere boys, you'll keep this thing up till ye get me riled."

Tariff Changes.

The Americans have taken five cents per bushel from the duty on barley going into the U. S., and increased the duty on malt about five cents. This will not decrease the value of our barley, but it makes a discriminating duty of about ten cents per bushel in favor of American manufacturers or malsters, against Canadian manufacturers. Very large quantities of malt were exported. The Canadian Government has increased the duty on agricultural implements imported from the States from 25 to 35 per cent.

It has been unadvisedly stated by an M. P. that Canadian agricultural implements are not as good af those made by Americans. Such an impression might have been made on any person going to the Northwest and seeing large quantities of Canadian-made plows lying singly and in piles scattered over the prairie. There have been two firms in Canada that have sent a lot of worthless stuff up there. If strict enquiries were made as to the ownership of these plows, a very unsatisfactory tale could be told, in which some legislator would and should be exposed. But to condemn all our implement manufacturers for the sake of some wild speculator, would be unjust. The Americans made a plow better adapted to the prairie than the Canadians did at first, before they knew the requirements. We believe that one or two of our plow manufacturers can and do make as good a prairie plow as the Americans. But it is claimed that Canadian reapers are on the whole better than those made in the States, and as for all the implements in general use on the farms in Ontario, they are quite equal to those made in the States. Our manufacturers have often beaten them at trials where fair play could be obtained. Canadians have reason to be proud of the efficient implements made in Canada, and any disparager should be censured. The enormous freights charged Canadians to enter our North-west Territory are adverse to Canadian enterprises.

But the withholding of the numerous sweepstakes prizes, honorably and justly deserved, at the great Fat Stock Show held in Chicago last year, must show to the world that Canadians cannot expect their just deserts in the show ring on that side of the lines. Such was the opinion of every Canadian that visited that exhibition, and of a very large number of independent, unbiassed Americans also.

There exist very bitter partizan feelings in regard to these questions. It is well that farmers should know the reasons why such steps are taken. They are being talked of by politicians, and the views expressed by the two parties are so dissimilar that many farmers are liable to be misled, or have their judgment warped by either party with which they happen to associate themselves. To enable you to arrive at a correct conclusion, you should prepare yourselves for a dispute and be prepared to argue the question on either side you may be called on. The best test of your knowledge would be to call on you to argue the side reverse to the one on which you last voted. Granges and Farmers' Clubs would enlighten themselves by having debates of this kind.

General Notices.

Messrs. G. P. Putnam & Sons, publishers, New York, U. S. A., have handed us "How to Succeed" and "The Blessed Bees," from their handy book series. The two works are most excellent samples of a most valuable and useful, though cheap, series of works now issued by this firm.

At the request of the Provincial Grange, the Council of the Agricultural and Arts Association have arranged for a trial of of self-binders on the Agricultural College farm, at Guelph, on the Friday of the exhibition week. A field of oats will be sown late for the purpose.

24-STOP ORGAN FOR $51.—The offer made in this week's issue by Mayor Beatty, of Washington, New Jersey, of a 24-stop organ for $51, delivered at your very door, is one that lasts but ten days from the 7th May, 1883, and our readers should take advantage of it at once. The well-known reputation of this house assures buyers that they will get what he advertises; and the price, with all freight prepaid, should give him, as it will, thousands of additional satisfied customers. We are informed by good authority that Mr. Beatty is manufacturing and shipping sixty-nine organs daily, and is running his factory nights in order to fill orders promptly.

Commercial.

THE FARMER'S ADVOCATE OFFICE,
London, Ont., May 1st, 1883.

The past month has been one of cold stormy weather, the result of which has been that as yet there has been very little plowing or seeding done; in fact, all kinds of seeds and grains are better in the farmer's barn or granary.

WHEAT,

with cold stormy weather and unfavorable crop reports, has shown a very strong upward movement. This has been further strengthened by heavy tradings in options in the States. Still there is nothing to warrant any permanent advance. Late Chicago advices say:—"There is certainly nothing in the crop outlook to justify the advance; on the reverse, there has been a marked improvement in the condition of the fall sown grain, and the favorable weather during the week has assured a large increase in the average of the Spring wheat. The latest advices from the Pacific Coast also further confirm previous reports of an unprecedented crop prospect on that side of the Rockies."

India is soon likely to assume a very important position in the production of wheat for the European markets. The United States Consul at Calcutta says:—

"The agricultural reports of the country are by no means complete, but it is believed that the present yield of wheat amounts to 240,000,000 bushels. The amount exported in 1879 was only 2,170,631, but the amount sent abroad last season amounted to 37,135,481 bushels. The wheat is sown in the autumn and harvested in March or April. It is usually sown in drills or rows, and weeded like garden stuff, and in quantities not much larger than garden patches in the United States, but the agricultural population numbers nearly 200,000,000, and it is this large aggregate that may have a strong influence even upon the future question of Indian vs. American wheat."

The N. Y. Tribune crop reports from the west

and north-west indicate that the crop, if not equal to last year's, will be at least up to the average crop for several years.

The London agent of the department of agriculture reports a probable decrease in the area of wheat in Great Britain of 15 per cent. and 10 per cent. in France, also a reduction in the area in Russia. In Austria-Hungary the full breadth has been sown. The condition of the plant at the present time is not generally very favorable.

The prospects of the wheat crop in Ontario are not very flattering. In some sections they are plowing it up and sowing Spring wheat and barley, while in others the plants look pretty well and healthy. Still a few warm showers and fine weather would soon put another appearance on things.

CHEESE.

Factories are now starting, and this week will see the principal part of them in operation. Cheese is very scarce and wanted for local use. Any new offered will find ready sale. Prospects are that we shall see a good demand for some time or till the make assumes heavy proportions. The indications are that we shall not see very much increase in this section What there may be in Quebec and the States we cannot say definitely at present.

BUTTER

is in good demand, and all offering is taken for local use at good prices. We shall see a considerable increase iu the make of creamery butter this summer, and we hope this expansion will go on till we have all, or nearly so, of the butter of Ontario made in this way.

CHEESE MARKETS.

Liverpool, Eng., per cable, 68s 6d per 100 lb.

LITTLE FALLS, N. Y., April 30.—Cheese dull; sales 1,500 boxes factory at 10¼ to 12¼c; 125 boxes farm dairy, 9 to 12c; 150 packages butter at 21 to 23c.

FARMERS' MARKET.

LONDON, ONT., May 1st, 1883.

Per 100 lbs

Red wheat..	$1 65	to $1 77	Dressed hogs	$8 25	to $8 50
Deihl	1 60	to 1 78	Eggs,small lots	14	to 15
Treadwell..	1 60	to 1 70	Potatoes, bag	75	to 90
Clawson.....	1 60	to 1 70	Apples.....	1 00	to 1 50
Corn..	1 15	to 1 30	Roll butter.....	20	to 23
Oats.....	1 30	to 1 40	Tub "	14	to 20
Barley.....	1 30	to 1 40	Crock "	18	to 20
Rye.....	1 00	to 1 10	Cheese, lb....	12	to 15
Poultry (Dressed)—			Onions, bush.	60	to 0 80
Chickens,pair	0 50	to 0 70	Tallow, clear..	7	to 8
Ducks, pair..	0 50	to 0 70	" rough.	5	to 5
Turkeys,each	0 75	to 2 00	Lard, per lb....	12	to 13
Poultry (Undressed)—			Wool..... ...	18	to 20
Chickens,pair	0 00	to 0 00	Clover seed,	8 75	to 9 00
Live Stock—			Timothy seed..	2 00	to 2 50
Milch cows...	35 00	to 75 00	Hay, per ton	8 00	to 10 00
			Beans per bush	1 25	to 1 50

TORONTO, ONT., May 1st.

Wheat,fallNo.1	$1 02	to $1 03	Apples, brl.. ..	2 50	to 3 50
Wheat, spring	1 05	to 1 11	Tomatoes, bu..	0 00	to 0 00
Barley.....	0 58	to 0 62	Beans, bu.....	1 25	to 1 50
Oats.....	0 48	to 0 50	Onions, bag...	0 50	to 0 60
Peas	0 77	to 0 78	Chickens,pair..	0 60	to 0 80
Flour.....	5 15	to 0 00	Fowls, pair....	0 60	to 0 80
Rye	0 60	to 0 65	Ducks, brace..	0 80	to 0 80
Beef, hind qrs.	8 00	to 9 00	Geese.....	0 60	to 0 60
Beef, fore qrs..	6 00	to 7 00	Turkeys.....	1 00	to 2 50
Mutton.....	9 00	to 10 00	Butter, roll....	0 22	to 0 24
Lamb.....	10 00	to 12 00	Butter, dairy..	0 20	to 0 23
Veal.....	9 00	to 10 00	Eggs, fresh..	0 15	to 0 16
Hogs,per 100 lb	9 00	to 9 00	Wool, per lb..	0 18	to 0 20
Potatoes, bag..	0 00	to 0 80	Hay.....	13 50	to 17 00
			Straw.....	9 00	to 10 00

LIVE-STOCK MARKETS

BRITISH MARKETS, PER CABLE.

CATTLE.

Liverpool, April 30, 1883.—The cattle market during the week has been moderately active under the influence of a steady demand, and prices have regained ½c of recent decline.

Prevailing prices are as follows:

	Cents ₩ lb
Choice steers	15½
Good steers	15
Medium steers	14
Inferior and bulls	10 to 12

[These prices are for estimated dead weight; offal is not reckoned.]

SHEEP.

	Cents ₩ lb
Best long wooled	@19
Seconds	17½@18½
Merinos	16½@17
Inferior and rams	13@15

[These prices are for estimated dead weight; offal is not reckoned.]

GRAIN AND PROVISIONS.

MONTREAL, April 28th.

Wheat—			Ont Oatmeal..	5 25	to 5 80
Can spring,f	$1 16	to $1 18	Cornmeal.....	3 75	to 4 00
Red winter	1 17	to 0 00	Butter—		
White	1 06	to 1 09	East'n Tp's.	25	to 27
Corn	67	to 80	Morrisburg..	25	to 27
Oats	39	to 40	Brockville..	25	to 27
Peas.....	1 00	to 1 00	Western....	25	to 27
Flour—			Mess pork....	22 00	to 23 50
Superior ex	4 50	to 4 55	Lard	14	to 14
Superfine...	4 50	to 4 55	Hams.....	14	to 15
Strong bak	5 15	to 5 25	Bacon.....	13	to 14
Pollards....	3 50	to 3 60	Cheese.....	12	to 14

AMERICAN.

East Buffalo, N. Y., April 28.

Cattle—There were about 20 cars on sale, but the demand was light and prices a shade easier; medium to choice steers brought $6 to $6.85; light to fair, $4.75 $5.75; a number holding over. Sheep and lambs—Demand fair at a shade further decline, except for a few choice fair wools taken for Boston trade, but all were sold. We quote fair to good wool sheep, $5.75 to $6.70; extra, $7.10; clipped sheep, $5 to $5.62½; western lambs, $6 to $7. Hogs—Fair demand for Yorkers, light grades; best medium and heavy dull and a shade lower We quote good to choice Yorkers, $7.80 to $7.90; light do, $7.65 to $7.75; butchers' and mediums, $7.85 to $8; pigs, $7 to $7.40.

OBITUARY.—The death of Charles Arnold, of Paris, Ont., will be learned with deep regret by many of our readers. The deceased was a painstaking horticulturist, gardener and nurseryman. His Little Wonder pea and Hybrid wheat gained great notoriety for him.

The Grangers and farmers of Elgin, London and West Middlesex, have decided upon holding a picnic at Port Stanley on Thursday the 2nd June next. Nothing will be wanting but fine weather to make the affair a success.

"THE FARMER'S ADVOCATE" PRIZE OF $100

given annually by Wm. Weld, Editor and Proprietor of this paper, will be awarded at the next Provincial Exhibition, to be held at Guelph, Ont., from the 24th to the 29th of September, inclusive, for the best samples of wheat.

The prize will be divided as follows: Two prizes of $30 and two of $20 each. The first prize of $30 to be given for the best variety of fall or winter wheat for the general farmer to raise, and $20 for the second best variety of fall or winter wheat; $30 for the best variety of spring wheat, and $20 for the second best variety of spring wheat.

RULES.

Two bushels or 120 pounds of the wheat to be exhibited. The name of the wheat, together with a written description, to be given, stating where the wheat was procured, how originated or introduced, as far as can be ascertained, a description of the soil and situation on which grown, what fertilizer used, and general history of cultivation. (The wheat must have been grown in the country for at least three years.) Also a report as to its milling and marketing qualities—a practical miller to be one of the judges.

The prizes will be given to four distinct varieties, and the descriptions and reports must be furnished to the Association before the bags are opened, the reports of all competitors to be the property of THE FARMER'S ADVOCATE. It is not necessary that the finest sample of wheat should in any way effect the award of the prize except that the wheat should be pure, clean and unmixed, the object being to decide the most valuable variety from actual yield and general qualities.

By the Way.

Prof. W. J. Beal says about roads in Central Ohio:

"They have abandoned our old-fogy, antiquated way of allowing every farmer to work out and fool away his own tax according to his own notion. There is a money tax, and the money is used by the lowest responsible bidder who agreed to keep the road in repair. At one time there were a good many toll roads, but the people are gradually buying them out, so that all roads shall be free. They go much further. They often tax the land a mile or more back from a certain road from $4 to $8 an acre, and make a good pike. This tax is in most cases very willingly paid. Several men assured me that it raised the price of land from 25 to 50 per cent. They could not be induced to go back to dirt roads. They are making more and more roads, using a foot or so of gravel on a well graded foundation. It is certainly a great treat to live where the roads are good the year round, and a farmer is thereby brought much nearer his neighbors, nearer market and the rest of the world."

This would apply with equal force to the Canadian road-work system.

We have received a bound volume of the report of the Fruit Growers' Association and Entomological Society of Ontario This book is well illustrated, and contains a deal of valuable information.

Ground oats form one of the best feeds to promote a flow of milk either in cows, ewes or in breeding sows. The oats will grind better if one bushel of corn is mixed with every two or three of the light grain.

If you are afraid to put hay or straw on strawberries because of fowl weeds, scatter in enough sawdust or spent tan bark to just cover the surfac nicely, mixing a little salt through it before putting on. It will keep the fruit clean and nice. Pile around the currant bushes plenty of coarse materials to keep the surface cool and moist.

It has often been said that the best time to market grain is just as soon as it is ready, and before it is reduced by any sort of loss or shrinkage. A table showing the price of wheat in New York for sixteen years, made by Statistican Walker to the Produce Exchange, confirms the soundness of this advice in so far as it shows that the average price from September 1 to March was higher than in the latter six months in just one-half of the year.

Stock Notes.

The Prince of Wales prize at the Provincial Exhibition this year is offered for the best herd of Shorthorn cattle, 1 bull and 4 females.

The attention of our readers is directed to the sale of the valuable herd of Shorthorns offered by H. B. Rathburn & Son., of Deseronto, Ont., announced in the usual column. We bespeak for Messrs. Rathburn a good attendance.

The Thorley Horse and Cattle Food Co., of Hamilton, Ont., show a most commendable spirit of enterprise in offering liberal prizes at the coming leading exhibitions to the users of their valuable cattle food.

J. C. Ross, of Jarvis, Ont., writes: I believe the card in your paper has made more sales than from any other source. I shall write you from England and let you know what I have bought, as I ex ect to fetch out some Clydesdale horses.

Mr. Wm. Rolph, of Markham, recently made the following sales: Crocus, of St. Ames (18676), $400; Rioter's Queen (14895), $400, both yearling heifers; also heifer calves Flower of Glen Rouge (17560), $350, and Violet of Glen Rouge ( ), $300, to Samuel Smoke, Canning P. O., Ont. Mr. Smoke bought these as the nucleus of a herd. To John Conworth, Paris, Ont., Effie ( ), imported, $250, and to Valancey E. Fuller, Hamilton, Mary Ann of St. Lambert (9770), a beautiful solid light colored cow, who at 3 years old made 14 lbs. 8 ozs. of butter in seven days on winter feed, for $509. I have sold through my small advertisement in your breeder's column in three years, over $7,000 worth of Jerseys.

T. Guy & Son, of Syndenham Farm, Oshawa, Ont., have lately sold the following Ayrshires: To Henry Longworth, Esq., of Charlottetown, for the Government Farm, Prince Edward Island, the yearling bull, Wolsley (181); to Hugh White, Esq., Branchton, Ont., Marmion (182); to Mr. M Ballantyne, St. Mary's, yearling bull Prince Imperial (179); to James Lawrie, Esq., Scarboro, Ont., Lord Lorne (178); to Harold Barrett, Esq., Barrett Mills, Port Hope, cow Cora (1307), and heifer calf.

The auction sale of Shorthorns on the 15th March, by James Cowan & Sons, at Galt, Ont., brought a good attendance of buyers from the different parts of the Dominion.

(Continued on page 160.)

The attention of our readers is called to the advertisement of J. G. Snell & Bro., Edmonton, Ont., late of the firm of John Snell & Son. These gentlemen have a world-wide reputation as breeders of Berkshire swine, etc.

Horse-hoof parings make a most excellent manure for potting pines, vines, pelargoniums, etc., and one can easily make arrangements with the nearest blacksmith to save them.

KEEP COWS OUT OF WET CLOVER.—Bloating may be presented by permitting the cows to go on the clover for a short time only, or by keeping them off while it is wet with dew or rain. Dry clover rarely bloats; wet always does, more or less.

While cows giving exceptionally large quantities of milk will sometimes show large butter yields, yet as a rule the two things do not go together, and are, in fact, inconsistent with each other. Breeding for quantity of milk is almost certain to depreciate the quality and reduce the butter yield.

Dr. E. Lewis Sturtevant, of the New York Experimental Station, in a recent lecture before the Ayrshire Breeders' Association, said that Ayrshire cows' milk was the nearest like human milk of any produced, and the most easily digested of any, and that the reason why Ayrshire milk was preferred to Jersey was because the curd of Ayrshire milk was more quickly assimilated, it being easily separated into fine particles.

WAY TO HANDLE SHEEP.—When about to catch a sheep, move carefully toward the one to be taken until you are sufficiently near to spring quickly and seize the beast with both hands, then pass one hand around the body, grasp the brisket, and lift the sheep clear from the ground. The wool must not be pulled. If the sheep is a heavy one, let one hand and wrist be put around the neck and the arm pressed against the leg. Never grasp the wool. Some seize the sheep by the hind leg, then throw one arm around the body and take hold of the brisket with one hand. But ewes with lambs should never be caught by the hind legs, unless they are handled with extreme care.

The Plaster Puzzle.

By J. S. Woodward, in New York Tribune.

I have known instances where plaster sown on clover in irregular streaks showed its effect as far as one could see the field ; where an application of 200 pounds per acre no doubt made a gain of one ton of hay per acre. On other fields and other soils twice that quantity had no perceptible effect and it apparently was thrown away. No one can forecast results by looking at the soil, or by any other means ; practical test is the one and only way. I have sometimes sown early in spring on clover, and then again when the plants were four or five inches high, and though it is a dirty job, I prefer to have the work done in the dewy morning. Apply at the rate of about 200 pounds per, acre and if all at once, put it on broadcast by hand, or by plaster-sower, about the time the plants begin to cover the ground, and leave plots here and there all over the field without any, and one year will tell plainly whether it will pay on your soil.

For corn it should be put on the hills when the plants are two or three inches high. Take it in a bag over one shoulder, or in a pail on the left arm, and with a little practice you can pick up with the thumb and fingers the right quantity for a hill, and by timing step and motion of hand you soon get to go as fast as you can walk. Some take two rows and take sufficient in the hand for two hills, throwing to the right and left as they pass along. Try this in the same way as recommended for clover, and one season will tell very clearly whether or not plaster will pay on that kind of soil—though this fact should be borne in mind, that plaster has much more and a much better effect in some seasons than in others. In a season quite dry with frequent and light showers, plaster has always given me the best results.

But the fact should be remembered, that plaster is in no sense a manure, and in and of itself has little or no value as plant-food. Just how it helps we cannot say, and yet the fact is indisputable that on certain plants on certain soils it does exert a wonderful influence, especially on clover, peas, potatoes and sometimes corn. Since, however, it is not a manure but a stimulant, any increase of crop by its use only so much more and so much faster impoverishes our land, and unless we follow such a system of farming that we put back in real plant-food as much greater amount than ordinary as we remove in the increased crop, we shall find we are none the richer for using plaster, but have only drawn our deposit from the bank so much the sooner. But by so farming that we use the increased crop of clover or other plants to feed the more stock and to make the more manure, then the application of plaster will be one of the means to profit.

A New Jersey farmer reports that a dressing of eight bushels per acre of salt to land badly infested with white grubs, enabled him to raise good crops of corn for three years past, which was impossible previous to this application.

PORTABLE HOUSES.—Now that more attention is being paid to poultry, and the use of portable houses strongly advocated as conducive both to health and profit, it seems astonishing that no enterprising firm constructs such houses on reasonable terms, or perhaps more astonishing that if such houses are constructed they are not advertised. They do not require to be elaborately finished, but capable of ordinary farm usage.

Rats, mice and insects will at once desert ground on which a little chloride of lime has been sprinkled. Plants may be protected from insect plagues by brushing their stems with a solution of it. It has often been noticed that a patch of land which has been treated in this way remains religiously respected by grubs, while the unprotected beds round about are literally devasted. Fruit trees may be guarded from the attack of grubs and ants by attaching to their trunks pieces of tow smeared with a mixture of chloride of lime and hog's lard.

FARMERS and OTHERS

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Climax Refrigerator

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BRYCE BROS

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WILL KEEP MEAT FOR ONE MONTH
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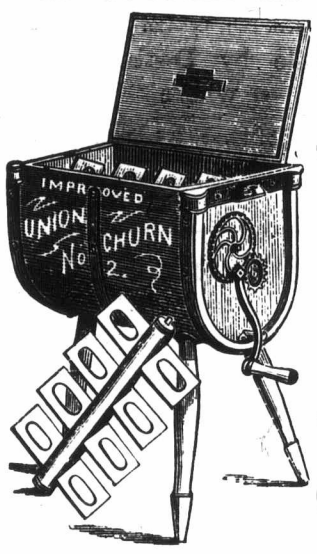

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Took the Following 1st Prizes Against all Competitors:

Hamilton	1876 and 1881
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Made in Four Sizes:

No. 1	$ 8 00	each,	net cash
No. 2	8 50	"	"
No. 3	9 00	"	"
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☞ When we have no agents we will forward to your nearest railway station for above prices.

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Manufacturers of All Kinds of Wooden Goods.

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WELL AUGERS

—AND—

DRILLS!

ARTESIAN WELLS! where there is no Rock, For House, Stock Ranch, Small Water Works, or deep and common Wells in Earth or Rock **IRRIGATION,** will find Water at every trial.

OUR OLD RELIABLE RUST WELL AUGER

PRICE OF EARTH TOOLS:

One 12 inch Earth Auger, with Derrick Irons, Turning Levers, 60 feet best Gas Pipe Shaftings and Couplings	$100 00
Same Rig, with Shaftings for 100 feet	120 00

Over 1,000 of these Augers in use. Printed instructions and guarantees sent when tools are shipped. In ordering Earth Tools send half the amount with the order, and pay balance when you receive the tools. For Artesian Wells or any Wells where Rock is found, our

EAGLE MACHINE IS THE CHAMPION OF THE WORLD

and is shipped on trial—that is, a man sent to set up and test until customer is satisfied, before any payment is required

PRICE OF DRILL TOOLS:

Best Eagle Machine, with 500 lb. drill, 2 six inch Z bits, Horse Power, and 200 ft. rope with man to set up and test, $450 00. Same Rig, with 4 H. P., Engine and Boiler, Smoke Stack and Belt	$685 00
Same Rig, without Engine or Power	400 00

Several of these Machines are now in every State.

JOHN ELLIOTT, Lipan, Hood County, Texas, writes me: "I have set up 4 of your Eagle Machines. All give good satisfaction." R. S. SEATON, Lampass, Tex., writes me: "My Eagle Machine is doing good work, as is also the one you sold MR. MARTIN of this place. I want another in the Spring." We have low freight contract, and prompt delivery guaranteed. Please order direct, or send for descriptive catalogue.

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'CORNELL' ENGINE & 'WIDE-AWAKE' SEPARATOR

IS MANUFACTURED IN CANADA ONLY BY

The HAGGERT BROS. MANUFACTURING CO., BRAMPTON, ONT.

The only Engine having an entire steel boiler—constructed upon purely scientific principles.

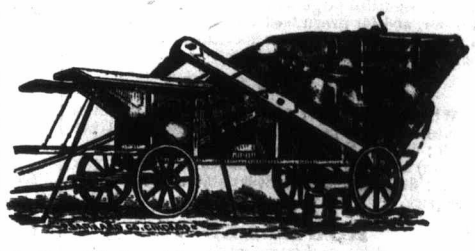
OVER 300 NOW IN USE IN CANADA

The only Traction Engine that propels and guides itself on the road without the aid of horses, and that goes either forward or backward.

The Cornell is the lightest, the strongest, the easiest managed, the most powerful, takes the least wood and water, the safest from fire, and the most suitable for threshing purposes of any Engine made in Canada.

The DOUBLE BELTED and *over* and *under* DOUBLE WIND BLAST

"WIDE-AWAKE" SEPARATOR



with five Combined Automatic Grain Separating Beaters, Universal Shoe Shake, and Self-Grain Tallier.

The most perfect Thresher, Separator and Cleaner on this continent. For pleasure of feeding, easy motion, fast threshing of grain, cleaning and saving, the Wide-Awake has no equal.

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SPECIAL SIZE MADE FOR STEAM POWER.

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Southern Sweet Corn

For Feeding Green, or to put in Silos.

The demand for this Corn last season exceeded the supply all through the dairy section in the States, and farmers and dairymen have already sent in their orders for sowing the coming season. It is a beautiful large white grain, very sweet and tender, and for green feed for stock has no equal. Price per bush., $2; bags 25c. each; two bushel lots $1.75 per bush.

SEED POTATOES.

White Star $2 per peck; American Magnum Bonum $1 per peck; Pride of America $1 per peck; Clark's No. 1 (the earliest potato in cultivation) 50c. per peck; Mammoth Pearl 75c. per peck; Susy, the handsomest potatoes grown, 50c. per peck.

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Every root grower should give the following varieties a trial

P. W & Co's Improved Prize Swede, 50c. per lb,, post-paid.
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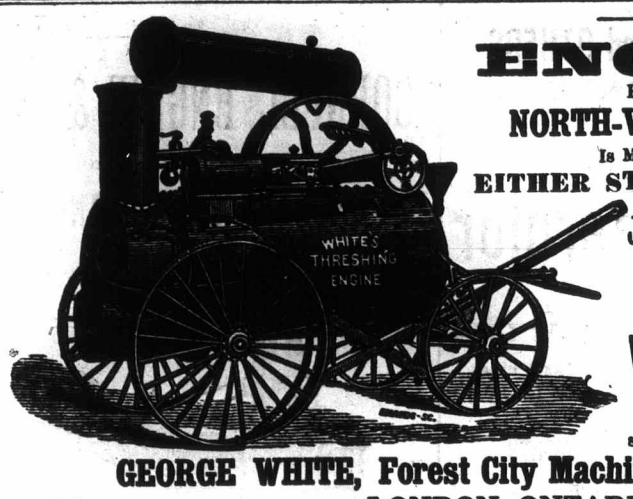

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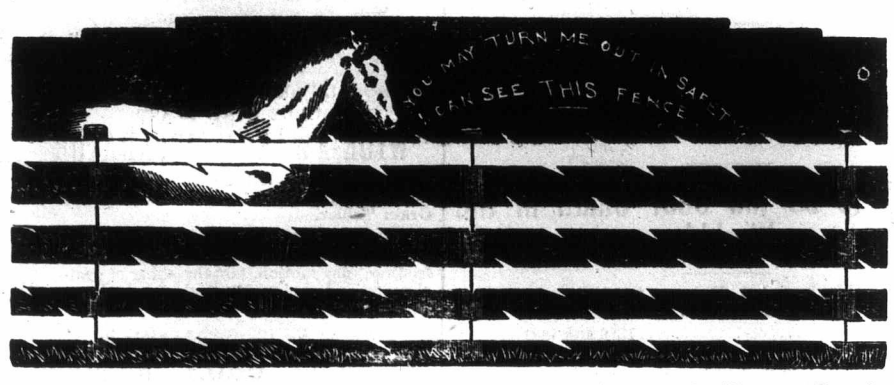

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FLAT STEEL STRIP BARBED FENCE.

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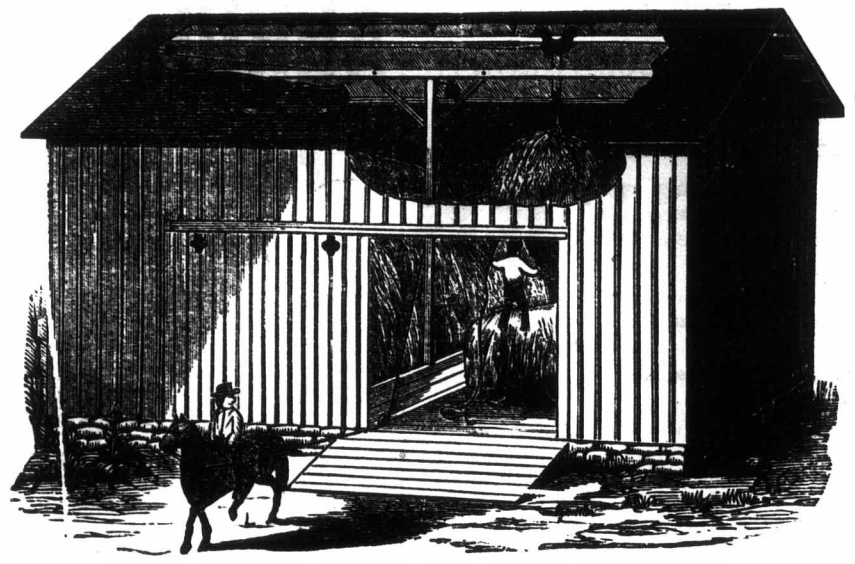

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