THE FARMER'S ADVOCATE AND HOME MAGAZINE.

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THE FARMER'S ADVOCATE & HOME MAGAZINE

WILLIAM WELD, EDITOR AND PROPRIETOR.

THE LEADING AGRICULTURAL JOURNAL PUBLISHED IN THE DOMINION.

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

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Our Monthly Prize Essays.

CONDITIONS OF COMPETITION.

1.—No award will be made unless one essay at least comes up to the standard for publication.

2.—The essays will be judged by the ideas, arguments, conciseness and conformity with the subject, and not by the grammar, punctuation or spelling, our object being to encourage farmers who have enjoyed few educational advantages.

3.—Should one or more essays, in addition to the one receiving the first prize, present a different view of the question, a second prize will be awarded, but the payment will be in agricultural books. First prize essayists may choose books or money, or part of both. Selections of books from our advertised list must be sent in not later than the 15th of the month in which the essays appear. Second prize essayists may order books for any amount not exceeding $3.00, but no balance will be remitted in cash. When first prize essayists mention nothing about books, we will remit the money.

Our prize of $5.00 for the best original essay on *The Farmer's Garden*, has been awarded to Henry Ives, Batavia, N. Y. The essay appears in this issue.

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

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

Post Office Orders.

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

Editorial.

On the Wing.

Having received a post card from the Secretary of the Agriculture and Arts Association, that an exhibition of Clydesdale stallions was to take place in Toronto on the 16th ult., and also that a meeting of the said Association would be held in the evening, we attended these two gatherings.

The exhibition of Clydesdale stallions took place under the auspices of the Agriculture and Arts Association, on one of the leading streets in Toronto, near the market, on the 16th ult. The unemployed of Toronto appeared to be the principal spectators, and crowded so close to the horses that it was impossible for a farmer to see them without danger, and even then often only one at a time. Why is it that our public agricultural institutions should be thus deprived of all grounds, and forced to descend to be mere beggars on the street, without protection?

On the evening of the 16th, the Agriculture and Arts Association held their annual meeting. The Secretary's report showed that the Provincial Exhibition had been but meagrely attended, and that the finances were at a low ebb.

A deputation of veterinary surgeons, presenting a petition bearing between four and five thousand names, waited on them. They asked that a fine of from $25 to $100 be imposed on any person practicing the veterinary art for pay or expectancy of pay or reward, without a qualified certificate. The speakers claimed in justification of their demand that such an act was passed in Manitoba, etc. Mr. Charles Drury, M. P. P., one of the members of the Board, said that it would now be impossible to pass such an act; that a similar act had been previously attempted; that there were more farmers in the House now than ever before. He considered that blacksmiths and farmers did a great deal of good, often more than the regular veterinaries. He had for many years employed a veterinary, but now employed one that they might term a quack, as he had no diploma; but he was a natural practitioner, and he was more successful in the treatment of his stock than the veterinary had been. There were many parts of the country where no veterinary resided for 30 or 40 miles. The farmers would employ veterinaries if they found them most skilful. Mr. Wade, the Secretary, and Mr. Craig, the President, favored the petitioners. Mr. Drury rose a second time and suggested an alteration. The proposed changes are: The limiting of the distance, the amount of the fine, and requiring the sanction of County Councils to approve of the law before it can be enforced.

We had a brief interview with the Hon. A. M. Ross, the Commissioner of Agriculture, in reference to the injury being effected by the erroneous governmental reports in regard to seeds, stock, fertilizers, and the pandering, partizan publications under the name of agriculture. We much regret that the Commissioner has been misinformed, or our judgment is erroneous. He read the following, which we had prepared for another purpose:

We should not be doing our duty unless we occasionally presented ourself before you and endeavored to obtain your aid and assistance in remedying some of the existing evils that farmers are complaining of and suffering under.

You hold what we conceive to be the most important position as farmers in Ontario. This Province embraces, we believe, a finer tract of country and more enlightened and prosperous agriculturists than are to be found in any part of the Dominion, and it is generally conceded that it is from the agricultural classes that our future legislators must to a large extent come—that the education they now receive must tend to the honor or degradation of our nation—that partyism is now standing on the most uncertain and tottering pinnacle that has existed at any time during the present generation; and the chief hope of our national peace and prosperity lies in the hands of our agriculturists. It is on their behalf we solicit your aid and influence. We are aware of the difficulties all have to contend against, and the odium we all incur in the discharge of duty.

One grievance is the undue proportion of the national burden that is borne by farmers.

Our struggling farmers living on small homesteads pay a much heavier tax directly and indirectly than any other class of the community. The control of their own affairs has been wrested from them, and the power placed in the hands of those whose interests are not agricultural, and the means adopted to gain these positions have too often been by demoralizing devices and corruptions. This uniting to frustrate the exertions of the practical farmer, and the unfair means used to defeat the sound convictions of right, should be, if possible remedied. We cannot hope for perfection, but only hope for improvement in the exposing of errors and then devising remedial measures. Much money has been granted annually for the benefit of the agricultural class, but a large proportion of such has been used to attempt to popularize plans that are not in the interest of the agriculturists. Our Government agricultural expenditures should be made popular with farmers if they are to be beneficial. Despite all the uniting of parties, and the paid orators who have

travelled over our land to aid and boom the plans and gain the confidence and approval of the farmers, the schemes have failed. The farmers now begin to see through the plans. The exhibitions that were once conducted beneficially have now descended so low that prizes are too often given to the exhibitor, not for the best exhibits. Many honorable farmers have been discarded from offices by the use of moneys raised to purchase votes from those who never had any interest in agricultural affairs. Even the grounds the farmers owned have thus been wrested from them. This system is on the increase. We have noticed the growth of corruption and demoralization for the past twenty-one years. We have exposed many dangerous national misfortunes, which at the time were either silenced or erroneously refuted, but which, to the loss and cost of our nation, have each proved to be correct.

We have been falsely condemned by partizans for having written for party purposes. Our platform is and always has been the interest of agriculturists morally, mentally and financially; and that is the only platform on which you can hope to retain power—the only platform on which we can hope to preserve peace and prosperity to our nation. Will you give us your aid and support to attempt to carry out the necessary improvements?

At the Rossin House, Mr. T. Laidlaw, of Toronto, greeted us. This gentleman was one of the original founders of the Provincial Exhibition, and also an active Canadian representative at the Centennial Exhibition in Philadelphia. He is a native of Scotland. He deplores the present drift of agricultural exhibitions, and looks on them as demoralizing booms that must burst.

Mr. Vantassell, of Belleville, also called to see us. He is one of our old subscribers, and highly approves of our attempt to advance the interest of the farmer. He informed us that the farmers in that vicinity had for years combined to sell their barley together. By this means they had been able to receive the highest price, as they saved all commission. This combination is an independent one, and not under the influence of the Grange. He says that every device possible is being tried to disunite the farmers from this combination, but as yet unsuccessfully. This Bay of Quinte barley has always had a high reputation, if not perhaps the highest. He also informed us that a farmer in Prince Edward county was left in the lurch by a hired hand leaving in the barley harvest; he could not procure any other as all were busy, and his barley lying out. He went to a blacksmith, got him to make a few long steel teeth, and attached them to his hayloader, drove into his field, and loaded his barley alone. Now the other farmers are adopting the same plan. How true the adage, "Necessity is the mother of invention." These self barley loaders will be made by manufacturers this season.

Mr. Heinzmann, whom we met at the Colonial Exhibition, chatted with us about it and Old London. It is pleasing to meet old friends we have been with in distant parts. We accompanied each other on a visit to Kensington Palace, upon an invitation of the Marquis of Lorne. He informed us that their firm have sold ten times as many pianos in England as any other firm.

The Shorthorn Swindle.

Now that the suspense is over, the manipulators having carried their point by a large majority, the time for calm deliberation has arrived. The deep depression in the Shorthorn business created alarm amongst the dealers, and gave impetus to an effort for relief, which culminated in circumscribing the herds in such a manner as to restrict competition, causing a loss of tens of thousands of dollars to many of the most honorable breeders of the Dominion.

At the outset of the controversy we believed that the owners of Roger stock were concerned only in their own interests, but there was a misapprehension here. It was first thought that only the Roger stock suffered, but afterwards, when it was discovered that many other animals of good pedigree and fine quality also became ineligible for registration in the Dominion Shorthorn Herd Book, the Roger men then bravely championed the cause in its entirety.

The great victory of the manipulators, however, has turned out to be worse than defeat. They could not win their game without exposing the frauds they perpetrated, the result being that the depression is now more seriously felt than ever, and, what is still worse, they have lost the confidence and respect of all honorable farmers who would otherwise have embarked in the Shorthorn business, and of our small breeders who would have engaged in it more extensively. The opportunities for the perpetration of frauds by designing breeders in all herd books are manifest, and when it is considered that the manipulators of the records have also a share in the disreputable deeds, and have lost the confidence of the community, the prospects of success are slim indeed.

What says the history? Fraudulent breeders and dealers have purchased barren cows of good pedigree at low prices and placed grade calves at their heels, which the owners succeeded in getting registered, and by a stretch of conscience they made themselves believe that the favored pedigree influences of the cow would be transmitted to the calf by contract. Where purchasers look for individual merit as well as pedigree, instances have been known in which good animals with poor pedigree have been sold in place of poor animals with good pedigrees, giving the good pedigree, and suppressing the bad one. Many thousands, if not millions, of dollars have been made by these sorts of frauds, and no law or any other power can prevent it. This by no means gives the whole category of the styles of fraud; and as it is impossible to weed out the fraudulent men, as well as the fraudulent pedigrees, there is no hope for salvation.

This is the character of the American Shorthorn Herd Book, and our own manipulators attempt to soothe their brother breeders, whose stock is ineligible for registration in the Dominion Herd Book, with the flattering consolation that they can get their stock registered in the United States. Judging by the past history of booms, the time is coming when our herd book will be in just as disreputable condition, and the frauds may continue for many years before any exposures are made.

But what is the remedy? Aye, there's the rub. If the herd book falls into such disrepute that pedigreed animals will bring prices little or no higher than those of grades, the remedy will be complete, for nothing can be gained by registration, and this seems to be the present tendency of affairs. The failure of farmers to embark in such a risky undertaking will cause a glut of Shorthorns, and prices must fall. An effort should be made to educate the farmers in sound principles, by which they will see that they must by all means look for individual merit, and get pedigree with it if they can. But there is little hope of accomplishing this end, so long as our Model Farm authorities aid the manipulators by giving pedigree twice the value of individual merit. They now call it "source," which may have a wider signification than pedigree. There is too great a tendency to mystify, instead of shedding light, in all these matters. The greatest "source" of the evil lies in the existing system of management of our so-called agricultural exhibitions and fat stock shows.

Another remedy would have its source in each breeder keeping his own records. This system would be specially advantageous in its application to dairy stock, where the quantity and quality of milk could form a source of valuation, and the register could also include the pedigree. There are hundreds of breeders in our country whose word is a better guarantee than any herd book—either those which have collapsed or those which must yet collapse, and it would be impossible for any breeder to fall lower in public estimation than our herd book managers. The business could be placed on the same foundation as other enterprises, each man standing on his own merits, and when a breeder has established a name for honesty and ability, let him push his business in the same manner as all other concerns are pushed. His fate would then be in his own hands, and not in the hands of rings and rascals. A wrong can never be righted by being modified; it must be *eradicated*.

Our Prize Essays.

The recent changes which we made in the conditions of competition have had a stimulating and wholesome effect. During the past few months it has been positively painful to us to have to withhold from public edification many of the excellent practical essays, our space being too limited to devote much attention to any given subject.

Some of the oldest and most popular writers of Canada and the United States are now on our list, but it may appear strange that the first prize is often carried off by some obscure writer whose name is not known to us or to the public—even with an essay which betokens a lack of ordinary education in the writer. What we and our readers want is sound, practical sense, not so much those grand literary effusions, with windy introductions, written to captivate the fancy, or play upon the passion strings. There is nothing in our conditions to exclude competitors from any part of the world; we have had many Americans as competitors, but the name of the first successful one appears in this issue. Mr. Ives is well known to the readers of the American agricultural press, amongst whom he enjoys a high reputation, but we hope Canadian writers will not feel discouraged at the appearance of this formidable competitor. In all cases, strict justice will be meted out in the awarding of the prizes.

We often wonder why our farmers should continue to pay money out of their pockets for those government prize essays—many of which would not come up to the standard for publication in our columns—when they can enjoy so many admirable essays free of cost.

The King of Holstein Bulls.

Presto, 380 N. H. B., is the property of John Leys, M. P. P., Toronto. He was the first prize winner as a two-year-old at the Great Fair at Alkmaar in the Netherlands, and was there purchased at a high price and brought to Canada. He took first prize for three-year-old bull at the Provincial Fair at Guelph in 1886, and also carried off the first prize for that class at the Western Fair at London the following week. He won diploma there as the best bull of any age, and was at the head of the herd, winning the gold medal and diploma for the best herd of Holstein cattle at the same fair.

His yearling daughter, Kol III., took first prize at the Industrial Fair in Toronto in 1886, and was pronounced by the judge as being so nearly perfect in points that she must be a first prize winner wherever shown. This heifer, with her half sisters, Kol II., A and Grietje III., by Presto, won first, second and third prizes at London. One of the best judges of dairy cattle in Canada pronounced Presto the best Holstein bull he ever saw, and so perfect that if asked to make him better, he did not know where he could begin.

Presto is believed by his owner to be without a rival in the Dominion, and the only bull in Canada winner of a first prize at any of the great fairs in Holland.

Mr. Leys' herd consists of over 40 animals, all imported from Holland, calved in quarantine or dropped this spring at the farm. Among the females are Betje, a five-year-old cow, No. 5263 N. H. B. Diewerra, another five-year-old cow, 5265 N. H. B. Maartje II., a three-year-old cow sired by Nocolas, No. 228 N.H.B.; dam Maartje, registered number 2430 N. H. B. Lotje II., three years old; sire Nicolas (above), dam Lotje, 242 N. H. B. Grietje II., three years old; sire Garfield 257; dam Grietje, 2770 N.H.B. Neeltje II., two years. Gerritt 301 N.H.B.; dam Neeltje, 3887 N.H.B. Janye IV., two year old; sire Cornelio, 445 N. H. B.; dam Janye, 5886 N. H. B. Grietje III., two years old; sire Presto, dam Grietje 2249 N. H. B. Kol II. A, two years old, by Presto; dam Kol II., 4571 N.H.B. Kol III., two years old, by Presto; dam Kol I., 944 N. H. B. There are also daughters of Graaf Adolf, 293 N. H. B. and Gerrit, 301 N. H. B.

Gerritze by Gerritt, dam Maartje II., won first prize at Toronto as a calf, and also first at London, and it is doubtful if she has a superior anywhere.

Oakdale, the son of Gerrit, dam Lotje II., won first prize at London and is a magnificent yearling, a worthy son of so distinguished a sire.

Every female, with one exception, old enough, has either calved this spring or is due to calve shortly, and the calves are a fine lot.

The exception is Molly Stork, now three years old, registered in N. A. H. F. H. B., which was purchased when about two years old at a sale held at Grand's auction rooms, Toronto, in spring of 1886, by B. B. Lord & Son, Sinclairville, New York, and represented by them to be all right. She was purchased because she was a heifer of fine form and a daughter of the celebrated bull, Antis, but she has proved to be a non-breeder, never having come in season since she was purchased.

HOLSTEIN BULL, PRESTO, 380 N. H. B., PROPERTY OF JOHN LEYS, M. P. P., TORONTO, ONT.

A good fence is cheaper than litigation.

Clean out your cellar thoroughly this month.

Sheaves from Our Gleaner.

H. C. Adams says he has had different cows come in, so as to try every month in the year, kept records, and says the cow that comes in late in September or early in October does the best. Says that if a cow calves so early in the fall that she is pestered with flies, she is apt to run down some, and can't be raised to do her best during the winter; but if she enters the late fall or early winter with a full flow, she can be held up to that flow nearly all winter, and will make more annual earnings than to begin at any other time of the year. Here is a fact from a gentleman competent to testify.—[Hoard's Dairyman.

A writer in the "Mass. Ploughman" says: Those Canada lands that have held out for twenty or sixty years with herdsgrass are well adapted to grass. The climate is moist there. Few of us have any idea what an excellent grass climate they have in western Canada. I have seen herdsgrass in the most favorable localities in Vermont lasting perennially in pastures. I never saw better pastures of herdsgrass under favorable conditions than in Vermont. Grass seed may be sown to advantage late in the fall in October or almost November. If I was ready to sow then and could get the field into good condition and the weather was about right, I should sow then. I should put rye with it, for rye will help protect the grass in the freezing and thawing of the fall and early spring. It will prevent the frost from tearing the ground all to pieces and pulling the grass out and killing it. Rye is the stronger crop. I would cut the rye in the spring for foddér, the last of May or the first of June, cutting it thus early in order to give the grass a better chance. The grass will do better if the rye is cut thus early than it will if the rye is cut late, and its roots are then exposed to the heat of midsummer.

Farmers' Clubs.

Dominion Farmers' Council.

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

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

COMMUNICATIONS.

A number of letters were received from clubs which applied for amalgamation, but as there were some irregularities, they will not be amalgamated until the next meeting of the Council, providing the returns be made in time. Several letters were read asking what advantages the clubs would have amalgamating with the Council.

Vice-President Anderson stated that these questions could be answered in a general way by reading the reports of the Council. He believed it would be a good plan to call a meeting of representatives of all the amalgamated clubs to discuss the best methods of advancing the interests of the clubs and the farmers generally. The farmers, he said, were rich and strong enough to protect their own interests, but they were not wise enough. They should learn to know that this end could only be attained by organization on an efficient scale, and they would never succeed so long as they delegated their interests to employes of the Government under our party system. The extent of the advantages which would accrue to clubs by joining the Council depended to a very large extent upon the number of clubs amalgamated, and the amount of harmony existing amongst them. It required a large number of clubs to fight the farmers' battles and make their influence irresistible. There were grievances which were more keenly felt in some localities than in others, and the clubs, by ventilating their grievances to the Council, could certainly promote their interests very materially.

TOP-DRESSING OF MANURES VS. PLOWING UNDER.

Mr. J. Hale, secretary of the North Dawn Farmers' Club, sent in the following report of their discussions on "Manures and the Best Method of Applying them :"

After routine the Secretary read an extract from the ADVOCATE, page 7, on the value of manures and fertilizers.

Mr. Knight thought that if farmers used the manure they made and plowed clover under occasionally, they need not buy fertilizers. He was in favor of top-dressing.

Mr. Brown thought that in top-dressing the manure lost considerable by sun and rain ; he would rather plow under.

Mr. John Kniffen favored top-dressing every time. He was at present drawing out manure on his fall wheat, and thought it would be as good as a blanket.

The Secretary thought that when manure was put out on top, it must lose a great deal, because you could smell it so far.

Mr. Kniffen said you could smell a skunk a long way, but when you came up to him he was all there.

After some discussion it was resolved that on our heavy clay it was better to plow under, especially when the land was not under-drained.

This report caused some discussion, the resolution of the club being generally concurred in. Mr. Anderson thought that a lot of valuable fertilizing material was lost by top-dressing—a quantity of ammonia escaped into the air. Mr. Little advocated plowing under, although he did not think there was much loss by top-dressing. His was a stiff clay soil, and plowing under improved its texture.

A MEMBER—What do the high authorities say on the subject ?

In answer to this the President went to the library to search the English authorities, and the Secretary brought down the German authorities from the German department of the library. The President read the following from Dr. Voelcker's conclusions from his experiments as chemist of the Royal Agricultural Society (paragraph 7) :

"On all soils with a moderate proportion of clay, no fear need be entertained of valuable fertilizing substances becoming wasted if the manure cannot be plowed in at once. Fresh, and even well-rotted, dung contains very little free ammonia ; and since active fermentation, and with it the further evolution of free ammonia, is stopped by spreading out the manure on the field, valuable volatile manuring matters cannot escape into the air by adopting this plan. * * * I am perfectly aware that, on a stiff clay soil, farm-yard manure, more especially long dung, when plowed in before the frost sets in, exercises a most beneficial action by keeping the soil loose, and admitting the free access of frost, which pulverizes the land. On light sandy soils, I would suggest to manure with well-fermented dung shortly before the crop is intended to be sown."

The Secretary then read paragraph 11, page 98, from Wolff's "Practical Manuring ":

"The manure is usually plowed under shortly after being spread upon the field. This must always be done when it is desired that the effects of the manure shall continue pretty regularly for three or four years. It should here be noted, however, that much loss of these constituents of plant food which have agricultural value need not be dreaded when the manure is left spread over the surface without being plowed under ; but under this circumstance the decomposition of the organic matter proceeds more rapidly, and the strength of the manure falls mostly to the advantage of the first crop, the effects upon the second and third crops being correspondingly less active. Surface manuring also, by the rapid disappearance of the organic matter, fails largely in producing its otherwise favorable effects upon the physical condition of the soil, the loosening properties being materially decreased—a circumstance which is of the greatest importance in a cold, clayey soil. During the colder months, when the decomposition of the manure proceeds very slowly, it may remain spread on the surface for a long time without undergoing material change."

The reading of these paragraphs from the leading agricultural authorities of the world put an end to the discussion.

EXHAUSTION OF THE SOIL.

At a previous meeting of the Council, it was resolved to have a paper read on this subject, and the question being a complicated and technical one, it was decided to have the paper published a month before the discussion took place, in order to give the members an opportunity of preparing their arguments, but the paper was crowded out of the ADVOCATE. However, printed proof sheets were sent to the leading members of the Council, so they were prepared for the discussion. But some of the members confessed that they had never given the question much thought, and had come to learn. There was a very lively discussion, but it was confined to a few members. The gentleman selected to prepare the paper was Mr. Robert Brodie, of Montreal, who has given considerable attention to such subjects. It reads as follows :

In the older and thickly populated countries of Europe, where the soil had become barren and sterile from long continuous cropping, the attention of the farmers was directed to the fact by scientists, especially those conversant with chemistry, that something must be done to prevent the country from becoming a barren wilderness like ancient Palestine, which at one time was exceedingly productive. But it was not until about the beginning of this century that the farmer became awakened to this fact, and that any great advance was made to rectify this evil, which took the shape of a more systematic cultivation of the soil by better tillage, drainage, and rotation of crops. The expectations of the farmers were satisfied for a time, as this system utilized a large quantity of plant food that was lying latent in the soil, but after a few years they were again abruptly aroused from this mythical dream by the fact that their land was again becoming exhausted, showing that this better system of tillage did not prevent the depletion of the soil, but only made available the remainder of the plant food that was lying dormant in the soil. This failure necessitated further investigation in order to discover what was lacking. The agricultural chemist's skill then came into play, which consisted in analysing the soil and the plants to find out what was really wanting. The result was the discovery that phosphoric acid, potash and ammonia were the plant foods found lacking, and that they were the chief constituents necessary for the successful propagation of all plants. This theory is still recognized to be quite correct, and no soil, however fertile, contains inexhaustable supplies of these three essential constituents. With these facts staring the farmer in the face, he had either to let his land become barren and sterile, or get a supply of these ingredients, in some shape or other, to take the place of the waste going on.

A new departure was then adopted in the shape of mixed farming—that is, keeping a certain number of stock, principally dairy-stock, to utilize all the rougher produce of the farm and have it converted into manure and put back into the land. This was to be the great cure-all for the prevailing evil, and, indeed, is considered by some of our farmers of this young country as being all that is requisite not only to keep up, but also to restore, the fertility of the hardly used soil, and this is one of the myths that is very hard to eradicate from the minds of our farmers in this country. Observation (so far as their experience permits) seems to verify this conclusion, for in many cases where this method is fairly well carried out, the land became much more productive than it was when grain crops were taken off continuously, and although we are pleased to admit this fact as far as it goes, yet we may rest assured history will repeat itself, and we have only to look up the records of some of the older countries to find that, with the most careful system of mixed farming, where nothing is sold off but milk, butter, and cheese, as the case may be, along with some beef, the soil gradually becomes depleted of plant food, and although it may take much longer time to accomplish this end as compared with raising and selling of grain, yet the fact remains the same : exhaustion is just as surely and steadily going on.

What says Ville : "In the past the following was made an axiom for good farming, 'We must have plenty of hay, pasture, cattle, manure.' But I assert that this proposition is an agricultural and an economical heresy."

The farmer who uses nothing but farm-yard manure produced on the farm, exhausts his land. Whence comes the manure but from the soil ? and if anything is sold, we are selling away part of the manure ; or, in other words, part of the plant food taken from the soil.

As a fact, farm-yard manure does not make up for the loss of the phosphoric acid, lime, potash and nitrogenous matter which it had to submit to through the carrying away of part, at any rate, of the crops grown on it. Where meat is sold the loss is less than in the case of grain, but there is a loss which in due time will be felt to be a serious one. I repeat, then, that this axiom, which has hitherto been made the foundation and palladium of agricultural science, is nothing more than an expedient.

I have said that farming founded on the use of the manure made on the farm alone is, economically speaking, against common sense. But if, besides the profit, we increase from the first year the crop of straw, is it not evident that, instead of growing meat in order to have grain, there is a manifest advantage in reversing the recognized order of things and commencing to grow grain in order to gain the earliest advantage ; in fact we get grain first and manure afterwards.

I repeat then that the soil cannot do otherwise

than exhaust itself unless we bring in from outside a large amount of fertilizing material, which for nine-tenths of the farmers in this country, must be in the shape of chemical fertilizers, and the solution of this question, imposed on us by the force of circumstances, seems to be that it is only by the judicious use of well compounded fertilizers that we can maintain the fertility of our soil, and these substances required to make chemical fertilizers exist in the mineral kingdom, which appear to us to be specially reserved to repair the depredations of the past and of the present, and to guard us against the effects of such disasters for the future. It is therefore not correct to say that, with farm-yard manure made on the farm alone, and nothing but that manure, we have everything required; it is, however, true to say that, in order to obtain large crops, there is only one method at our command, and that is to have recourse to chemical manures in preference to all others; with their aid we can govern the requirements of the farm instead of being governed by them.

As I have now clearly shown that the best of soils will soon be depleted of plant food by continuous cropping, I will endeavor to show, for the benefit of those who would like to know, how fast the depletion takes place under both systems of agriculture. I here make an approximate statement of how the waste goes on, which will be sufficiently accurate to illustrate the point:—

Approximate estimate of Nitrogen, Phosphoric Acid and Potash, taken from 100 acres worked as a dairy farm. Stock carried on the farm:—5 horses, old and young; 14 milk cows; 1 bull; 8 young cattle; 15 sheep; 5 hogs.

ANNUAL SALES.

	Nitrogen.	Phos. Acid	Potash.
	Lbs	Lbs	Lbs
½ Horse Live Weight, 600 lbs.....	14	10	1
4 Cows " " 3,200 lbs.....	74	53	6
4 Sheep " " 600 lbs.....	14	10	1
8 Lambs " " 1,000 lbs.....	20	11	1½
5 Hogs " " 300 lbs.....	6	3½	½
12 Cows, Milk 400 lbs. each, 48.000 lbs..	22	8½	½
15 Sheep's wool, unwashed, 75 lbs..	307	96	81
100 Bushels Barley, 5,000 lbs.....	5		3
50 " Peas, 3,000 lbs.....	87	45	22
200 " Potatoes, 12,000 lbs.....	120	35	35
	44	22	70
	713	289	224

Approximate estimate of Nitrogen, Phosphoric Acid and Potash, taken from 100 acres worked as a grain farm. Stock and produce carried on the farm:—4 horses; 4 cows; 1 calf; 3 hogs; 550 bush. oats; 275 bush. peas; 450 bush. barley; 200 bush. wheat; 200 bush. potatoes; 60,000 lbs. hay.

ANNUAL SALES:

	Nitrogen.	Phos. Acid	Potash.
	Lbs	Lbs	Lbs
3 Calves, Live Weight, 250 lbs.....	5½	4	½
1 Hog " 250 lbs.....	4½	1½	½
200 Bushels Oats, 6,400 lbs.....	126	35	25
350 " Barley, 17,500 lbs.....	270	120	74
200 " Peas, 12,000 lbs.....	480	140	140
150 " Wheat, 9,000 lbs.....	165	70	45
100 " Potatoes, 6,000 lbs.....	21	11	35
15 Tons Hay.....	440	550	125
	1512	931½	445

In both cases this is exclusive of what is necessary for the maintenance of the family on the farm; also in the case of the grain farm, it is exclusive of straw not used and which might be sold.

The intelligent farmer will see at a glance from the foregoing estimates the enormous amount of plant food that is sold off, never to return except from outside sources, and which must be either in the shape of chemical fertilizers, purchased foods, or barn-yard manure purchased in the towns and villages at a heavy cost, and even without taking the cost into consideration, it is beyond the reach of nine-tenths of the farming community; and when we take into consideration the fact that there is only about one-half percent of each of these essential elements of plant food in good barn-yard manure, it staggers us to think that it would require about 30 tons in the case of the dairy farm, and about 95 tons in the other to make up what was sold off.

These facts go to prove conclusively that the best and richest of soils will become exhausted, unless something is used either in the shape of chemical fertilizers, or food from outside be bought and fed to stock on the farm, and returned to the land in the shape of manure.

Any of our old pioneer farmers who took the axe on their shoulders, cleared off the forests, and cultivated the virgin soil, will tell you that the produce is 25 to 50 percent less than when first brought into cultivation, and as time wears on the decrease in yield continues, until, in many cases, some of the farms in the older counties that were once considered the garden of Canada, have become completely sterile.

If we would come to our right minds, and develop an improved system of cultivation, we must cease to regard the soil as an inexhaustible mine, but rather look on the soil as our stock in trade, from which we are to manufacture all that is necessary for the sustenance of both man and beast, and we must do it (if we want to be successful) in as an intelligent a manner as the mechanic who builds a steam engine, and who studies all the details carefully in order to save fuel, etc., and gets the greatest amount of power at the least expense. At this age of the world, it will not pay to do anything in a hap-hazard manner, but in order to be successful, we must investigate and study the most minute details, in order that we may see an intelligent reason for every change.

Now, from the foregoing facts, I think the question has been settled conclusively that land will not maintain its fertility—even if everything is put back—under the best system of farming, as there is a waste going on that must be made up in some way or other; the farmer cannot create something out of nothing, as he is but finite. Therefore we have to take into consideration the cheapest manner by which this waste can be overcome, and, in order to save time and expense in experimenting and going over the same ground which those in older countries have done, we ought simply to look up their records, where we will find the question fully discussed, and the conclusion arrived at is that well compounded chemical fertilizers will have to be resorted to by all progressive farmers. Indeed, Prof. Atwater, of the U. S., says it is his belief that chemical fertilizers will supercede the use of barn-yard manure, being more immediately available, cheaper for farmers generally, and altogether nicer and easier to handle than barn-yard manure.

Another fact we must not lose sight of is, that either hay or grain grown by the use of rightly compounded fortilizers is much better in quality than by farm-yard manure. For instance, if a farmer will cut a small sheaf of hay from a field where fertilizers were applied, and cut a similar sheaf where none was used, having them conveyed under cover and dried carefully, he will find the hay grown with a fertilizer will have a nice, fragrant, aromatic perfume, whereas the other will have a dry, fibery smell like old flax, the difference being so marked that the value of hay for feeding purposes grown by fertilizers must, at least, be 25 percent better than the other. Wheat in the Genesee Valley, western New York, where wheat growing some years ago was abandoned by the farmers on account of the sterility of the land, has now again been taken up with renewed vigor and satisfaction through the use of fertilizers.

In support of Prof. Atwater's idea, as already quoted, a well conducted experiment on potatoes was tried in the Province of Quebec, during the summer of 1886, with the following results:—A field of potatoes was planted; on a part of the field about 15 tons of genuine milkman's cow manure was applied per acre, and on the balance of the field a fertilizer at the rate of 800 lbs. per acre, analyzing—ammonia, 3½–4½ percent; phosphoric acid, 8–10, and actual potash, 6–8 was used. The result of the experiment was a return of 32 bushels more potatoes per acre where the fertilizer was applied, as compared with the other part of the field where manure was used. The crop was sold all round at the rate of 40c. per bushel. Estimating the manure to be worth $1.50 per ton laid down on the field, which is below the average cost, and the fertilizer costing $42 per ton on the field, we get the following results:

15 tons manure at $1.50 per ton.....	$22 50
800 lbs. fertilizer at $42 "	16 80
Saving in favor of fertilizer.....	$ 5 70
32 bushels increase in potatoes at 40c.	12 80
Total gain in favor of fertilizer..	$18 50

I will cite another instance in favor of well compounded, complete fertilizers versus partial fertilizers: A gentleman in Ontario was in the habit of applying wood ashes on corn when planted; he seemed to think that the potash was all that was required. He was persuaded to try a well compounded fertilizer containing the three essential elements. The result was that where the fertilizer was applied the crop rushed ahead of the part where ashes were applied, and ripened sufficiently early to escape an early frost, while the part where the ashes were applied did not, and he was the only farmer in that part of the country who had any corn fit for seed.

This fact should be borne in mind by the general farmer, that he had better use a complete fertilizer than trust to a partial one, unless he is sufficiently posted in chemistry to know exactly what is wanting in his soil in order to produce without fail a good return.

Numerous other instances could be quoted, if time and space permitted, but the best proof that properly compounded fertilizers are needed is the fact that about 25 years ago the manufacture of fertilizers had only begun in a small way in the United States, and, according to government returns two years ago, over $30,000,000 worth was made, and the consumption was equal to the production, which shows the estimation in which they are held by our neighbors in the U. S.

To sum up, this fact should be borne in mind by our farmers, that on account of our lands becoming exhausted, it seems a short-sighted policy that we should be shipping annually large quantities of our mineral phosphate, when they are so much needed at home, and, at the same time, it is a strong argument in their favor, showing to the outside world our short-sightedness in throwing away our birthright.

DISCUSSION.

MR. WELD—I do not intend to enter into the discussion of this paper, but before you commence, I wish to say one word. Since you chose this subject, it has been ventilated in other quarters—by our stockmen and their organs, aided by the professors of the Model Farm. Now, as this paper stoutly opposes the theories of these authorities, who maintain, in the live stock interests, that the farm-yard manure made on the farm will accomplish all that is claimed by the writer of the paper that has just been read. It should be deeply deplored by every honorable and independent farmer in Canada that a question like this should be dragged into politics for the purpose of advancing the interests of a few speculators. I feel it my imperative duty to call upon you as a body of honorable, intelligent and independent farmers, composed of stockmen, dairymen and mixed-husbandry farmers, to discuss this deeply interesting question upon its merits, and from that standpoint alone. It is my only desire to see truth and justice prevail, and I myself, as well as a large body of independent farmers throughout the Dominion, have implicit confidence in your decisions.

PRESIDENT LEITCH—There is a farmer present who informed me just before the opening of this meeting that he had seen a proof of Mr. Brodie's paper, and had read it before a meeting of the Grange in his neighborhood. He informed me that the Grange meeting had unanimously pronounced the paper to be a piece of rubbish from beginning to end, and he came here for the purpose of protesting against the discussion of such

nonsense at farmers' meetings. What I protest against is the wholesale condemnation of anything, no matter how apparently absurd, without sound argument. For my part, I shall not yield to the Grange, to the Government, to the fertilizer men, or to any other power, unless they discuss the question fairly, and are able to give substantial reasons for their beliefs. My impression is that they are all wrong, or at least they do not give the whole truth, and their statements are therefore misleading. The discussion cannot be commenced without first stating the character of the soil and the system of rotation. I tried several tons of fertilizers, and have found no profitable results from them, but I am not so bigoted as to condemn them on this account. I believe the fertilizers I used were very badly adulterated. There should be rigid inspection, and farmers should learn when and where to apply them. They should first make careful experiments on a small scale, and if the directions of the chemists did not then prove satisfactory, it should be known whether the fault was in the chemist or in the fertilizer. I do not believe that barn-yard manure made on the farm is the great cure-all. Something must be returned to make up for the enormous drafts from the soil which are yearly being sold off. Some soils have great depth, and the supply of plant food is practically inexhaustible ; but it may be more costly to unlock the insoluble constituents than to supply more available material. This can only be ascertained by direct experiment. When tillage and green manuring are carried out on an extensive scale, your crops can subsist largely on the food made available in the soil, but the natural fertility is being exhausted all the more rapidly. When the land is once run down, the fertility may be profitably maintained by proper management, but the restoring of the natural fertility may cost more than the land is worth. I believe that many soils are deficient in only one or two of the essentials of plant food, in which case it is a great waste of valuable material to supply barn-yard manure alone, which contains all the essentials. I don't agree with the writer when he says that farmers should buy general fertilizers ; they should rather find out which constituents were most deficient, and then apply a special fertilizer. Buying food for stock to enrich the soil is only practical when there is profit in feeding it, and when the soil requires a general fertilizer.

JOHN O'BRIEN—I use large quantities of gypsum with good success, but I have had no experience with fertilizers. My soil is somewhat stony, and I pick out fresh batches of stones every year which come into contact with the plow point. In this way my soil sinks, and every inch I lose on the top I gain in the bottom. So long as this continues, I don't see how it is possible for my soil to become exhausted. If the bottom soil is worse than the surface soil, of course then this is a bad thing. If all the soil were plant food, it could never become exhausted, but the good is taken, and the bad left. I am in favor of making experiments with fertilizers.

JAS. K. LITTLE—I tried plaster and found no good effects. My soil is a stiff clay, and I have increased its fertility by plowing under clover. I am a strong advocate of green manuring, and have never tried fertilizers, but from what I hear, I have little faith in them.

W. A. MACDONALD—The great error which the live stock authorities make in discussing the soil restoration question is that they fail to draw a distinction between increasing the productiveness of the soil and the increase of its fertility. In stock raising, when nothing but the home-made manure is returned, both productiveness and exhaustion may proceed at a rapid rate for many years ; in fact, the greater the productiveness the more rapid the exhaustion, and if it is better to raise heavy crops for quarter of a century than light crops for half a century, then the stockmen are on the right track. There is no relation whatever between stock-raising and soil fertility ; a pasture that carries a good cow per acre will become exhausted much faster than a grain field of average yield. The degree of exhaustion is determined wholly by the quantity and quality of produce sold off the farm, be it milk, grain or beef—providing the manure is carefully husbanded. The reason why stock-raising increases the productiveness of the soil is because under this system of husbandry the dormant plant food becomes more rapidly available, but it is absurd to credit this effect to the stock ; the same end can be more efficiently attained by green-manuring, thorough tillage, root culture and the application of lime, salt and plaster, but the relative economy of these methods must be ascertained by each farmer for himself. Stock-raising can therefore only be defended on the ground that the business pays without counting the manure ; and although both productiveness and fertility can be increased by purchased foods, yet this system of soil restoration is accomplished at a heavy loss, unless there is a direct profit in the feeding. But in speaking about fertility or exhaustion, a great deal depends upon what constituents of plant food are meant. The nitrogen (or ammonia, as Mr. Brodie is pleased to call it) may be restored differently from the other essential constituents. By green-manuring, thorough tillage, etc., the nitrogen can be not only maintained but also increased, as this element comes from the atmosphere as well as from the soil, and here stock-raising plays no part whatever. Phosphoric acid and potash, however, cannot be supplied through the upper regions, and when they are deficient—which they usually are—the most economical way is to supply them in the commercial form. Barn-yard manure, being highly nitrogenous, is a badly balanced ration for many soils. My soil can be kept productive for half a century by the application of phosphates alone. The argument of the stockmen that barn-yard manure improves the texture of clay soils is also a weak one, because the same end can be attained by green-manuring. Commercial fertilizers, being very concentrated, only produce profitable effects when the soil is in a good mechanical condition. Mr. Brodie does not put the case right when he says that fertilizers are better than manure for the quality of the crop ; any fertilizer or manure which is excessively nitrogenous, especially if the soil is also so, will produce a poor quality of grain, grass, roots, or milk, although the bulk of the crop may be materially increased. There are some deep fertile soils, composed largely of minute rocky fragments, which can hardly ever be exhausted under a proper rotation of crops ; but whether or not it is profitable to use commercial fertilizers with barn-yard manure or green-manuring, must be ascertained by experiments. In such cases, phosphates are usually lacking.

HENRY ANDERSON—I am a strong advocate of nitrogenous fertilizers, and I don't think I can get enough of them, although I have used phosphates with marked success. Since I began to save all the liquid manure—which is strongly nitrogenous—by keeping the stock mostly in box-stalls, I find a great increase in the productiveness of my soil.

Moved by John O'Brien and seconded by Jas. K. Little, that this Council, after careful deliberation on the subject of soil exhaustion, having compared the experience of its members with that of the best known authorities, make the following suggestions and recommendations :

1. That the farmer's first and most imperative duty is the saving of his barn-yard manure—both the solid and the liquid excrements of his stock, the main source of our soil exhaustion being attributable to neglect in this important particular.

2. That the extent to which the farmer should engage in stock-raising ought to depend upon the *direct* profits made in the business, calculating the food consumed at market prices, there being a loss in raising manure when there is no direct gain in feeding the stock.

3. That every farmer should study the requirement of his soil, and conduct experiments in order to ascertain if any of the constituents of plants exists in deficient quantities ; if so, the lacking ingredients should be added in the form of commercial fertilizers applied with barn-yard manure when the greater profit is in the stock feeding, and with green manuring when the greater profit is in grain growing. Nitrogen fertilizers, if purchased at all, should be purchased sparingly, the farmer depending mainly upon atmospheric nitrogen, obtained by the introduction of green-manuring, thorough tillage, and root-culture, largely into the rotation of crops, unless he has proved by experiment that this element can be otherwise more cheaply obtained.

4. The farmer who has a deep, fertile, clayey soil, composed largely of fine fragments of rocks, and not poor in any of the constituents of plant food, may depend upon thorough drainage and barn-yard manure for maintaining productiveness for an indefinite period of time, without purchasing foods or commercial fertilizers, providing he extensively adopts the system of rotation mentioned in the last paragraph.

5. The farmer who has a thin layer of soil upon a substratum of rock, gravel or sand, must depend, for maintenance of fertility and productiveness, upon purchased foods when stock-raising is profitable, and upon commercial fertilizers and green manuring when grain is profitable —or upon a combination of these, depending upon the constituents most lacking in the soil.

6. No farmer can exhaust the fertility of his soil by selling off nothing but butter, providing he carefully husband the manure.

7. This Council deeply deplores the fact that so much of our valuable phosphates are being shipped out of our country to enrich nations which compete with us in the world's markets, and that so little interest is manifested by our farmers in experimenting with them to ascertain the quantity of phosphoric acid in their soils ; also the extensive exportations of our ashes without experimenting with them as to the condition of their soils with reference to the supply of potash.

8. That this Council will use its utmost endeavors to have our fertilizer laws made in the interests of our farmers, whereby they may be able to procure at all times the pure, unadulterated article.

The motion was carried.

The Farm.

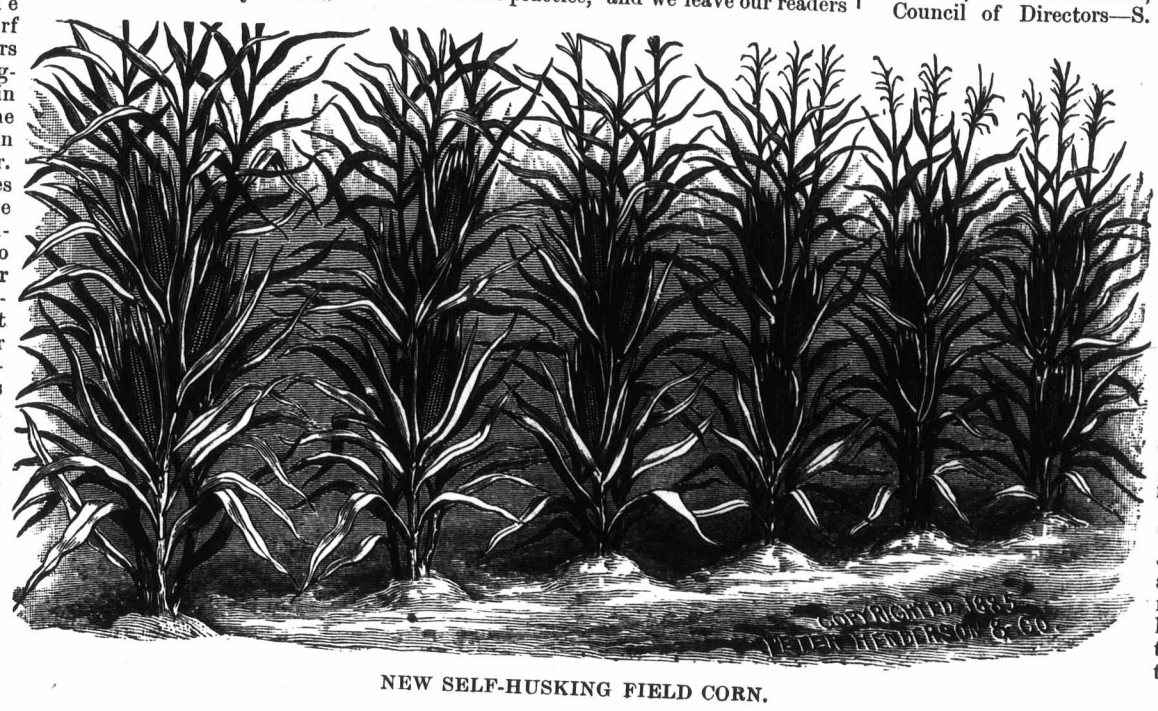
Seed Grain.

We have not troubled you much for some years past in introducing to your notice new varieties of wheat, oats, peas, barley or corn, for the reason that we could find no new variety that we could so confidently recommend to you as those we have in years past called your attention to. We cannot caution you too much about purchasing seeds that are sold at enormous prices by some travelling agents.

Mr. J. A. Simmers, seedsman, Toronto, introduced a new wheat from which good reports are received. There will be a new spring wheat offered to the public next year, if this year's crop proves as good as in the last four years of trial.

We now call your attention to a new corn which may prove of value, particularly in our northern limits of corn production. We intend to test it in our experimental ground this year. We extract the following from the catalogue of Peter Henderson, New York:

"This is the earliest field corn in cultivation, ripening fully ten day before the Early Yellow Canada. The plant is of dwarf habit. The ears are large, averaging ten inches in length, while the cob is small; grain of an amber color. It often produces three ears to the stalk, seldom confining itself to one, even under ordinary cultivation. The great merit we claim for this variety, however, lies in its departure from the habits of all other corn, in the inclination to strip itself clean of its husk, a distinctive feature we have tried to show in the engraving, and which has suggested the name of 'Self-Husking.' So marked a peculiarity of this kind is of no little value where large areas of field corn are grown."



NEW SELF-HUSKING FIELD CORN.

Mr. Jas. J. H. Gregory, of Marblehead, Mass., speaks highly of this corn. We doubt if you can procure any this year. We will spare only a few grains of what we have only to old subscribers that send in a new subscriber; a few other choice seeds will be sent with it.

In the catalogue published by J. D. Bruce, of Hamilton, we find that he is introducing another new variety of corn under the name of the Angel of Midnight.

Exhaustion and Restoration of Soil Fertility.

This question is very thoroughly, ably and seasonably discussed in this issue. The so-called arguments employed by our live stock manipulators, their organs and confederates, the Model Farm professors, are too well-known to require summing up here. If we undertook to rebut all their heterodox preachings, we would have no time to devote to anything else. The doctrine of soil restoration by means of its own resources through the bowels of registered stock, was first promulgated by Prof. Brown, and he succeeded in gaining much popularity thereby, which seems to be much envied by Prof. Robertson. If these professors come forward and admit that they undertook the job through ignorance, and not through any desire to deceive the farmers, we will let them out through this horn of the dilemma. So far as Prof. Brown is concerned, however, nobody has confidence any longer in his little booms, for they have all been "sat upon" with explosive pressure, and of late he has had little diversion in this direction. His prime object in raising stock is to get manure, the question of direct profit being a secondary consideration, and there is nothing said in this connection about purchased foods. This is his story when he is abroad amongst the farmers, but in his lectures to his Model Farm students, he gives the following recipe, the given quantities being the dose per acre, *suitable for all soils:* Barnyard manure, 15 tons; mineral superphosphate, 150 lbs.; plaster, 150 lbs.; salt, 300 lbs.; bone dust, 200 lbs.—total, 800 lbs. of fertilizers per acre, plus 15 tons of barnyard manure. This is Model Farm practice, and we leave our readers to reconcile it with itself and with the discussions on the subject which appear in other columns of this issue.

We are pleased to see that our able correspondent who signs himself "Subscriber," has dragged Prof. Tanner into the issue. Dr. Tanner is one of the ablest agricultural authorities in England, and it will be remembered that his little book on the "First Principles of Agriculture" was introduced some years ago into our public schools as an optional text book. That is to say, our Government teaches our children that the soil cannot recuperate itself by its own resources, and it appoints professors to preach around the country, at the farmers' expense, a diametrically opposite doctrine.

It appears as if these professors were appointed on account of their popularity, and not by virtue of their knowledge of the branches of farming over which they have control; and such will always be the case so long as our farmers consent to pursue the system of political agriculture.

The question of soil fertility has been pretty thoroughly discussed in recent issues of the ADVOCATE. Our noble army of prize essayists have had their say about green manuring—we wish we could find space for a dozen or two of the excellent essays we received on this subject. We have discussed the indirect acting fertilizers—gypsum, salt and lime—and the DOMINION FARMERS' COUNCIL, in this issue, have contributed their quota. What yet remains to be discussed are the application and uses of direct-acting fertilizers—those containing ammonia, phosphoric acid and potash—and this part of the subject will occupy our attention in future issues

New Draft Horse Book.

A meeting of the Dominion Draft Horse Breeders' Society was recently held in Clinton, Mr. John McMillan, M. P., acting as chairman in place of the President, Mr. A. McD. Allan, of Goderich. The Secretary and Treasurer's reports showed that 150 entries were made, 46 members enrolled, and $80 disbursed during the year.

The election of officers and directors resulted as follows:

President, John McMillan, Hullett; Vice-President, David McIntosh, V. S., Brucefield.

Council of Directors—S. Smillie, Hensall; Wm. Wellwood, St. Helens; Alex. Innes, Clinton; John Marquis, Benmiller; W. H. Graham, St. Marys; Thomas McMichael, Brussels; John Mason, Londesboro; Thos. McLaughlin, Seaforth; J. E. Blteckall, V.S., Clinton; Joseph Salkeld, Stratford; T. J. Bell, Londesboro; J. J. Fisher, Benmiller; Jas. Mitchell, Goderich. Five of these shall form a quorum.

J. J. Fisher, as Treasurer, and James Mitchell, as Secretary, were re-appointed to hold office during the pleasure of the Council.

Messrs. Smillie and Innes were appointed Auditors for the year. The Executive Committee for the examination of pedigrees was appointed: D. McIntosh, J. E. Blackall, John Mason, J. J. Fisher and Alex. Innes.

The Auditors and Executive Committee were instructed to meet at Clinton, on Saturday, March 19th, to examine the officers' books and a number of entries awaiting registration.

The time for the next annual meeting was fixed as the second Wednesday in December ensuing, and the place to be Clinton.

Messrs. McMillan, John Mason, Blackall, McIntosh and Smillie were appointed a committee to revise the present rules and regulations and submit a report to the Council, who will lay their report and recommendations thereon before the next annual meeting for consideration.

It was resolved that in view of a contemplated raising of the standard for registration at the next annual meeting, the time for receiving entries under the present standard close on Dec. 1st.

Congestion of the bowels or rheumatism may be brought on an animal by lying on wet bedding for a single night.

A Model Farmer.

Just before the organization of the Dominion Farmers' Council, when we were urged upon to make an attempt to organize the farmers of our Dominion, we addressed meetings of the Middlesex County Council and the East Middlesex Agricultural Society, asking each of these bodies to nominate three of their most honorable, successful and progressive members to act with us as a committee for the purpose of discussing the propriety of organizing a central council or club; and Mr. Henry Anderson, a portrait of whom we present herewith, was elected chairman of the committee appointed by the East Middlesex Agricultural Society. Mr. Anderson was the first Secretary of the Dominion Farmers' Council, but he now occupies the position of Vice-President. Mr. Dougald Leitch, the President, an illustration of whom has appeared in the ADVOCATE, was the chairman of the committee appointed by the Middlesex County Council.

Mr. Anderson was born in Wiltshire, Eng., in 1818, and immigrated to Canada with his parents in 1833. His father farmed on an extensive scale in England, and brought sufficient means to get a fair start in Canada. He with his family settled near Wilton Grove, about seven miles south of London, and the old homestead was left to his son Henry—the subject of our sketch. Although virtually belonging to the second generation, Henry Anderson possesses all the energy, frugality and perseverance of the oldest settlers, and although he commenced life on his own account with a farm to his credit, yet in his earlier struggles the inducements to go into debt were strong, but his manly spirit of independence and self-reliance, which he exhibits in all his doings, has enabled him to go through life with the blissful satisfaction of owing no man a cent. It is related that, on one occasion, when he had no ready cash to buy a pitch-fork, he struggled through the harvest with a wooden one made by his own hands. However, these days have long since passed away, and since that time he has accumulated 200 acres of land, besides still being the happy possessor and occupier of the venerated old homestead, with attractive surroundings, a cheerful and intelligent family, and the pleasing gratification of standing high in the estimation of his neighbors and acquaintances.

Mr. Anderson has been director of the East Middlesex Agricultural Society for 26 years, and Secretary of the same for 20 years. He was general superintendent of the Western Fair for 4 years, and general superintendent of the Provincial Exhibition—a position which he held for 11 years, and then resigned. He held the office of Deputy Reeve of the township of Westminster for several years, and afterwards the office of township clerk. He is one of the originators of the Westminster Fire Insurance Company—one of the most prosperous insurance companies in the Province—and has been secretary of the company since its inception (1857). He has also held numerous municipal offices of a minor description. He was the active organizer of the first Grange that was established in Canada west of Kingston, and took an active part in promoting the interests of that organization. He ceased connection with the Grange because he could not get them to unite on an independent basis to study their true interests, and found that they continued to vote on party lines.

He is engaged in mixed farming on a mixed soil—varying from almost pure sand to a heavy clay. He feeds about a dozen Shorthorn grade steers every winter, and his dairy herd is of a mixed character. Although a close tudent of agricultural matters, he has devoted his greatest energies to municipal matters, and is regarded by the Council as their municipal lawyer. He has had a great deal to do with municipal litigation, and is a terror to the lawyers on many points. He has strong faith in the principles upon which

HENRY ANDERSON.
Vice-President Dominion Farmers' Council

the Dominion Farmers' Council is established, and takes an active part in promoting its interests. If the Council, with its vast intellectual resources, cannot succeed in organizing the farmers on an independent, self-reliant basis, he does not see what power on earth can accomplish this most desirable result.

Rust and Blight in Grain and How to Prevent it.

BY THOS. ELMES, PRINCETON, ONT.

I have been engaged in introducing and testing new varieties of seed grain the last few years, and carefully studying the various diseases to which grain is subjected. This last season I tested 170 different varieties and carefully noted the results of climate and cultivation.

Rust and blight arise from various causes; from an unhealthy state of the plant caused by sowing old varieties of the same seed on the same soil, year after year; by bad drainage; by sowing grains not suited to the particular soil and situation; by late sowing, and by using those manures and fertilizers which unduly increase the amount of juice in the plant, and cause it to burst the vessels which convey it to the head, causing the ruin of the grain and rust of the straw; by the drying of the juice exposed to the rays of the sun; also by the propagation of a fungus which floats in the air or arises out of the soil, fastening upon the plant and extracting its life.

The different species of fungus are very numerous; it decays our timber, rots our potatoes, mildews our fruits and vegetables, moulds our food, causes smut, rust, blight, mildew, etc., in grain, and is the fruitful cause of many of the diseases of man and beast. But I do not intend to describe the various kinds of fungi, but base my remarks more on the practical means within our reach to withstand their ravages in grain.

The first means we should use to prevent rust and blight is thorough drainage of the soil. Without this it is impossible to successfully battle against them, as stagnant water is sure to produce disease alike to vegetable and animal life. After this has been accomplished, comes the cultivation and fertilization of the soil. Land intended for spring grain should be fall plowed, so that the fungus may have more time to escape or perish, and the crop can be earlier sown in spring, which is a very important item.

Again, too much care cannot be exercised in applying manure to land intended for grain. It should be well rotted; indeed, it is better not to manure the same season land intended for the special crop of grain where rust is very prevalent, but to apply all manure the former season for a crop of corn, roots, etc., on ground for fall wheat on fallow not later than the early part of June. Then the spores, which undoubtedly exist in all barn-yard manure, may have time to escape, and the manure thoroughly rotted and mixed in the soil before the coming crop occupies the land, thus escaping the germs of the disease. Next, the judicious use of all manures and fertilizers—not applying in such large quantities as to cause an over-production of juice, producing a rank growth and dark color in the foliage. Disease constantly occurs in plants from over nutriment, and the sap passages are gorged with juices of a greater and thicker consistency than usual; the vegetable powers exerted beyond their just limits, and either a natural passage is produced for the discharge of the superabundance of matter, and thus form a rich bed for the growth of fungus, or the whole plant becomes gouty, unhealthy and blighted, and the crop is a failure, which before had such a promising appearance of an enormous yield.

Early seeding is another important means of averting rust and blight. In fact it is really more than half the battle in successful grain raising.

Light soils with gravelly and sandy subsoil, has invariably blighted spring wheat of late years, as they do not contain certain elements essential for the health of the plant, while the same soil will produce good barley, because it is a strong atmosphere feeder, and spring wheat is not, and is sure to be a failure for want of proper food and moisture in such soil.

Again, we can do much to stay the ravages of rust and blight by a continuous change of seed so as not to sicken the variety of the particular soil. Also by proper selection of the variety, especially those of early habits. Some varieties are almost rust proof, because of the protection given to the sap vessels by the hard, close nature of the fibre of the straw. Of such we might mention of spring wheat: Wild Goose, Italian, Silver Chaff, Rio Grande, McCarling. Of fall wheat: Landreth's White, Garfield, Rogers, Fultz. While of oats: White Russian, Early Blossom New Zealand. Barley: Sovereign (six-rowed), Imperial. In fact, barley is not so subject to be affected by rust, as the first joint next to the head is very little exposed, and retains sufficient nutriment to fill the grain, even if the outside coating is affected.

While many other varieties of grain might be mentioned which are very liable to be overtaken by disease because of their lateness in ripening and exposure of the sap vessels, all such should be rejected where rust is at all prevalent. Among these might be mentioned, of fall wheat, Martin's Amber, Finlay, White Mountain; spring

wheat, Velvet Chaff, Invincible Club; oats, nearly all the black varieties are more subject to rust than any of the white varieties.

Then, again, in sowing the seed, much depends on how it is done. If sown broadcast, it should be evenly distributed over the ground, avoiding crowding the plants, which is a cause of disease, causing weakness of the plants by not admitting the sun, on account of the thick foliage, and disease is sure to follow.

If sown in drills, they should always run from north to south. This admits the rays of the sun, that which strengthens the spores so as to prevent them bursting, and also quickly dries the dew and moisture which gather in the bottom of the plants, and which, if allowed to remain, make a hot-bed for the growth of fungus.

(To be concluded in our next issue.)

Our Government and its Confederates Preach False Doctrines in the Methods of Restoring the Fertility of the Soil.

To the Editor of the Advocate:

SIR,—Prof. Robertson, of the Model Farm, Guelph, and Mr. Shaw, of Hamilton, have recently been down east attending "Farmers' Conventions" and lecturing, the former on the "Model Dairy Cow," and the latter on "Robbing the Land." Among the places visited was Huntingdon, P. Q., and I have been reading the report of the meeting there as given in the "Gleaner," published in that town. As both of these gentlemen at that meeting, and most likely at others also, expressed and reiterated opinions which are erroneous and misleading, I request the use of a small space in your widely circulated journal to point out to farmers (and the lecturers) where they are in error.

Mr. S., in his paper, makes some very good points. He says: "A man who crops continually and puts back nothing will leave his children a farm on which they cannot make a living. No soil is so rich that it cannot be exhausted, etc." But when he goes on to say that an *exhausted farm* can be *restored* to fertility from its own resources while selling off beef, he is grievously in error. Yet, in answer to a question, he repeats it thus: "I deny that a farmer cannot sell off a certain quantity of produce without impoverishing his soil. The fertility can even be *increased* while doing so." He had doubled the fertility of his farm in eight years, all the while exporting beef. Does any one really believe that a farmer can take the hay, grain, roots or whatever it may be that he grows, feed that to cattle, sell off the beef, putting back only the manure, and by so doing *increase* the fertility of the farm? The thing is absurd. It is true that cattle raising or dairy farming will not run down a farm as quickly as grain growing, but the exhaustion will come just as surely, if not so rapidly. He confutes himself, however, because he says: "A day is *coming* for *artificial manures*, but there is no use buying them while we are wasting the manure we have." Now, why mention artificial manures at all, if farmers can *double the fertility* of their farms in 8 years, at the same time exporting beef (and making money at it, I suppose) as he says he did.

He also says: "Artificial manures ought not to be used unless the farmer knows what his land lacks and how to apply them. Ashes are better than phosphates or guano." The first part of this piece of advice is like that of the fond mother who advised her boy not to go into the water till he learned to swim, and he might as well say that salt is better than sugar, as say "ashes are better than phosphates or guano." How is a farmer to find out what his land needs unless by trying different things. If land needs ammonia, 1,000 bushels of ashes per acre would not supply a particle of it, but a small quantity of guano would.

A member who stated that he had a poor farm and wanted to increase its fertility, said "he did not believe land would grow richer while exporting cheese."

Prof. Robertson, in reply, said: "Certain properties of the soil leave the farm in cheese; part are restored by the atmosphere, and part can be replaced by barn-yard manure and by plowing in green crops. The mineral constituents cannot be so replaced, but they are minute, say 1¼ lbs. per cow a year." This answer did not satisfy the enquirer, and he again asked: "Will my farm grow richer by receiving all the barn-yard manure made on it while employed in dairying?" Professor R. replied: "I am sure of it—poor farms can be improved by dairying."

Now, if Professor R., or any farmer who reads this, will procure a copy of Tanner's "First Principles of Agriculture," and turn to section 60, page 32, he will find it stated that "the first step towards the use of artificial manures was the use of bones on *dairy farms* where the pasture lands were exhausted of phosphoric acid by the formation of milk and for the growth of the young calf, very little being returned to the soil in the excrement." There could not be a more direct contradiction of Prof. R's statement than this well known historical fact. In the same section of Tanner's book, he states that there is 1 lb. of phosphate of lime in every 25 or 30 gallons of milk. Now, a "Model Dairy Cow," such as Professor R. describes, should give at least 400 gallons per year, and that quantity would contain 16 lbs. of phosphate of lime, besides about 7 lbs. of potash, and both of these constituents came *only* from the soil. If the milk were made into cheese on the farm and the whey fed to hogs, the loss would be ¼ less, say 17 lbs. per cow per year of mineral ingredients, instead of 1¼ lbs. as stated by Prof. Robertson. Nor would the 25 lbs. of nitrogen in the milk be nearly all replaced by the green crops plowed in or absorbed by the soil from the air. It is quite evident that however good an authority the Professor may be on practical dairying, he is uninformed in the chemical or practical aspect of the matter as affecting the exhaustion of the soil.

Here we have two gentlemen (one of them holding an official position) teaching our young farmers the most illusory doctrines—doctrines that are contrary to science, experience and common sense.

The most extraordinary statement of all, however, was made by a member in corroboration of the assertion of Prof. Robertson, that a farm would increase in fertility while dairying was carried on. This farmer stated that he had bought 150 acres so run down that it would support only 5 cows, and he had brought it up so that it now carried 35 cows and 3 horses, by the use of farm-yard manure and a *little plaster and ashes*. This gentleman, according to his own statement, has accomplished more than all the great agriculturists that have ever lived. Liebig, Ville, Lawes and all such men, have only been wasting time and money trying to find out a way to accomplish what this farmer has done by the most simple means. The farmers in the old country have been throwing away millions of dollars every year on guano and such things to maintain their lands, when it could all be done by using their own manure and a *little plaster and ashes*. It has generally been supposed that farmers in the old country know all about making and saving manure, but they apparently do not know as much about it as this gentleman. He is far ahead of either Professor Shaw or Robertson—quite a phenomenon in fact—and I would suggest that he be engaged to deliver a course of lectures to instruct his brother farmers just how he did this thing. Our young men may go west, but it is quite evident that the wise men still live in the east, as in ancient times.

Seriously, Mr. Editor, it is an unfortunate thing for our country that, at the present time, when our farmers are feeling the need of a change from the old style of farming, such delusive teachings as I have criticised should be spread over the land and be accepted and believed by so many farmers. It certainly has been by no such means as the gentlemen referred to advocate, that the farmers in Great Britain have made their land so productive as it is, and it would surely be a wise course to study out and follow, as far as practicable, the practice which has been so successful there and in other countries. I have given one illustration to show that the best authorities there hold opinions quite different from those who fill the position of instructors in this country.

SUBSCRIBER.

Bumblebees and Clover Blossoms.

An inquiring friend would know "why the first crop of clover has no seed; whether it is possible to distinguish the difference, if any, between the blossoms of the plant bearing the seed and that which contains the fertilizing quality; and has the bumblebee anything to do with it." So far as examined—and many flowers have been examined—the blossoms of the first crop of red clover have good pistils throughout, and good stamens, with plenty of what we should call good pollen. In other words, we cannot see why they are not just as capable of fertilization as those which come later. Experiments, repeated on the second crop for six years, give varying results, but in all cases they show that bumblebees in Central Michigan increased the crop from 100 to 400 percent. Other insects may also help in this matter. In Kansas they tell me bumblebees are scarce, but clover seeds freely. Honey-bees at Michigan Agricultural College, without any question, increase the yield of seeds of white clover enormously, in one case as 236 exceeds 5. I am satisfied that in some locations at least bumblebees should be encouraged ~~for the good they do~~ to red clover. Now the problem is this: How can the entomologists rear and keep over winter large numbers of fertile queens? It seems to me not improbable that the time may come when bumblebee queens will be reared, bought and sold for their benefit to the crop of clover seed.—[Professor W. J. Beal.

Prof. Roberts, Cornell University, found by direct experiment on a clover plot, that the tops of the clover, when dried, yielded 3,295 lbs. per acre, and the dried roots gave 4,896 lbs. per acre. Who would think that the roots of the clover are more valuable than the tops?

The Dairy.

Testing Milk and Cream.

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

No. IV.

III.—THE CREAM GAUGE.

The cream gauge, or cremometer, is simply a glass tube about eight inches deep and one and-a-half inches in diameter, open at one end and setting upon a glass stand. The milk, when placed therein, is allowed to stand for twenty-four hours, and the instrument is so graduated that the volume percentage of cream can be seen through the glass at a glance. It was formerly supposed that the milk which cast the greatest bulk of cream was the richest in butter or butter fat. This, however, has been proved to be a great fallacy, and the volume or measure standard has fallen into disuse, it being superceded by the weight percentage of butter or fat. The bulk of cream depends upon many circumstances which we cannot control. Temperature plays a significant part. Raised in the cold, the cream has greater bulk than when raised in a warm surrounding, the other conditions being alike, although the percentage of fat raised may be equal or less. Another important factor is the condition of the casein of the milk, which substance is not in a state of solution like the albumin, the milk, sugar, and the mineral constituents; but the nearer the casein approaches the soluble condition the more easily the fat globules rise to the surface, while, on the other hand, the more viscid the casein, the greater is the resistance offered to the rising of the globules. This condition also operates upon the percentage of casein in the cream, so that two samples of cream which analyze the same percentage of fat may vary materially in volume. Besides, some samples of milk build less bulk of cream in proportion to the percentage of fat than others, and here, again, we get different volumes. In short, it has been found that the bulk has varied in extreme cases from four to forty percent without showing any material variation in the percentage of butter fat, and yet many creameries still adhere to this standard: that is, paying the same price for equal volumes of cream. Let me here present the results of a few actual tests. The following table shows the differences that have occurred, one examination being made by Dr. Kirchner, Professor of Agriculture, University in Halle, Germany, and the other by Prof. James Long, England:

TABLE SHOWING THE DIFFERENCES IN THE PERCENTAGES OF FAT AND CREAM.

Examined by Dr. Kirchner.			Examined by Prof. Long.					
Total Solids.	Percentage of Fat.	Percentage of Cream.	Percentage of Cream.	Percentage of Fat.	Percentage of Cream.	Percentage of Fat.	Percentage of Cream.	Percentage of Fat.
11.49	3.04	8	2	2.93	4.5	4.57	14.	2.97
11.67	3.05	6	16	4.83	20.	3.67	17.5	2.51
11.32	3.03	10	13	3.16	16.	2.76	11.5	2.64
11.65	3.02	7	12	2.34	3.	3.46	6.5	4.10

The samples examined by Dr. Kirchner in the above table were from four consecutive milkings of the same cow; and it will be seen that, although the fats and the solids were almost identical, there was a variation of four percent in the volume of cream. In the twelve samples examined by Prof. Long, as shown in the table, it will be seen that the percentages of cream varied from two to twenty, while the percentages of fat only varied from 2.34 to 4.57. In two of the samples (the first and the eighth in the table), it is observed that the percentages of fat in the milk are actually greater than the percentages of cream. These facts and figures prove that the cream gauge is utterly useless in testing the quality of milk or cream; experts only resort to it in connection with other instruments, and it is only then of value in cases of suspicion of adulteration, it being found that, as a rule, healthy, unadulterated milk should not yield much less than ten percent of cream. The Chevalier Cremometer is the most popular one in use; and, having the dimensions which I have mentioned, it is useful for containing milk when the specific gravity is being taken.

IV.—THE CENTRIFUGAL MILK TESTER.

But cream can be raised by a method other than by setting the milk, namely, by centrifugal force, and this system has been adopted for testing the volume of cream as well as for separating the cream for making butter. There are several designs of the centrifugal milk tester, but all of them work on the same principle. The instrument consists of graduated bottle-shaped glass tubes, which, when filled with milk and placed in metal receptacles, are made to spin around with such velocity that the cream gathers in the graduated necks of the tubes, and the percentage of cream can be instantly read as soon as the instrument ceases revolving. These receptacles, containing the glass tubes, are fixed at one end into a disc in such a manner that they hang perpendicularly when the instrument is at rest, but assume a horizontal position by the rapid motion of the instrument. Any number of tests may be made at once, corresponding to the number of tubes in the tester, and as high as fifty-four samples have been tested at one operation. The time required for keeping the instrument in motion varies from twenty to forty-five minutes, according to the design of the instrument. A new instrument has been completed which makes the test in less time.

The accuracy of this instrument depends largely upon the condition of the casein of the milk, as mentioned in connection with the ordinary system of cream raising, but the cream corresponds more closely with the fat obtained by chemical analysis than the results under the setting system. By the centrifugal tester, it is customary to add 100 percent of water to the milk, by means of which the fat globules rise more readily, so that the natural volume of cream is then obtained by multiplying the volume from the watered milk by two.

The distinguished investigators, Schulze and Kræmer, obtained the following results from twelve tests, expressed in the form of a ratio, 1 being taken to represent the percentage of fat obtained by chemical analysis:—

	Unchanged Milk.	Milk with 100% water.
Maximum	1 : 1.97	1 : 0.98
Minimum	1 : 1.51	1 : 0.74
Test No. 9	1 : 0.92	1 : 0.40
Average without No. 9	1 : 1.74	1 : 0.85
" with "	1 : 1.67	1 : 0.80

These tests prove that there is no constant relation between the butter fat in milk and the volume of cream obtained by centrifugal force. This tester is of little or no use for any purpose whatever, taking accuracy, labor and expense all into consideration.

V.—THE LACTOBUTYROMETER.

This instrument is extensively used by our dairymen for testing milk and cream. It is simply a graduated glass tube (of which there are several designs), closed at one end. A specified quantity of milk is first poured into the tube, a like volume of ether then being poured in, and the tube is then briskly shaken for four or five minutes, the open end being stopped by the thumb or a tight fitting cork. A similar measure of alcohol is then added, and the tube shaken again for five minutes. The ether dissolves the fat in the milk, and when the alcohol is added the fat appears on the surface of the mixture in the form of a concentrated ether-fat solution, which can be read on the graduated portion of the tube, and by reference to tables prepared for the purpose, the percentage of fat in the milk can be ascertained, the fat standing in a certain relation to the ether-fat solution. Before the observation is taken, the tube containing the solution is placed in a warm bath for a few minutes.

The most popular lactobutyrometer is Marchand's, improved by Schmidt and Tollens, and numerous have been the investigations made to compare the results with those obtained by chemical analysis, of which the following table is representative:—

	Examined by Schmidt and Tollens.		Examined by P. Vieth.		Examined by Kræmer and Schulze.	
	Analysis.	Lacto-butyrometer	Analysis.	Lacto-butyrometer	Analysis.	Lacto-butyrometer
	3.77	3.78	3.36	3.25	3.28	3.35
	3.84	3.68	3.31	3.15	3.40	2.95
	3.22	3.38	2.76	2.65	4.86	4.87
	3.65	3.68	3.38	3.30	3.75	3.13
	3.24	3.68	3.33	3.10	3.39	3.35
	3.17	3.12	3.36	3.25	3.76	3.35
	3.75	2.68	3.27	3.20	3.01	2.77
	3.24	2.97	3.22	2.90	3.10	2.77
	3.97	3.68				
Av.	3.54	3.18	3.25	3.10	3.57	3.32

Comparing this table with those showing the results of the lactoscope, we find that the lactoscope is a more accurate instrument than the lactobutyrometer, and behold what a difference in the cost, labor and time; a lactoscope analysis can be made in less than two minutes, and there is no waste of milk or cream. The main cause of the inaccuracy of the lactobutyrometer is the fact that the ether does not dissolve all the fat, and there is no ready method of ascertaining the quantity of fat left undissolved in the milk. It may be said, however, in favor of the lactobutyrometer that, by means of recently improved methods, where great care is observed in the hands of experts, such extreme variations do not occur as are occasionally found by lactoscope analysis. In a series of forty examinations made by Schmidt, the greatest variation did not exceed 0.20 percent, and the averages showed that the lactobutyrometer may be regarded as a useful instrument for some purposes.

[To be continued.]

The annual milk production per cow in the U. S. is estimated at 2,692 lbs. Valuing cheese at 10c. per lb., and 10 lbs. for 100 lbs. of milk, the income per cow would be $26.92 per annum. What farmer can keep a cow respectably on this sum?

Raising Calves on Skim-Milk.

If you are breeding a dairy herd, the first thing now to be done is to knock every calf on the head which does not come from a good milker; in fact, no such calf should ever be dropped.

The popular error made in feeding skim-milk is that the feeder, believing it to be poorer than whole milk, feeds it in larger quantities. This is a mistaken idea, for skim-milk is richer in the essential constituents of animal growth, and should be fed in rather smaller quantities, if any distinction at all is made.

No invariable rule can be laid down for the raising of calves on skim-milk, and each feeder must make a rule for each calf. It is often said that a weakly calf should receive new milk longer than a strong one, but we say, knock the calf on the head, unless the weakness is caused by some temporary ailment from which the calf is likely to rally. The new milk may be withheld when the calf is about two weeks old, and the skim-milk may be commenced more or less gradually, depending upon the vigor of the calf, first giving part new and part skim, feeding the mess at blood heat (98° F.); better use a thermometer. The best substitute for the fat removed from the milk is flaxseed jelly, made by boiling flaxseed in five or six times its bulk of water until a thin gruel is formed. The quantity first used may be one or two pounds of flaxseed to 100 pounds of milk, which is gradually increased to 5 or 6 pounds per hundred of milk, the flaxseed being increased in proportion to the decrease of new milk, the latter quantity (5 to 6 lbs.) being used when the milk is entirely skim. The jelly, of course, is mixed with the milk. It is better both for the calf and the dam if it was not allowed to suck at all.

The next step to be taken is to endeavor to get the calf to eat as soon as possible, and while doing so the process of taming can be advantageously pursued. It is a great blunder to feed gruels and slops; the food should be dry and uncooked, given immediately after the feeding of the milk, the great object now being to get the calf to masticate the food thoroughly, instead of bolting it, as is done with gruels and cooked foods. The best food is whole oats, teaching it to eat from the hand, or, at the very outset, forcing small quantities into its mouth. Bran may be fed in the same way, and when it learns to eat, small rations should be left constantly before it. Above all things, avoid the feeding of sour milk. The feeder should also have on hand some early-cut, juicy hay, which the calf will soon learn to eat, and hay tea made therefrom will make an excellent substitute for milk, for a change. A few pulped roots may also be fed to advantage. Salt should not be given to young calves.

Under improper treatment, now look out for scouring. This misfortune can be remedied by the use of lime-water, made by putting a lump of lime about the size of a hen's egg into a jug of water and shaking briskly, then keeping it corked, when it is always ready for use. A tablespoonful of this liquid may be given with each feed so long as scouring continues, at the same time reducing the quantity of milk fed. The main causes of scouring are over-feeding, irregular feeding, and feeding cold milk. An egg stirred in the milk is also said to be an excellent remedy; so is parched flour. Skim-milk, when fed in proper rations, should bring 25 to 30 cents per 100 pounds, or 2½ to 3 cents per gallon.

When the grass begins to start, don't rush the calves (or the cows) to the pasture too hurriedly; accustom them to their changed conditions by degrees, changing the feed very gradually, and do not expose them to inclement changes of the weather.

Separating Cream from Milk by Hand-power.

Since mentioning this subject in a previous issue, we have received several inquiries relating to the hand separator, of which the accompanying cut is an illustration, and we refer intending purchasers to our advertising columns. The figure explains itself. The milk is merely placed in the upper cylinder, from which it runs through a tap into the lower cylinder, and, when the crank is turned, the skim-milk pours out through one of the small spouts, and the cream through the other. The machine can be turned by any

HAND SEPARATOR.

person of ordinary strength. Forty turns of the crank per minute insures sufficient speed, causing the cylinder to make 6,500 revolutions per minute, and will readily separate 250 lbs. of milk per hour. The gearing and balancing are so exact that the machinery revolves easily, softly and noiselessly.

With the capacity mentioned, a farmer who has 10 cows giving an average of 16 lbs. of milk each per day, will separate the milk in one hour; or half an hour in the morning and half an hour at the evening's milking.

The hand separator is specially adapted to the farmer's own use when he makes his own butter, but their is little objection to his sending his cream to the creamery under this system. The great advantages possessed by the separator are these: 1. The milk can be separated immediately after milking, when the temperature is at its best, thus saving the labor and expense of heating the milk to its proper temperature, as is required by the separator operated by steam power, when the milk usually comes from several farmers before being separated. 2. The skim-milk can be fed to the calves warm from the cows, being then in its very best condition, and possesses feeding qualities equal to whole milk that is allowed to cool before being fed to the calves. 3. The butter-milk can also be fed fresh and sweet, and will have about the same feeding qualities as new milk, whereas, under the souring system, the butter-milk is almost useless as food for calves. 4. An extra quality of butter can be made from the sweet cream, the farmer having all the conditions under his control, and if he makes his business known to the public, he can command the highest prices for his butter. The quality is still further enhanced by the fact that the separator takes out all the dirt that may happen to get into the milk, thereby preserving the original sweet, creamy flavor, which cannot be imparted to butter from sour cream, and the separating process causes the milk and cream to get such a thorough airing that the animal odors are driven to the winds. In short, it is hardly possible to make bad butter under this system.

The hand separator is the latest invention De Laval, the famous Swedish inventor, and is now in the hands of the investigators, who will be sure to expose any flaws should it possess them. So far as yet known, the machine has given great satisfaction to all who have used it; but it yet remains to be proved whether or not it will separate as much fat from the milk as the steam separator, as the motion by means of the hand crank cannot be made so uniform. This difficulty, however, can be easily obviated, and it may be safely asserted that it will separate more butter from the milk than by the ordinary setting process. When the news of the invention first swept over the United States, an ingenious Uncle Sammy protested against the use of the crank; he would get a dog, or something of that sort, to do the revolving business.

Hand in hand with the separator, is the invention of the lactocrite—an instrument which can be attached to any of the De Laval separators and will accurately analyze twelve samples of milk all at once in a short space of time. The particulars about this valuable instrument will appear in our next issue.

Prof. Arnold, referring to his recent trip to England, said before the N. Y. Dairymen's Association: In Liverpool he visited some of the leading wholesale houses where cheese was handled, and found the warehouses nearly empty in June. The same fact was observed in London. Where it was formerly the custom to buy largely in advance, they now buy only as they need the goods. This compels the producers and small dealers to carry the stocks. The case may be different, however, in the fall months. Canadian cheese was preferred over that of the States. He saw it sell at 59s when lower grade English Cheddar was only 44s, and State cheese only 40s. The objection made to States cheese was that when it began to get off-flavored it went from bad to worse very rapidly, whereas the Canadian held its quality longer and better. It requires less skill to make cheese in England than in this country. The temperature of the air is more even, and the grass is much better. We are obliged to cook our curds too high to make fine cheese, on account of our high temperature in summer. The lower temperature in England helps the cheese maker wonderfully. But the greater part of the cheese is made in private dairies, and is, therefore, very uneven in quality, while our factory cheese has the great advantage of uniformity.

In the United States last season the general average price of Shorthorns at auction sales was $104.50; Herefords, $209.80; Polled Angus, $305.30; Galloways, $248.

Stock.

A Chatty Letter from the States.

[From our Chicago Correspondent.]

The immense crop of distillery cattle is beginning to move. The first arrivals of any consequence were about the middle of March, and sold as follows: 1,100 @ 1,471 lbs., $4.40 @ $5.10; cows, $3.25 @ $3.60; bulls, $3.50. Meal-fed Wyoming-Texas cattle, fattened at Ames, Neb., sold at $4.10 to $4.40, averaging about 900 lbs. Unless the fattening process was quite expensive, these prices must have paid better than sending the range cattle to market in poor condition and when the markets are flooded. The feeding establishments of the Standard and Union Cattle Companies, at Ames and Gilmore, Neb., seem to be very successful, and are turning out fat cattle nearly every week.

The best prices for live stock at Chicago lately were as follows: Top cattle, 1,700 @ 1,860 lbs., $5.25 @ $5.50; fancy 300 @ 400-lb. hogs, $6 @ $6.12½; best sheep, $5, with lambs at $5.80 per hundred. The number of cattle feeding in the corn belt is hardly as large as was estimated and will not exceed last year.

Hog raisers have made a great deal of money, as prices have been steadily on the advance for the past few months. Less than half a year ago there were large numbers of farmers who firmly believed that there was no money in hogs, and would not be for a long time. They took no care of the pigs, rushed them off to market half fat, allowed them to die of disease and neglect in large numbers, and now they all wish they had some of the pigs which they then considered almost worthless. The mess pork gamblers ran the price of that article up to $21.50 per bbl., against $9 at the opening of the winter packing season. Reckoning the decrease in average weight as well as numbers, Chicago handled 670,000 less during the last packing season than during the corresponding period of 1885-6. The current weights of hogs are running largely behind last year.

Mr. Rodgers, of Abingdon, Ill., the Polled-Angus man, reports the sale of an 11 months old bull calf, Prince Domino, dam Princess Albeila (5515), sire Prince of the Blood (2307), at $500 cash. He says this is one of the best Prince bulls he ever sold, and considers that the price is just half as large as it would have been before the pleuro-pneumonia racket.

The U. S. Government has just turned over $500,000 to be expended in extirpating contagious diseases. It is needless to say that the pleuro-pneumonia managers are happy.

The past has been a fine winter for feeding live stock in the West. Cattle feeders have not made money as a rule, except those who have continued to feed since the spring advance commenced.

There are now some doubts about the crop of Texas grass cattle coming to market much earlier than usual, as they have had no rain or snow this winter, and are in need of moisture to start the young grass. As for cattle from Montana, they will be extremely late this year, and the number of beeves from that Territory will probably be far short of the average crop.

John Gosling, Superintendent of the Swan & Bosler Hereford farm, at Indianola, Iowa, was here with 41 head of yearling steers, one year old this spring, which averaged 1008 lbs., and sold at $4.55. These youngsters averaged only 17 months old, and included 8 calves not 13 months old, which averaged 1005 lbs. after being driven three miles. These cattle were fed 6 quarts of meal and 3 pounds of oil cake per day from the time they were weaned. Mr. Gosling firmly believes that we must shorten the time between weaning and killing.

There has lately been a much more confident feeling among cattle growers, and some who were ready figuratively to "throw up the sponge" and quit the business, have taken fresh hope and decided to continue a while longer. Notwithstanding the very low prices for ordinary fat cattle, the demand for thrifty young store cattle has continued very strong.

The January and February receipts of cattle at Chicago were 50,000 head larger than last year, while the March receipts were only about the same, and toward the latter part showed some decrease. As the markets for fat stock begin to show so much improvement, and spring business of all kinds is opening in such a promising manner, the outlook for fine stock also grows better. During the winter the fine stock trade in the West was discouragingly dull.

Our Native Cows—Feeding for Milk Tests.

To the Editor of the Advocate:

SIR,—The February number of the ADVOCATE furnishes its readers with portions of the remarks of Prof. Robertson and members of dairy associations, which admit of criticisms, and, when considered, might enlighten practical farmers and lead them to think for themselves. To read the Professor's remarks, one would suppose he was not aware that many of the cows he calls "scrubs" are Ayrshire grades, and their milking qualities are due to that family of thoroughbreds, Ayrshire bulls having been obtained throughout Canada during the past fifty years for that purpose. If the Professor had given us the date of purchase and cost of the twelve cows that he calls "poor starved looking creatures," the time he fed them, the cost of feeding from the date he purchased them to the end of the three and three quarter months that terminated with a product of an average of 3,300 lbs. of milk for that time, and what butter or cheese that produced, then we might better judge the merits of the cattle and the value of the Professor's tests to the farmers of Canada; then give the prices that the twelve cows were sold at, thus showing the cost of the test.

There is no doubt that the "Canadian cow" is well adapted to our climate. It may be asked what is the "Canadian cow?" The cows that were so called a century ago were of the French and Jersey type; their importation commenced about two hundred and fifty years ago by the first settlers. Their first cross breeding here was by using Scotch cattle brought out by settlers to the grant of territory made about 1625 by King James I. to Sir William Alexander; thenceforward the importation was continued, the greater part coming from Scotland and England, till the real "Canadian cow" is hardly known.

It will not be denied that the quality of the cow we find often called a "scrub," is due to the extensive use of pure-bred sires from the best dairy breeds, and that without the use of new and good blood, the character of our dairy stock would degenerate. Farmers who use poor, small bulls, even from a good "scrub," fail to secure profitable young stock. Forced feeding may give more milk and beef, but it pays best to increase the quantity and quality by introducing new and the best blood of the beef kind, if for meat, and of the dairy kind, if for milk. R. P.

Bedding for Sick Horses.

In all diseases where acute pain is evinced by violence or rolling, and especially in some intestinal affections where the intensity of suffering produces almost uncontrollable frenzy, it is necessary to provide some protection against self-inflicted injury by an abundant supply of straw bedding spread thickly over the floor, and packed along the walls of the box for several feet above the ground-level. In the majority of other severe and acute diseases there is generally an obstinate disinclination to lie down, and the movements of progression and turning are accomplished with difficulty and pain. In such cases saw-dust or chaff-litter is better than straw until convalescence is so far advanced as to warrant a probability that the animal will take his rest in a recumbent position. Where sawdust or chaff are unobtainable, the straw should be sparingly used and cut into short lengths, so that the horse may move freely through the bed. The bedding, of whatever material composed, is to be maintained in a condition of cleanliness and dryness by the prompt and complete removal of any portion soiled by dung or urine, or which may have become damp from any other cause. An important duty of the hospital nurse is to carry out the orders of the medical attendant, whose instructions should be implicitly obeyed with accuracy, regularity, and punctuality. The administration of medicines must be conducted with quiet, patient, and careful resolution, and in strict accordance with received directions as to dose, time, and form.—[Reynolds on Draft Horses.

Canadian Horses for the Imperial Army.

Two correspondents of the *Field* furnish valuable evidence of the importance to the Mother Country, no less than to Canada, of the Dominion as a source for the supply of horses for the British army. Captain William Martin, late of the Royal Artillery, says in the course of a long article:—"From this last fact [that in 1877-1878 a commission of the British officers were sent to Hungary, on the advice of the inspector-general of cavalry, with orders to purchase 700 remounts, which order they were unable to execute, having to content themselves with 400 only, many of these being under regulation height, and some under four years of age] it seems that the European market will not supply our deficiencies; and if Hungary cannot, what chance can we have of supplying ourselves from Canada, where the winters are so severe that all stock and horses require housing? There at least it is not likely that people would keep any large surplus of horses over their immediate wants."

"W. H." in the same issue, writes:—"I thought the horses on the British side of the lines, known as Canada, British Columbia, and North-West Territories, showed more quality, with substance, than anything I saw in the States. The number of English horsemen settled there sufficiently accounts for this. The Eastern Canadian horses—though quite different from the Western, being almost exclusively the progeny of English and French horses—I considered on the whole a very useful breed. It would be most interesting if the two officers who were through the country last year could be induced to give us in your columns a candid report of their experiences. Meantime (taking it for what it is worth) I cannot say that I consider the Western American horse would come up to the standard required for the English army, either in strength, action, quality, or appearance."—[Can. Gazette.

[So satisfactory have been the specimens of Canadian army horses shipped to England by

Col. Ravenhill (as published in a recent issue of the ADVOCATE,) that the English government have appointed an officer of the war office, assisted by a British veterinary surgeon, to take up his abode in Canada and engage in the purchase of Canadian horses for the Imperial army.—ED.]

Beef versus Blubber.

Tallow having been in the ascendant four or five years, it is gratifying to know that it has reached its meridian, if indeed it be not on the decline. This is proved by the several awards for dressed beef at the recen Chicago Fat Stock Show. Of the forty carcasses laid out for public inspection, fully thirty were quite too fat for profitable use even by those who can afford to pay three prices for the meat they consume. Still, it was not so overloaded with blubber as to make the lean greasy and unpalatable. In making the awards, for the first time in the history of these premiums, the blue and red ribbons were given to lean and well marbled meat, instead of to mountains of tallow, and for the first time all the honors were carried off by the Herefords and their crosses. This triumph of course made Hereford breeders jubilant, as they had a right to be after a four or five years' contest. The victory of the Whitefaces over the Shorthorns, and a previous one of the Black Polled Angus, in the show-ring, lowered for the time the temperature for Durhams a good many degrees.

Yes, it is certainly safe to say, breeders and feeders of intelligence and discernment have become aware that it is necessary to take a new departure in feeding and fattening stock, with the view of producing lean meat worth twenty cents a pound, rather than tallow not worth over three cents, and in future fat stock shows we may hope to find tallow and blubber at a discount. To make these changes is not very difficult, consisting in feeding more grass, clover, hay, roots, oats, barley and rye, and limited instead of unlimited corn. The two-year-old Hereford-Devon steer that took the chief sweepstakes was given oats chiefly for his grain ration from first to last, and a beautifully marbled mass of lean meat with no excess of fat, was the result. Of the carcasses of sheep and hogs, it can be said there was some improvement over former shows, in that there was more lean and less fat, but still so much of the latter as to yield four pounds of lard, tallow and bone to one of eatable meat.—[Cor. N. Y. Tribune.

Fast-walking horses are in demand.

Good care is the farmer's best horse and cow doctor.

Breeding stock should not be pampered, but be kept in a thrifty condition, and not allowed to "run down." They need muscle rather than much fat, as the latter always means a loss of energy, if not of health and vigor.

Two errors are common in the management of calves. When first taken from the cow and given skim-milk they are apt to be fed too heavily, because most people have an idea that skim-milk is much less nourishing than that which retains the cream. So far as fattening is concerned, this is true, but the elements of growth are nearly all retained in skim-milk. The calf's stomach is thus overloaded with cold milk, and it is this which gives it the scours. Warming the milk to blood heat and adding an egg will stop almost any case of scours.—[Am. Cultivator.

Garden and Orchard.

PRIZE ESSAY.

The Farmer's Garden.

BY HENRY IVES, BATAVIA, N. Y.

First, as "the farmer's garden" is designated instead of the merchant's, or the lawyer's, it indicates that one may have plenty of room to properly lay out and manage a garden to the best advantage, instead of its being of limited size and confined to a fixed limit, as the city garden must necessarily be, and the farmer will have many other advantages over his brother in the city so far as gardening and the pleasure and profit of gardening are concerned.

The farmer should, and by right ought to, have the best garden of any class of citizens, and he should find the most enjoyment of any class of men in managing and working one; for, as he can have suitable room and proper tools, himself also being a professional tiller of the soil, the dressing and keeping of a garden might be for him only a pleasant task compared with the laborious job of hoeing and weeding, too often required to be done in the farmer's garden.

The trouble with the farmer's garden has generally been that it is so laid out that it can only be worked by hand, and by the time it is most needed to be done the farmer is busy with work in his larger fields, where his teams and tools can work to good advantage, and so would postpone the disagreeable and slow handwork required to keep the garden in order, and, being once neglected, it would rapidly become worse, so that soon it would really be a formidable job to put it in proper tilth again, and, instead of the farmer finding the greatest pleasure in attending his garden, he would allow it to become the most disagreeable work of any on the farm.

Now the farmer, by using proper shrewdness and management, can easily remedy all this, and the work of the garden may be done so quickly and easily as to insure its being done well and in season. The first requisite, then, will be to locate well, and this I would do almost regardless of soil, for that can be made to suit the purpose required. It should be situated near by the farm house, in plain view from a frequented door or window. Lay off grounds of liberal length, and wide enough for two good garden plots, avoiding, as far as possible, the fencing of them in, though along the farther side from the house and across the rear end, if some boundary is needed, let it be some evergreen hedge-rows. They always look well, and in some cases are very useful as windbreaks for garden protection. Next, look to the soil, and if too sandy, draw on clay loam to add to it, or if too much inclined to clay, draw and mix with it a good quantity of light sandy loam. The farmer may always rely on this, that a good application of fair soil is quite as valuable any time as a dressing of manure, and, owing to its mechanical effect, if judiciously applied, is often better and more lasting. I have thus used many hundreds of loads, not only in making up a suitable garden soil, but in improving the quality of soil in places for other parts of the farm, and I would say that material for this is found quite readily on any farm by taking the surface soil from the side of the highway when it needs grading, or road making material is to be taken, and in grading for fence building or such like chances, only being sure to apply enough of it, and manure to make a deep rich soil. After thoroughly mixing and working to a fine seed bed, seed down, and lay by the one half in clover, or orchard grass, or both, to lie for two years, while the other half is being used for the garden. Then alternate by seeding this down to lie for the other two years, while that which rested under clover is being used in this two years' course of garden rotation. The continual use of a single plot of ground for this purpose will deaden any soil more than manure alone can remedy, but by the change and recuperation gained by being in turf one-half of the time, the soil is enlivened so as to work in a much more friable condition, and by applying the manure or fertilizers when seeding down, and especially a heavy coat upon the turf the fall before plowing again for a garden, the ground will be rich enough, and will to a great extent go clear of the cumbersome and formidable stock of weeds, which usually have to be accepted as the inevitable in the farmer's garden.

Now for some plan of rotation. I have found it to be of so much practical benefit both to the garden and the farmer, that I will describe in few words how I have for several years managed a single garden plot so as to obtain nearly as good results as with double grounds above described. I simply plant all early and quick growing vegetables and plants on one-half of the garden (dividing it lengthwise), and as they are removed, till and manure, and sow the ground to rye or oats—rye is better—and so preoccupying the land; it keeps it from running foul and barren, and the soil to a good depth will be filled with the small fibrous roots, which, with the mulch and green manuring these tops will give the ground, will go far towards enlivening and renewing the garden soil. Then the following spring, if rye is used, it will grow large and can be plowed under in good time for planting for later garden crops, while the other half, being planted early, can be taken from the garden in time to be followed with rye, as the other was the autumn before. This is a two-crop rotation course of only one year, and works very well for the single garden plot.

Now, although it is not essential for the working of this plan, it still enables me to recommend it as being quite desirable, to lay out a broad walk lengthwise through the centre of the garden, or in case of the double garden, locate it between the two. On each side of this, from the front end of the walk, plant the rose, the pink, the hollyhock, and such other perennial growths as fancy may dictate; and, for the farther end, say half its length, plant grape vines to grow on lattice work and trellis, to form an arbor over this part of the garden walk. Besides the beauty and convenience of this, it makes a definite division for carrying out the rotation recommended above.

To work this "Farmer's Garden" right, the owner can till it as readily and to nearly as good advantage with horse and cultivator, as he does his corn or potato field. After plowing and fitting to a good seed bed, mark it out the long way with a 2½ or 3-foot marker, and nearly everything that is to be grown can be planted in these rows, such as beans and other plants of smaller growth, plant near together in the row, and tomatoes, corn, potatoes and the like, plant farther apart; for cucumbers and other vines requiring more room, plant only in every other row. Then, with a light and rather narrow and

fine-toothed cultivator, a horse and a skilful hand will go over an ordinary garden in an hour, and by following this up about once a week, supplementing this tillage with a little hand-work with hoe or garden rake, you will till such a garden quickly and thoroughly, and it will be such a piece of work that the farmer will take pride in.

As to having shade or fruit trees to cumber the vegetable garden, I consider them so out of place there as not to need mentioning in connection with the garden ; but I remember when the formidable rows of plum and cherry trees, with their thickets of volunteer scions and the invincible rows of currant bushes, were an accompaniment to almost every farmer's garden. As they are still used to quite an extent in the Province, I see that the practice should be noticed. I provide for all these, and for all berry bushes, in my orchard system, that is, just to plant the rows far apart one way (the way I want to plow) and much nearer the other; then on the side, or end nearest the house, plant all pear, plum, cherry trees and the like, either as an extension of the apple rows, or in different corresponding rows, or into the apple rows, one in each interval, until enough are in this way planted out. Then I extend the filling in of these rows, sometimes even to the extent of the whole orchard, with currant and berry bushes planted between the trees on the line of each row. I also go still further than this, and plant an American white cedar or arbor vitæ, say 3 or 4 ft. in height, along every row of apple, and half way from one tree to another along the row. These always branching low, will break the current of wind under the apple trees and make the orchard much warmer. I also plant trees for wind-breaks outside of these. Now as an orchard, especially in its earlier years, should be tilled and planted, and as this tillage will all be one way (not cross ways), it is just as easy to work with these apple rows thus filled out as if there was nothing there but the orchard, and what shade there is will be no detriment to this small fruit; it is almost entirely out of the way, and will cost but little to grow it.

As to the strawberry grounds, it is not half the time of late years that I grow them, since I can buy so cheaply. But when I plant, it is done across the head or farther end of the garden, and I plant berry bushes there too, when planting in plots alone, these also to be tilled with a horse the first year, and then heavily mulched with coarse manure or old hay and straw. This does not interfere with the other system of garden work with the horse and rotation, as stated.

As to getting an extra early start with tomato, cabbage, pepper and such plants, the green-house men make such a business of supplying farmers with these, that they are mostly obtained of them. But it is also very desirable, and quite as practicable, to get potatoes and corn earlier than they will grow from hill planting. For them I make a very plain hotbed to start the plants, and can usually also grow those other plants too in the same bed. For this I draw 2 or 3 loads of horse manure, dump and stamp it down about two feet thick, in any out-of-the way corner, with 6 or 8 inches of good soil; and after cutting some early kind of potato, spread the pieces one thickness on the bed as far as they go, then cover these about 3 to 4 inches with more earth. The corn should be put into 3 to 4-inch check rows, and other plants by themselves. Then when potatoes are 2 to 4 inches high, plant in these sprouted pieces, earth, roots and all, one to a hill. With the corn, cut out each square for a hill, and by taking a little pains, these can be got much earlier than by common planting.

Conquering Pear Blight.

A correspondent of the "Horticultural Times" (Eng.) says : The tree was badly blighted, the top boughs being dead down at least four feet, and every limb of the tree seeming more or less affected. The land was rich with barn-yard manure, but I concluded it wanted mineral food, so I dug away the soil for about 6 feet around the tree and down until the top roots were all uncovered, and then took 100 lbs. of German salts (containing 15 lbs. of pure potash), mixed it with four or five times its weight in earth, and spread on top of the mixture with potash salts. Then I took 50 lbs. of lime mixed with earth, and spread it on top of the potash and phosphate (these contain all the above minerals.) We then drew from the well twenty or thirty pails of water, and gave the whole a thorough wetting, and in one week's time I could see that the tree was reviving, and blight apparently never extended an inch beyond what it was at the time of making the experiment. The tree bore a small crop of pears in the centre of the top that summer, but at the extremities of the limbs they fell off. The next year it bore a large, fine crop of pears. None fell off, and no insects seemed to touch them. The third year was the same, the crop large, fine and smooth ; and this, the fourth year, the crop promises as good as the two previous years. Now this proves that what we call "pear blight," is simply starvation ; that the mineral supplies of the soil had become exhausted and the tree was dying for want of food. And it proves a little more, for what had been a semi-annual bearer became an annual bearer.

To Make Grafting Wax.

There are various proportions of the materials used to form grafting wax. Some want a wax that will not run in a hot sun, some a wax that will spread easily, and for some purposes we need a tough, sticking wax. The materials used are tallow, resin, and beeswax. Some use pure linseed oil in place of the tallow. The tallow and resin make the wax adhesive. The beeswax makes it smooth and keeps it from melting in the hot sun. The more resin used the cheaper the wax, and the more brittle in cold weather and more difficult to spread. Beeswax makes it spread and keeps it from sticking to the hands so tenaciously ; it also makes it work smoother, but adds to the cost of the wax.

The finest and most expensive grafting wax is made of equal parts of tallow, resin, and beeswax ; this is very expensive. A fair wax may be made of four parts of resin, two of tallow, and one of beeswax. A good wax, and one that will stand hot weather, is made of—resin, four parts ; beeswax, two parts ; tallow, one part. So much depends upon the uses the wax is to be applied to, and the quality of the materials used, that the wax can be varied in materials from best wax, given first, to the poorest, which was the second mentioned.

An excellent and easy way to make grafting wax is to take one pint of pure linseed oil, one pound of beeswax, and four pounds of resin. We find the best way to mix the materials, for any of the recipes we have given, is to take an iron pot and set it on a fire, and place in it the resin and beeswax ; melt them together, then carefully add the tallow or linseed oil, making sure it does not boil over and take fire. When all the tallow or oil is added, stir the hot wax well and remove from the fire. Pour it into cold water. When cold enough to handle, work it by pulling, until it is a fine lemon color. It is then ready for use.—[Farm and Garden.

SECOND PRIZE ESSAY.

Personal Observations on the Effects of the Removal of our Forests.

BY W. A. HALE, SHERBROOKE, QUE.

Before treating upon the effects of the removal of our forests, it may be as well, first, to say a few words concerning the causes of their too rapid disappearance. These in most cases I think we can trace to the avariciousness of those engaged in the lumbering business, encouraged no doubt by the ruinous policy pursued by our local governments, each one of which seems to be more intent upon showing a good financial balance sheet at the end of their terms of office than by husbanding what might otherwise be lasting resources of the country. The reckless manner in which they sell enormous limits of timber at prices which tend to encourage over-speculation and supply, also has the effect of inducing lumber men to hastily cull out only the best portions of the best trees, and to leave the rest not always to grow, but generally to fall victims to the enormous forest fires which are almost certain to follow in the wake of the lumberers. Added to this are the unfair rules for scaling logs, particularly long timber, the effect of which is to cause the sub-contractors in many cases to reject large portions of the upper parts of trees which might otherwise be brought to the mills, and which thus remain as being worse than wasted, only adding fuel to the flames when fires do occur.

As to the disappearing of the forests under the axe of the settler and wood contractor, we need not feel so much alarm ; the former, I am aware, is far too prone to make a clean sweep of everything in the shape of tree or bush, with which he comes in contact while clearing up his few acres of new land each year, but then he seldom allows the fires to spread to his standing timber, and with him much can and is being done by forestry associations and municipalities in inducing him to allow trees to remain along the high roads, boundaries and in rocky and swampy places, as well as groves and groups of trees in pastures. The wood contractor takes little else than hard wood, and either clears up as he goes, or lets the saplings grow for a future cutting, and his depredations have been very materially reduced of late years by the cheaper rates of and more general use of coal.

The effects of the removal of our forests seem, no doubt, to be in general detrimental to the rest of the country in many ways. Taking the forests as they now stand, it is true that they are not contributing directly to the wants of man, as are the cleared and cultivated portions of the land, and it is also true that there is no more available timber standing in them to-day than there probably were thousands of years ago. Then why, one might naturally ask, should we not hew them down, convert them into money and materials for the benefit of man, and give their place to the growing of crops beneficial to the human race ? This all sounds logical enough, but are we prepared to convert our still cold winter climate (of which most parts of Canada can now boast) into a shelterless, blizzard-blown country like the treeless west ? For just in pro-

portion as our forests disappear, so does the severity of the winters increase; higher winds prevail; public roads and railways are blocked with snow; dwellings and farm buildings are more difficult to keep warm; grass and pasture fields are injured from the snow being blown from them; destructive "wind-falls" occur where portions of timber still remain, and buildings of all sorts are liable to be demolished by hurricanes, as has lately been the case in many western towns and cities.

What has been the history of large portions of the New England States? The forests once destroyed, the bleak and barren hills not affording sufficient food or shelter for man or beast, the river bottom farms were sought for and cultivated, but here also the effects of the destruction of the forests followed them; the rivers that now were dry in the heat of summer brought down overwhelming freshets in the spring and in the rainy seasons. The porous leaf mould which held much of the superfluous moisture from rains had disappeared from fires, had been plowed under or trampled into a hard and compact surface by the feet of pasturing cattle. The moss with which the woods abounded, and which, acting like a sponge, held back enormous quantities of surface water, had long since gone. The melting snows of winter having no longer the shade of trees to retard their rapid melting, now poured down their unrelenting floods into the valleys, bringing with them sand and gravel, which, in many cases, covered the river meadows to such a depth as to render them practically useless, and carrying away flocks, fences, bridges and homesteads, and teaching the hard learned lesson that man had by his foolish destruction of this great climate ameliorator brought disaster upon himself.

Along the Chaudiere Valley, notably in the county of Beauce, many of the river farms have of late years very materially depreciated in value, and some homesteads been abandoned, owing to the danger of increasing floods and high water caused by the clearing away of the forests on the hills and uplands. In the flat, so called French country in the Province of Quebec, where one may often travel many miles without seeing the sign of a native tree, the drifts in winter are so severe that special laws have been made providing for the opening of winter roads through the fields, and for the marking out of the same with bushes every few rods, otherwise winter travel would often be impossible, and in consequence, for their own protection, all the settlers build upon the high roads, sub-dividing their farms till some are not more than one or two acres wide by a mile or more long, and in spring or autumn one often sees the whole face of nature under water, causing heavy loss to the farmers by delaying spring work and fall plowing, and leaving the land wet when worked and sun-dried and cracked during the heat of summer.

Let us look at other countries. Take Egypt and the river Nile, for instance. The enormous floods which annually supply it with moisture and rich sediment by irrigation, and which, at times, cause such destruction of life and property, have been traced, by Sir Samuel Baker, to their source at the head waters of the Albara River, rising in the treeless country bordering upon Abysinnia, where, from the want of forests and their restraining climatic influences, the rains having no check put upon them, rush directly off the surface of the land into the river, carrying with them vast quantities of the alluvial soil of which the steep banks are formed, and rushing onward, join the Nile, causing its overflow in Egypt, meaning in many cases disaster for which there seems no human remedy.

Should further proof be needed of the injurious effects resulting from the clearing of forests in a reckless manner, we have only to look at the efforts being made by most European countries to replant, both by private enterprise as well as under government supervision, tracts of land sufficiently large to deserve the name of forests, even at the present early date.

Entomology.

Remedies Against Destructive Insects.

The ravages of destructive insects still continue, and unless peremptory measures be taken against them, they may in time get the upper hand through the carelessness and neglect of the thoughtless class of farmers.

There are men who devote their lives to the study of insects, but their efforts will be unavailing unless our farmers also do their duty. The most effective measures must be those of a preventative character; remedial measures are too expensive in the long run, and those who persist in them should be dubbed as "bug doctors." Preventative measures are mainly those which contribute to the vigor of the plant, induced by feeding the plant properly, and giving it proper attention. A distinction is drawn between those insects which feed on the leaves or buds and those which penetrate the plant and suck the juices, poisonous applications (such as Paris green, London purple and hellebore) being used in the former case; while in the latter, remedial measures are the best precaution.

The remedies prepared by the Washington Bureau of Entomology are still recommended by leading fruit growers and gardeners, although many of them apply the Paris green in a much weaker solution than that recommended by the Bureau, and have met with equally efficacious results. The following are their directions for the use of insecticides:

London Purple.—To 20 pounds flour from a quarter to a half pound is added and well mixed. This is applied with a sifter or blower. With 44 gallons of water a quarter to a half pound is mixed.

Paris Green.—With 20 pounds of flour from three-quarters to one pound is mixed and applied by sifting or by a blower. The same amount of insecticide to 40 gallons of water is used as a spray.

Carbolic Acid.—A solution of one part in 100 of water is used against parasites on domestic animals and in their barns and sheds; also on the surface of plants and among the roots in the ground.

Hellebore.—The powder is sifted on alone or mixed with one part to twenty of flour. With one gallon of water a quarter pound is mixed for spraying.

Kerosene-Milk Emulsion.—To one part milk add two parts kerosene, and churn by force-pump or other agitator. The butter-like emulsion is diluted *ad libitum* with water. An easier method is to simply mix one part kerosene with eight of milk.

Soap Emulsion.—In one gallon of hot water half pound of whale oil soap is dissolved. This, instead of milk, is mixed to an emulsion with kerosene in the same manner and proportions as above.

Pyrethrum, Persian Insect Powder.—Is blown or sifted on dry; also applied in water, one gallon to a tablespoonful of the powder, well stirred and then sprayed.

Tobacco Decoction.—This is made as strong as a wash or spray to kill insect pests on animals and plants.

When the insecticide is applied as a dust instead of a liquid, a dewy morning or damp weather should be selected; in dry weather it should be applied as a spray.

APHIDES.

These are minute lice which gardeners call the green fly. They appear upon the tender shoots when the plants are two or three inches high; they cluster together very thickly and suck the juices with their snouts. When the plants are in pots and can be collected into a building, the best remedy is to burn tobacco stems, the smoke suffocating the insects. Tobacco dust or tobacco tea may also be applied to the affected plants.

THE ONION MAGGOT.

Onions should be planted as early as possible. If the onion maggot is damaging, much of the seed will fail to appear above the ground, and the seedsman will be blamed unless the farmer examines his onion bed for this insect. The fly, which is something like a house fly, lays its eggs on the plant about the surface of the ground, the maggot being hatched in about a week, which feeds on the juices of the onion. The flies emerge from the ground, where they pass the winter in the pupa state. Having attained its growth, the maggot withdraws from the bulb a short distance, and turns into the chestnut-brown pupa. The entire life of the insect is only four to six weeks, counting from the time the eggs are hatched until the fly appears again, and several broods appear during the season. The best remedies are preventative—those which prevent the fly from laying its eggs upon the plants—and applications must be used which produce a strong odor. Kerosene oil sprinkled over the bed has been used with good effect, the strength being two to four tablespoonfuls to a gallon of water. Two or three applications during the season are required. Tar has produced the same effect, the strength being one part tar to forty of water. Sand saturated with coal oil has also proved obnoxious to the fly, and prevented the deposits of eggs. Fresh gas lime sown between the onion rows has produced variable results; but this substance when spread in the fall and worked into the soil, destroys insects that pass the winter in the ground. With regard to destructive remedies when the grub is feeding upon the juices of the onion, the labor is much greater. When the onion is seen wilting, pull it up and examine for grubs. Each fading plant should be dug up with a broad bladed instrument, taking up also a portion of the ground—for all the grubs may not be in the onion—and the mass should then be placed into a vessel, boiling water being poured in to destroy the maggots. The bed should thus be examined every few days, and every wilting plant removed in order to prevent the appearance of another brood. We have had some success by pouring hot water into the roots of the onion, the heat being sufficient to destroy the grubs without affecting the plants.

AMMONIA FOR KILLING SLUGS.

Different forms of ammonia are becoming popular as an insecticide. "Vick's Monthly" makes the following allusion to the subject:

Liquid ammonia is coming into use in England for destroying slugs, for which purpose it is said to be very efficient. About a tablespoonful of the liquid is mixed with a gallon and a half of water, and sprinkled on plants and soil. The effect on the plants is beneficial, and it kills any slugs it comes in contact with. This is a cheap remedy, easily applied, and said to be very effectual. A writer in *Gardening Illustrated* says of liquid ammonia, or ammonia hydrate, that "two strengths are generally sold—one sold as scouring liquid, which is used by laundresses and for household purposes (this is a very weak solution,) the other a very strong and pure article, known in the trade as 880." It is the weak dilution that is referred to in the directions given above. The same writer says that for the purpose of killing slugs he prefers one of the salts of ammonia, "ammonia sulphate, or, perhaps better still, nitrate of soda; these can be sprinkled around each plant, or, if wanted in solution, about one to one and a half ounces to a gallon of water. When using these salts there is no waste, because the ammonia in the ammonia sulphate is fixed, and does not escape into the atmosphere. I must here say that the foliage must, on no account, be touched with this solution, or the plants will, in all probability, be destroyed."

Poultry.

Edited by J. W Bartlett.

Getting a Start.

There will be many persons who will make a start in poultry keeping on an improved system this season, as there is every year, and with the improved prospects for the poultry business, no doubt more this season than usual. During the last two winters, hucksters have scoured the western counties for poultry, for the Detroit and Chicago markets, and the preference they give to choice birds can not but stimulate our farmers to action in the matter of improving their stock of fowls. This can be done either by buying eggs for hatching, or stock, and if eggs can be got from reliable breeders, it is the cheapest way to work into a good stock of fowls. But alas! this is one of the most difficult things to accomplish we ever tried, not that most breeders are dishonest, but most people who keep choice fowls take so much pride in them that they over-feed, and this is a serious drawback to successful incubation. It took us many years of expensive experience to learn to feed properly to secure good results in hatching; we have often failed to get even two percent of eggs to hatch from men we know to be strictly honest.

Again, by all means do not be at all penurious in this matter, as the first cost of a setting of eggs is or at least may be of many dollars import to you, and as an American writer said recently—"while high prices can not be positive proof of choice stock, low prices are proof positive of inferior stock."

Feeding Young Chicks.

Although a great deal more is dependent on the health and condition of the parent fowl that laid the egg than is generally supposed, and we might almost say than upon the care of the chick, yet after the downy creature leaves the shell, there is much to be done to assist its development and build up a healthy, robust frame, and from the time of leaving the shell it must be pushed forward as fast as healthy food and nature can do it, as all time lost in growth may be considered eternally lost, for no care can atone for it, and the chick will never make as fine a bird as the one that commences to grow immediately on its advent into this world, and continues to do so without interruption until maturity is attained. And because the chicks are not intended for exhibition purposes is no reason why they should not receive at least humane attention; if it pays anyone to keep fowls, it pays the farmer, and if it pays him to keep them at all, it pays to keep them well. When we hatch with hens we take the chicks from the nest as soon as they are dry and put them near the stove or in some other warm place (we find an old cap an excellent receptacle for them), and cover warmly until all are hatched; this keeps the hen quiet and she does not break eggs or trample chicks to death. Do not feed the chicks until twenty-four or thirty-six hours; then if at all convenient, feed for one or two days on the yolks of eggs boiled hard, keeping the whites and shells until three or four days old, then chop them fine for them; in the meantime give them a few crumbs of granulated oat meal occasionally, and by the fourth or fifth day abandon the eggs entirely and feed coarse corn and oat meal, but do not wet it, and be very careful about letting them get drink for the first four days. Chicks should not have drink until that time, and if possible give them only milk until a month old, and if there is any tendency to diarrhœa, boil the milk occasionally, chop a little fresh meat very fine for them; and if there is not grass, chop a little cabbage, carrot or turnip once a day; also a little bone meal is beneficial fed in the meal; after they are a month old, corn ground coarse and scalded for a morning feed and wheat the rest of the day is as good a ration as can be given. Most writers lay great stress on Douglass Mixture for both young chicks and adult fowls, which is made as follows: Half pound of sulphate of iron and one ounce of sulphuric acid dissolved in two gallons of water; give a teaspoonful in a pint of their drinking water—but we prefer powdered charcoal, a teaspoon to a dozen chicks in their soft feed. The preparation of iron sometimes causes a yellow tinge on white feathers, and the charcoal answers every purpose without any of the disagreeable results, and we do not consider either necessary where the chicks are hearty, and they are likely to be when cared for as directed above, especially if given unlimited range on grass. This latter alone covers more deficiencies in care than any other one thing.

Duck Raising.

It is an open question whether it will pay to raise ducks on most farms or not; the careful housewife whose pin money is derived from this and similar sources, says yes, while the husband or manager of the farm in nine cases out of ten says no, and we are inclined to think he is correct—but on the other hand there are many cases where they may be raised with profit, and a reasonably large profit. If the farm is located near a large city and regular trips are made to the market, it will pay to raise them until nine or ten weeks old, and put them on the market at that age, but under ordinary circumstances they must be sold at that age, as they are so rapacious feeders that they will eat their heads off, so to speak, if fed on meal and grain until Christmas; but on the other hand, if the farm has a piece of waste ground in the form of a marsh or miry place, where they can forage for themselves after that age and not be a source of destruction to growing crops, they may be kept until autumn with reasonable profit. While ducks are fond of water, for the water itself is not a positive necessity to their well being, the chief reason why they like water is the vast amount of animal food they get from that source; this is why they prefer a dirty pond or marshy place, to a clean spring creek. It affords greater quantities of snails, slugs and worms. But to raise ducks on meal and grain until autumn, they will be a bill of expense instead of a source of profit, and where they are allowed to get into the growing crops or garden, they will in a short time destroy more than they are worth, as their feet seem peculiarly formed for that purpose, while their bills are equally well formed for devouring any grain and succulent leaf that may be within their reach.

The Pekin is probably the best for all purposes, being quite hardy and prolific, yielding a goodly quantity of feathers, and when killed are of fine flavor and good size. There are several varieties of smaller ducks, but these are in most cases more ornamental than profitable, some of them being of gorgeous hues.

Points about the Nests.

Much depends upon the nest. It should be made movable, so as to be taken outside for cleaning, and it should never be placed where any of the fowls can cause it to be filthy or roost upon it. It should never be so high as to compel effort to reach it, as the large breeds will prefer to lay on the ground rather than attempt to reach a high nest, even when a footway is provided, to say nothing of the fact that some hens learn to fly over a fence by first learning to reach a high nest. Never have the nest in a barrel, or so constructed that the hen must jump *down* into it, as broken eggs will be the consequence; but, rather, so place the entrance as to permit her to *walk in* upon the eggs. The nest should be placed in a dark position, or so arranged that the *interior* will be somewhat dark, which will be a partial protection against egg-eating. For a flock of one dozen hens four nests will be sufficient.—[Farm and Garden.

The Apiary.

Managing Bees for Honey.

BY W. H. WESTON.

The care and management of bees can be classed under three headings, as follows: For queen rearing, for increase, and for honey. The latter plan being the most remunerative to the average bee-keeper, I shall therefore confine my remarks to this branch of the business. Before proceeding, I will offer a few suggestions that may be useful to the readers of the ADVOCATE.

Bee-keeping farmers who wish to be successful must be perfectly conversant with the honey flora of the locality in which they reside. Study the best works on bee culture, so that you will be able to use the information to the best advantage, practically, during the season. As there are many kinds and styles of hives in use at the present day, it is rather difficult to choose, but when you have made a choice, have all your hives the same. Purchase what foundation comb you think you will require for the season, and prepare all the frames and hives to receive the swarms that you expect during the season. In that way you will not be delayed, and everything will be properly and systematically done.

To obtain a large honey crop, it is of the utmost importance to "keep all colonies strong," and to that end it is necessary to understand the fall care of bees, as the fall and spring management are closely allied. In the fall, when the flowers have done blooming, it would be well to feed a small quantity of rich syrup each night, till real cold weather comes, so as to keep up breeding. If you are successful in doing so, these young bees will be, to a great extent, the salvation of the colony in the spring. Colonies that are short of young bees in the fall, very often in spring dwindle, and in many cases disappear altogether. Many a bee-keeper who is congratulating himself in April on being so successful in wintering his bees, is down in the dumps in May, when he loses a large share by spring dwindling.

When the red buds of the soft maple appear in spring, feed a small quantity of thin syrup every day, but be careful to avoid robbing by not spilling any about the bee yard, as bees are very apt to rob weak colonies, and are almost sure to do so when encouraged by carelessness about the apiary. Continue to feed till the apple blossoms appear. In this way you will build up each colony, so that they will be just boiling over with bees by the time the white clover blooms. "Keep all colonies strong," is the watch-word for every bee-keeper, and should not be forgotten if you wish to avoid trouble with the bee-moth and other pests of the apiary.

Some who wish to obtain a large honey crop are anxious to avoid swarming, but I would say let them swarm naturally, unless you perfectly understand dividing. If your colonies are strong when the white clover bloom appears, put on the surplus cases and increase the room gradually above the brood, if possible, so that the bees will not waste valuable time hanging out, as they would be likely to do unless extra space is given them to store in. When they show signs of swarming, place empty hives where they will be convenient when the swarm issues. When you have hived your swarm, place it on the stand which you have previously prepared for it, and, on the same day, put on the surplus boxes and contract the brood chamber so as to force the most of the bees into the surplus department. It is always well to use shallow frames in the surplus cases, if you are working for extracted honey. If you are working for comb honey, put on a case of sections, and when it is nearly filled with comb, raise it and put another case of sections beneath it, so that the bees will have to pass through the bottom sections to get at the full ones, and the bright cappings of the filled sections will not be soiled by the bees having to run over them to deposit their loads of honey, as they would if you were to put the empty sections above the partly filled ones. Some of the largest

producers of honey in America do not extract the honey till after the season for gathering is over; but instead of emptying the combs as they are filled, they allow the honey to remain in the hives, and, if necessary, tier up the cases, and the honey is thoroughly ripened in the hive. This is the kind of honey that can always be depended on to command a ready sale on account of its delicious flavor and general good quality.

Correspondence.

NOTICE TO CORRESPONDENTS.—1. Please write on one side of the paper only. 2. Give full name, Post Office and Province, not necessarily for publication, but as guarantee of good faith and to enable us to answer by mail when, for any reason, that course seems desirable. If an answer is specially requested by mail, a stamp must be enclosed. Unless of general interest, no questions will be answered through the ADVOCATE, as our space is very limited. 3. Do not expect anonymous communications to be noticed. 4. Matter for publication should be marked "Printers' MS." on the cover, the ends being open, in which case the postage will only be 1c per 4 ounces. 5. Non-subscribers should not expect their communications to be noticed. 6. No questions will be answered except those pertaining purely to agriculture or agricultural matters.

Correspondents wanting reliable information relating to diseases of stock must not only give the symptoms as fully as possible, but also how the animal has been fed and otherwise treated or managed. In case of suspicion of hereditary diseases, it is necessary also to state whether or not the ancestors of the affected animal have had the disease or any predisposition to it.

In asking questions relating to manures, it is necessary to describe the nature of the soil on which the intended manures are to be applied; also the nature of the crop.

We do not hold ourselves responsible for the views of correspondents.

Exports of P. E. I. I address to you a copy of the Charlottetown Examiner of January 6th, giving a partial return of the exports from this Province. I am sorry I have not the complete returns to send you. Taking the size of the Province into account, the exports appear creditable, especially the horses. I presume full returns would show 1,500 horses to have been shipped. Our farmers very often complain that the exports are not noticed by the press of the upper provinces, and if you could find time and space to notice them, I know it would gratify many of our farmers:—Examiner Jan. 13th, 1887—The Pictou Standard says that 1,295 horses shipped from P. E. Island passed over the Intercolonial Railway last year. These horses must have brought to the Island at least $150,000. Shipped from the port and outports of Charlottetown (Queen's and King's counties) during the season of 1886, 1,277,436 bushels oats, valued at $380,345.80, of which 532,123 bushels went to the United Kingdom. From the port of Summerside, Prince county, 584,472 bushels, making a total of 1,861,958 bushels oats. During the same season there were shipped from Charlottetown and outports 1,307,006 bushels potatoes, and 59,874 bushels turnips, and 1,302,236 dozens of eggs.—W. L., Charlottetown, P. E. I.

Degeneration of Bone.—I have a valuable Jersey cow which has a large lump on her jaw. It is hard on the bone, and has been growing very fast lately. There are about three months since it started. It has broken, but discharges nothing but blood.—J. S. S., Truro, N. S.

[Your cow has *Ostea sarcoma*, or degeneration of the bone. These is no cure for this disease, and the usual practice is to fatten the animal for the butcher, but as the Jersey breed does not fatten readily, you have little hope of obtaining any profit.]

Dairy Breeds—Implements for Sowing Seeds and Fertilizers—Berkshires—Peas vs. Linseed Meal for Milk and Fat.—Would you be so kind as to answer the following questions. I am going in for general farming and want cows that will make a large quantity of butter and also have young stock that will grow to a large size:—1. What breed or crosses would you recommend? 2. What do you think of a cross between Shorthorn and Ayrshire? 3. Are there any machines made in Canada for sowing turnip seed and superphosphate or any other commercial fertilizer together in drills? I have seen one that was brought out from the old country; it worked well; I tried to get one like it, but have been unsuccessful 4. Do you think that it would pay a farmer to raise thoroughbred Berkshires just for fattening purposes? 5. Could peas take the place of linseed meal in the production of milk and fat? 6. How long does it take maple trees to grow large enough to tap, *i. e.*, from the time of planting?—J. R., Lennoxville.

[1. Your main choice is between the Holsteins and the Shorthorns or their crosses. In the Shorthorns (or their grades) you would be sure of the beef, but you would run a risk in getting a milker, unless you knew the ancestors to be of a good milking strain. From a good Holstein bull, you would usually get a good milker, and an animal that would be very likely to fatten readily. Much depends upon the milking qualities of the cow from which the grades are produced. 2. There would be some risk in a Shorthorn-Ayrshire so far as the milking properties are concerned, unless the offspring came from good milkers. 3. Write to the manufacturers of agricultural implements who advertise in the ADVOCATE. 4. No—unless the price of the thoroughbreds is as low as that of grade Berkshires. 5. The feeding properties of linseed meal (with the oil left in) differ very much from those of peas, the former being a poor milk producer, and the latter good for milk production. Oil cake, however—that is, linseed with most of the oil extracted—has milk feeding properties equal to or superior to those of peas, if fed in proper rations. Fatty or oily foods, however, are superior for the production of fat. 6. The time for tapping the maple does not depend upon the age of the tree, but upon the quantity of sap you take from it; the younger the tree the less sap you can get without injuring or retarding the growth of the tree. You should not expect much sap for 20 or 30 years.]

Distances Apart of Orchard Trees.—I am about to plant ground of considerable extent with apple trees, but am not a little puzzled what to make out of the conflicting views of *experienced* persons with regard to the distance apart to plant each tree. I am informed by individuals from east Canada that there very leading growers, at least in some instances, are adopting the plan of putting in the trees, in some cases 15 feet and in others 20 feet only, instead of 30 or 40 feet apart. Will you oblige me by saying whether those who are adopting the above new and near distances have been in the practice of doing so a sufficient long time to test the prudence of it, and whether the thus considerable saving of ground is not too dearly bought at the expense of other advantages gained, it is alleged, by the adherence to the old system of 30 to 40 feet?—W. A. P., Spallumcheen, B. C.

[The only thing that can be gained by planting close distances apart is a saving of land. Where different varieties of apples are mixed, the distances apart must be the same in order to get the trees in rows; otherwise the large growing varieties may be planted farther apart than the small. If you crop the orchard, the distances apart should be greater than when you constantly cultivate, as the shade will then not affect the growing crops so much. Where land is cheap, we would certainly always plant 30 or 40 feet apart at least, in which case the land also needs less manuring.]

Horse Breeding—Fattening Cattle—Bees.—1. Please let me know the best book on the diseases of horses and how to attend to weak colts after being foaled; also how to take care of entire horse when travelling him to serve mares? 2. What is the best book to teach how to feed and fatten beef cattle? 3. Please let me know the latest work on bees and honey and how to take care of them?—A. P., Ashdown, Ont.

[1. The best book on horses for the purpose you mention is "Horse Breeding," by Sanders, a new edition of which is being published, and we will soon have it on our advertised list. 2. The only book specially devoted to fattening for beef is by Prof. Stewart, but it is written mostly for feeders who fatten for exhibitions and fat stock shows. There is another book on the subject by Prof. Armsby, but it is too scientific for most farmers. 3. For the best and latest works on bees, consult our advertised list.]

Interesting Notes from Our Northwest.—Enclosed I send you one dollar for the ADVOCATE, which I like well as an agricultural paper, as it certainly contains a large amount of very useful information, to farmers especially; and I will here give you a few lines for your paper, if you think them worthy of insertion, respecting our great and beautiful Northwest. Some years ago I well remember reading an account of your trip to and in Manitoba, and when I came to see the country here, in passing through a portion of Manitoba, I did not wonder at you having such difficulty in traveling over the prairie, as a very large tract of country around Winnipeg is so very flat and wet. But our Northwest here, in the Temperance Colony, is mostly beautiful, gentle rolling prairie, and at the same time is well supplied with beautiful slews, which afford a good and convenient supply of good water for stock; and plenty of good water for house use, etc., is got by digging wells from 13 to 30 feet deep. I have one well for the stock only 13 feet deep, which supplies plenty of water for 50 or 60 head of cattle, the water rising within seven feet of the top of the well; it has never frozen over all winter, though only covered over with some poles and a little snow. Our climate here is much milder than that of Manitoba, and real blizzards are wholly unknown here. Last winter was the most beautiful winter I ever saw (though I have lived in western Ontario for about fifty years), only the month of January being really cold, it sometimes during that month registering 44 degrees below zero. The rest of the winter was perfectly dry, and not quite warm enough to melt the snow during any time (it was really pleasant and lovely to enjoy it), until spring opened, the snow all going off in about 48 hours with a hot wind, and seeding commenced on April 5th; the spring wheat harvest commenced on the 26th of July. The grain was good, but light in yield and short in the straw, owing to the extreme drought, there not having been two inches of rainfall in 16 months. But it is said by the natives here that the last was the dryest season for over forty years, so we live in hope of better times in future. Last summer we had no summer frost from opening up of spring until Sept. 16th. I think that many farmers who are paying heavy rents for farms, and interest on heavy mortgages on their farms in Ontario, would do well to strike out here to the Northwest, and thereby relieve themselves of their present heavy burdens.—H. G. S., Saskatoon, N. W. T.

Farmers' Organizations.—I am well pleased with the ADVOCATE. I would say every farmer ought to have it in his home. I am a member of a Grange, which is failing in interest. Would you advise us to wind it up and start a farmers' club—A. J., Bluevale, Ont.

[We would advise you to re-organize and amalgamate with the DOMINION FARMERS' COUNCIL. Write to the Secretary for pamphlets and information.]

Lameness.—I would like your advice about a horse I got last spring. He has been worked hard and badly abused, and has a lameness in his fore foot; some call it knuckling. His foot bends forward when walking. Is there any cure for him?—W. J. C, Lower Jemsey, N. B.

[Would advise you to apply a blister to the part around the fetlock, and up the back cords near to the knee, once every two weeks. Make the blister of pulverized cantharides, two drams; biniodide of mercury, one dram; lard, two ounces, rubbed well together. This will make enough to blister four times. Apply a little lard to the part blistered the third day after each application.]

Spreading Manure in Winter—Horse Ailments—Condition Powder.—1. My cow manure has been thrown out on the north side of stable, and has never heated, but is mixed with snow and is frozen. I want to use it on my potato ground next spring, and would like to haul out while the snow is on the ground. Would you advise me to haul it out while the snow is here, and scatter it off the sleigh; or would it be better to haul out and put in a heap, to be again handled when needed? 2. What is the best way to apply long barn-yard manure to potatoes—soil, sandy loam? 3. What is the cause and cure of a hen's head turning upside down and the fowl generally dying? 4. A six-year old mare fed on hay and oats, and two quarts of raw turnips daily, will rub and scratch herself for hours when let into the yard; has rubbed off the hair; no lice, otherwise healthy. 5. Give a good condition powder that may be used when a horse is working and liable to get wet.—BELA, Allandale.

[1. If the land is a stiff clay, spread on the manure now or any time before planting; if the land is light, put into a heap and spread shortly before planting. 2. Top dress or turn under very shallow. 3. Your information is defective. 4. Give her a dose of purgative medicine (Barbadoes aloes, 6 drams; carbonate soda, 2 drams; ginger, 2 drams, water, one pint) once every ten days. Give her 2 drams of sulphur and 1 dram nitrate potash every night in her feed. Have her thoroughly groomed, and if necessary, wash the parts that she rubs most with castile soap and water, or a little carbonate of soda and water. 5. Nitrate potash, ½ pound; sulphur, 1 pound; resin, ½ pound; fornigreek, ¼ pound; black antimony, ¼ pound. Give a tablespoonful every night in soft feed.]

Lameness.—I have a mare that stocks in the hind legs every winter, and you can pick the hair off quite easily. What can I do to remedy it?—W. E. A., Drayton.

[Give her a purgative ball (Barbadoes aloes, seven drams) once a week; then give every night, in warm bran mash, iodide potassium, one dram; nitrate potash, one dram; sulphur, two drams, until you find her improving; then perhaps two or three times a week would be often enough to give the powder in her feed. Regular exercise, with comfortable and well ventilated stable, is quite necessary in such cases.]

Hen Manure.—Please let me know what crop hen manure is best suited for.—G. S., Mimico, Ont.

[It is more proper to ask what *soil* a manure or fertilizer is best suited for than what *crop*. Hen manure may be used just the same as barnyard manure; but it contains about three times as much fertilizing matter, and one-third of the quantity will therefore do; that is, if your soil needs 15 loads of barnyard manure per acre, 5 loads of hen manure will produce about the same effect. Large quantities of these manures should not be applied to soil that contains much vegetable matter; phosphates and ashes should therefore be added.]

Commercial Fertilizers — Strawberries — Melons—Forcing Vegetables for Prizes.—I have read your paper for 12 years and am glad to see that it is improving very much every year. If you would answer a few questions you would oblige me very much. 1. What is the best artificial fertilizer for a light clay loam soil, and will it pay to use it for root crops? 2. Are there any made in London, or whose would you advise me to use? 3. What kind of strawberries are the best for a farmer's garden for his own use? Is the spring or fall the best time to plant? 4. What kind of soil is the best suited for strawberries and other small fruits? I have wood ashes, stable and hen manure; which would be the best for a garden, or are fertilizers better? 5. What are the best varieties of water melons for this part of Ontario, and how should they be cultivated? Do you think it is fair to force vegetables or roots of any kind for an exhibition, or should the largest take first place, no matter how they are grown?—T. H. L., Bruce Co., Ont.

[1. Nobody can exactly say, even by examining the soil, as much depends upon your system of farming; your best plan is to make tests, or use a fertilizer which contains ammonia, phosphoric acid and potash. For roots get a fertilizer which analyzes a high percentage of phosphoric acid. 2. Read the advertisements in our advertising columns. Get catalogues from all the advertisers you can find. All those are reliable who advertise in the ADVOCATE. 3. Read our March issue; it gives you all the information you require on this subject. Plant early in the spring; but the fall will also do. 4. A sandy or clay loam. Any potash fertilizer is good, unleached wood-ashes being the best, using also some stable manure, especially if the land is somewhat stiff. Hen manure, like barnyard manure, is a general fertilizer, and may be used just like barnyard manure, but only about one-third of the quantity should be used, as it is richer and more concentrated. 5. Black Spanish, Cuban Queen, Peerless, and the Boss, are all good varieties. Plant in well manured hills about 8 feet apart each way, placing 4 or 5 seeds in each hill. Forcing vegetables or roots for exhibitions is one of the greatest humbugs of the age.]

Values of Bran, Shorts and Oats—Oil Cake and Linseed Meal.—1. On renewing my subscription for 1887, I wish you would give the value of shorts or middlings for feed, as compared with oats or bran; I am feeding it to pigs and horses, but do not know whether it is as profitable as oats or not. Would it be safe food for milch cows? 2. Is there much difference in the value of oil-cake meal and linseed meal?—C. W. K., Oil City, Ont.

[1. Bran is better than shorts or oats for milk production and for growth in young stock, as it possesses more flesh, bone and milk forming material. Oats are preferable to bran or shorts for putting on fat. Bran is good for working horses, for what develops muscle also develops strength, but oats should also be given. Shorts are a sort of general purpose food. In all cases of feeding, a change of ration is desirable. 2. Yes. Oilcake, or oil-cake meal, is like bran in its feeding properties, and linseed or linseed meal (not extracted) is like oats or corn, but has much more fat in it; both should be fed in small quantities.]

Wild Oats.—Please let me know in the next issue of your valuable paper the best way to kill wild oats?—N. M., Hartley, Ont.

[Prevent their going to seed as much as possible, but if any ripen and fall on the ground, keep the surface of the soil stirred with harrow or cultivator, so as to give the oats a chance to germinate; they can then be plowed under, and will cause no further trouble. But if the soil is full of seed to a good depth, the ground should be summer-fallowed, or some green crop grown so as to choke them, clover being best. If you take the business in hand in time, not letting the oats get deep into the ground, you will have little trouble with them.]

Tieing Cattle—Saving the Manure.—1. I would like to know which is the best way to tie cattle in a barn, with chains or stanchions? 2. Does it injure manure to be outside of a building, or should it be under cover in winter?—H. D., Doaktown, N. B.

[All depends. Many stockmen would have no stanchions under any circumstances, but others favor them for cows. They are better than chains for stables which have deep gutters behind the stock. When stanchions are used the stock should be groomed every day, so that they need not lick themselves, and the animals should be free from lice. For ordinary purposes, chains are preferable, and they should be so attached to the post that they will slip up and down freely. 2. Manure is usually better under cover, or left in the box-stalls; but those who understand the caring of manure do not need to keep it under cover, as they can keep it fermenting all winter in the open yard without loss, and it will be ready for use early in spring.]

Relative Value of Different Food for Stock.—Please print in your next paper the relative value of different food for stock, especially wheat bran as compared to a good timothy hay. Would it pay any farmer to sell good timothy hay at $8 per ton and sell bran at $12 per ton? I would like for you to print the within closed table and add bran to it. —W. V. B., Belleville.

[The following is the clipping sent by the above correspondent: "One hundred lbs. of good hay for stock are equal to 669 lbs. of beets (White Silesia), 469 of turnips, 429 of rye straw, 373 of clover (red green), 371 of carrots, 368½ of mangolds, 350 of potatoes (kept in pit), 367 of oat straw, 360 of potatoes, 135 of carrot leaves (tops), 89 of clover (red dry), 78½ of buckwheat, 62½ of corn, 59 of oats, 58 of barley, 53½ of rye, 44½ of wheat, 43 of oil cake, linseed, 37½ of peas (dry), and 28 of beans." He asks us to add bran to the above list, but it is very hard to do so, as bran possesses a feeding value which can be attributed to few other foods. In the preparation of all such tables only the albuminoids, fat and carbohydrates are taken into the valuation, but bran and oil-cake have large percentages of mineral matter which has a high feeding value for some purposes—such as growth, milk production, and muscular development. According to the American standard, the albuminoids of the food (flesh-forming constituents) are valued at 4.5 cents per pound; fat at 3.84 cents, and the carbo-hydrates (heat-forming constituents) .95 cents, the mineral matter not being reckoned, it being usually abundant enough in all foods, but when the other portion of the ration is of poor quality, the mineral matter is quite a consideration. The values given to these foods can only be followed when proper rations are fed, and then they are only approximate, as the composition of the foods varies with the character and richness of the soil; the richer the soil, the richer the food grown on it, and then there are also great differences in the individual characteristics of the animals. According to the American standard of valuation, bran is placed at 3 cents per hundred pounds higher than oats, but for milk, growth, and muscle, we would place the feeding value of bran as being little inferior to peas or beans (pound for pound) making oil-cake the best of the lot. Oats and corn are best adapted for fattening. The best results will be obtained from bran and oil-cake when fed with coarse, bulky foods; while oats or barley may be fed with good hay, or the less bulky foods. According to the standard, there is very little difference between good hay at $8 per ton, and bran at $12; but if you have much bulky food, you had better sell some and buy bran.]

Monopolies and Frauds—The Salt Question—The Advocate.—Times being hard and money scarce, I had concluded to give up some of the papers which I had been receiving, but I cannot afford to close my door against the ADVOCATE, which I consider the farmers' counsellor and friend. I have been pleased with the part you have taken against monopolies and fraudulent proceedings. Your monthly prize essays are highly instructive to the farmer, and are carefully read and discussed in this section of country. Great interest is taken in the salt question, and we hope yet to learn, through the columns of the ADVOCATE, the manufacturer of No. 10. I learn you are surprised that you do not hear from farmers on this important question. Well, sir, farmers, as a rule, are slow to rush into print. Many know that the salt they have used did not do its work satisfactorily, but not being analysts, are unable to detect the adulteration before using. We look to others for light. Speaking for myself, I am not in favor of a government inspector. No doubt this question will be discussed by the various farmers' institutes, and this salty (or lack of salt) question solved.—A. K., Brampton, Ont.

The Apple Tree Borer.—I noticed an item in one of your horticultural notes recommending a stiff wire for probing apple trees infested with borers. This will not reach the case very often, owing to the crooked way in which they travel. I see others telling their readers to cut them out; this is clumsy and ruins the tree. If a man wants to be successful in fruit growing he must never let them get in, and it takes less time to go over a tree with a blunt knife or a coarse brush and remove the eggs in summer before they hatch, than it does to cut them out after. If any should get in, take a piece of steel pianoforte wire and make a barb point like a fish hook; this will follow the winding hole and bring the borer out without damaging the tree. I used one for years, and never failed to get them out.—G. A., Lynch Lake, Muskoka.

Ayrshire Herd Books.—I have much pleasure in being able to send you the first volume of the Canada Herd Record, published under the direction of the "Ayrshire Importers and Breeders' Association of Canada," which we will be pleased to have you place on record in the library of your valuable paper, as a book of reference. To this work I have devoted much time, attention, travelling, searches, correspondence and expense. The volume contains the pedigrees only of pure-bred imported Ayrshires and their produce. Our list of members and organization you will find in the book. We have nine members in Ontario, several in eastern Canada, and a few in the United States, whose herds were of Canadian importations and breeding; in all, 54, and we soon hope to number 100, from all parts of the Dominion, that will form part of our association, as they are cordially invited to do. The standing of our list of membership so far should be some guarantee of the wisdom there would be in joining us in the good work; instead of undertaking detached provincial organizations that tend rather to weaken the union of Ayrshire men, as is the case where there is competition that may lead smaller local societies to accept pedigrees with less discrimination to secure more entries and fees to officials, as has been the case in the office at Toronto of the Ontario Ayrshire Record, in which there are a large number of false and imperfect pedigrees, evidently imperfectly investigated before entry. You are perhaps aware that four or five persons met in Toronto this month and elected officers, without having procured—in advance of their doing so—a list of qualified members to an association, which they there and then called the "Dominion Ayrshire Breeders' Association," and at that small meeting proceeded with the organization; while, at the same time, correspondence was going on, and they named a committee to meet a committee from our association to confer on amalgamation, thus creating a rival association, and placed it in the hands of Mr. Wade to press it upon the attention of Ayrshire breeders; while all the pressing that was necessary was to join our association, and go on with the work of entering their good and throwing out their bad pedigrees. We, however, will wait the result of their interview. If you consider our work fair and desirable for Ayrshire men to join, rather than have it split up by local, personal or Governmental influences, then our members will be pleased to receive a favorable notice from you.—W. RODDEN, Plantagenet, Ont.

Notices.

On the 7th of this month we intend being in Waterford, in the county of Simcoe. At the latter part of this month or beginning of next we purpose being in Ottawa.

Mr. Daniel H. Nash, of Millington, N. J., manufacturer of the Acme Pulverizing Harrow, informs us he has appointed Mr. F. G. Bowley, of Napperton, Ont., his agent for the counties of Middlesex and Lambton.

We would direct the attention of our readers to the advertisement of Ashton's Salt, which appears in this issue. To produce highly flavored and good keeping butter or cheese it is necessary to use the best quality of salt. Mr. Ashton's is favorably known all over the world.

The Chicago, Burlington & Quincy R. R. Co. has published a pronouncing dictionary containing 320 pages, 32,000 words and 670 engravings. It teaches everybody how to pronounce correctly. Send sixteen cents in stamps to PAUL MORTON, G. P. and T. A., C. B. & Q. R. R., Chicago, Ill., and get a copy of the dictionary—the cheapest book issued.

Foul weeds are one of the many drawbacks farmers have to contend against, and a first class fanning mill is one of the most important implements on the farm. We believe the mill manufactured by Manson Campbell, of Chatham, Ont., is equal to any mill made in America. His sales last season were over 2,000.

TREES AND VINES.—We have a quantity of young walnut trees for mailing, and a few Ampelopsis Veitchii; also a number of alder or ash-leaf maple. One of the walnut and Ampelopsis Veitchii and three of the latter will be sent to all who send in one new subscriber, accompanied with one dollar in cash.

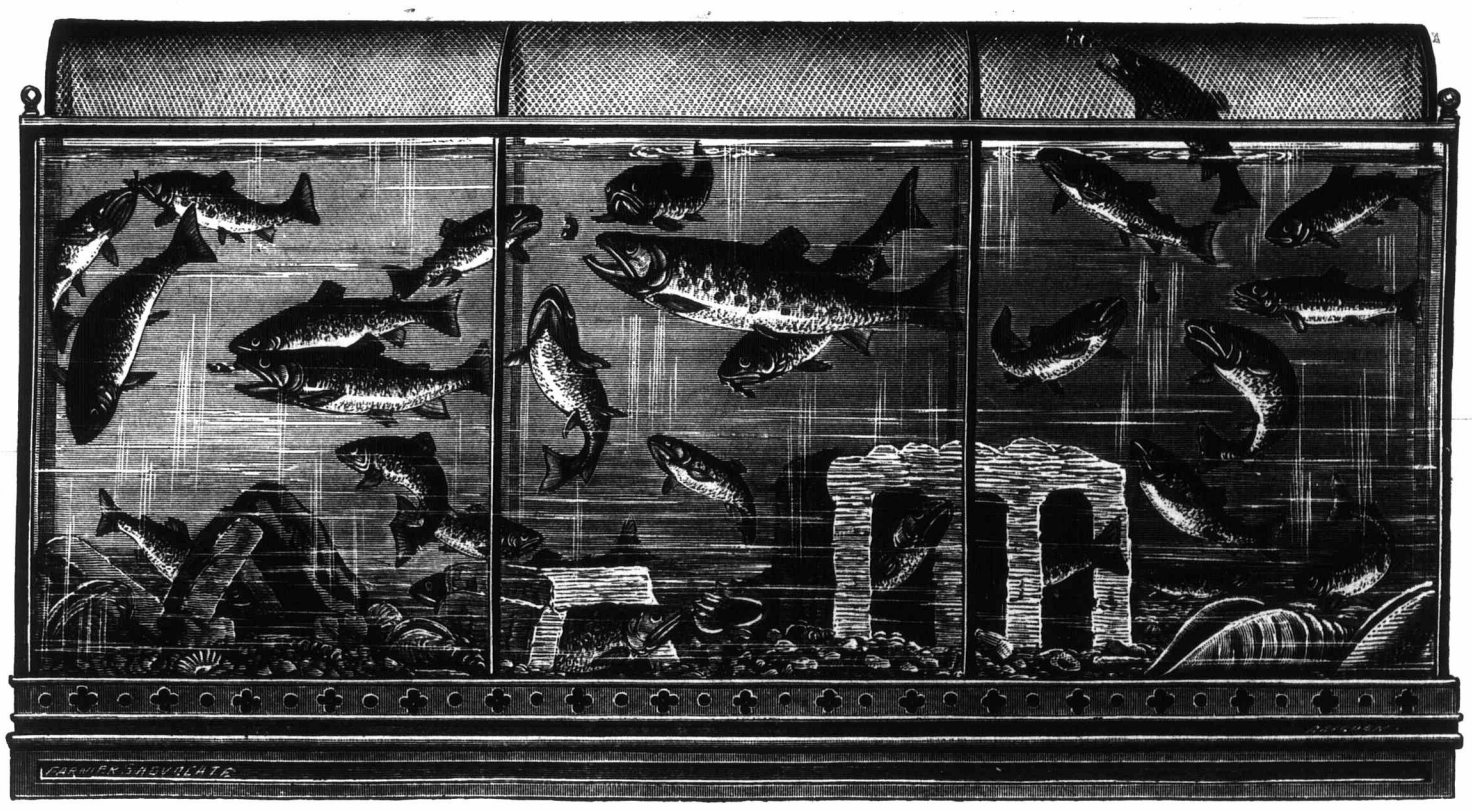
Water.

If you want health, if you want thrifty stock, or if you want to make the best butter and cheese, look out for a stream where brook trout have thriven, and if the ruthless destroyer has cut the trees away and made the water too warm, plant trees and re-stock the brook. We have destroyed too much of our timber and too many of our brook trout and trout streams. They will repay us to protect, re-plant and re-stock. They will be money in your pockets, pleasure to your eyes, and the admiration of all who see your creek, your trees and your brook trout.

Water is as necessary to life as the air we breathe. Everybody knows the danger of living where air is impure ; the densely packed, unaired rooms and dwellings of cities impregnated with sewer gas, tell their tale on the faces of many citizens. The low, damp lands and the stagnant waters of many localities are great blessings to medical men, patent medicine vendors and undertakers. But injurious as the effects of bad air may be, bad water is far more so. Whole droves of cattle have been swept away in one part of America we have visited from drinking impure water. The impure water that the bovine tribe is too often obliged to drink imparts disease and death to the human race, and often the individual is ignorantly but surely drinking that which results in early demise.

When traveling in some parts of this continent we always take a supply of lemons or some other antidote to counterbalance the evil effects of bad water. This precaution we deem necessary, as at one time we were brought near unto death's door from drinking water when traveling. We can always do well enough on the food we eat, but the water procurable is often disgusting and dangerous. Even in the great metropolis of London, England, we several times, and in several places, put the glass to our lips, but rejected the warm, nauseous stuff with disgust. Bad water is a great incentive to allay our thirst with other liquids, and thus create an appetite for them. This habit becomes pleasant and fashionable, but the results on the morals, health and happiness are appalling.

This city (London, Canada) is supplied with water of a very pure quality; in fact, in no other city have we ever drunk such palatable water, and we very much doubt whether in any city we have visited such water exists. Brook trout (to our palate the most delicious fish that swims) will live and thrive in this water, and brook trout will only live in the purest cold, running spring water. The gold fish will live and thrive in stagnant, warm water abounding in filth and garbage. In a window not far from our office is an aquarium in which a large number of beautiful brook trout are kept ; we often stop in passing to admire the beautiful and varied colors and the graceful movements of these charming pets. A trout of 1 lb. or 1½ lbs. is reckoned by the angler a very fine fish, and many a stream swarming with trout produces none nearly as large.



BROOK TROUT AQUARIUM, LONDON, ONT.

The head of the common trout is large, the eye large, and the general form symmetrical. Their various colors are really marvellous, as some of the trout have been taken from different localities, and it is remarkable that these fish will partake of the color of the bed of the stream in which they live ; for instance, from a brook having dark earth at the bottom, the trout are of a darker shade than from a brook having a lighter colored bed. We presume this is a natural gift, to prevent their being too easily observed by their enemies. We saw these pretty creatures partake of their Christmas dinner, although not given them until after that day, as they do not feed them every day. Small pieces of fresh beef were thrown into the water. The dormant fish soon knew what was going on, for even fish will fight and steal ; if you doubt it, and are an admirer of sharp practice even in connection with beauty and purity, just see these trout if you have an opportunity of doing so. We have been so much attracted by them that we have had this engraving made, and believe it will please you, although we cannot bring out the beautiful, bright and varied colors, nor the graceful motions, gambols, fights or love-making which may all be seen in the beautiful free show.

Look out for swindlers.

Organize a Farmers' Club.

Go more largely into the cultivation of small fruits.

A Vermont farmer plants a sunflower seed instead of a pole to each hill of beans. The sturdy stalk answers for a pole, and the seeds supply an excellent feed for poultry.

Farmers constitute the majority of the people; if they are willing to keep still and let themselves be robbed, they have no one to blame but themselves. If they will determine to have things otherwise and so express themselves at the polls, they can easily amend anything that is wrong.—[New Eng. Farmer.

The bark at the lower extremity of some trees in the orchard is sometimes apt to split in the spring, caused by alternate sunshine and cold winds. This is specially liable to happen when the stems of the trees are long. The best remedy is to protect the affected part of the tree by placing a shingle or piece of board upright in the soil near the trees between the split and the sun, acting as a protection during the hottest part of the day.

Government officials are tramping the country amongst the farmers disseminating the theory that the fertility of the soil can be restored and maintained by the manure from stock fed from the produce of the farm alone. This may be a popular theory, but if these officials would aim at truth instead of transient popularity, they would fare better in the end. We shall thoroughly discuss this question.

The most untrustworthy of all agricultural literature is found in the government reports, and yet there is a plan on foot having for its object the dissemination of more of it. Where will the evil end ?

Family Circle.

THE CHILD KING.

"Will you go over to Nankin with me to-morrow?" asked kindly Mrs. Brown of her tired and hard-working neighbor, Mrs. Peters. "You know the association meets there, and husband's got to go, so I thought you would like to drive over and see your Aunt Betsey."

"Oh, I should, ever so much! but Dell has got to go to a picnic to-morrow afternoon, and it'll take me the whole of the morning to iron her white dress. I've just got it washed and hung out; and then there's biscuit to make; she wants em fresh. And"—

"O mother!"

The words came before the door flew open, and in bounced a young girl of 12, with the assurance and poise of 40, dressed in a braided costume that implied a week's hard work for somebody, her light hair banged on her low forehead, cheap rings and bracelets shining on her fingers and arms, a gilt necklace round her sallow throat, over a frill of imitation lace, her whole air pert, tawdry and disagreeable. She barely nodded to the minister's wife, and went on in a loud voice, "Say! Lucelle says I'd ought to have some little pies and some cream cake besides the biscuit, so I run home to tell you."

Poor Mrs. Peters' face fell.

"I don't really see how I can, Dell. It's quite a piece of work to make them cream cakes. I can make some pie crust and fix it up for the pies."

"Oh, but I want the cream cakes! If you make 'em to-night, the pies can wait till morning."

"But, Dell, I've got to get the breakfast and wash the dishes and make the beds and sweep, and then iron your white dress, and you know there's sights of work on it, and you want the run esfluted, and—"

"Oh, can't you get up real early!"

Mrs. Brown was indignant. A wise proverb cautions us not to put a finger between the bark and the tree, but she did not remember it. "Why don't you make the cakes yourself, Della?" she said. "When I was your age I could make cake. Can't you?"

Della stared at her scornfully; Mrs. Peters put in her word at once.

"Oh, I haven't never asked it of her. Mrs. Brown. Dell's real delicate, and she loves to go; children ain't children but once, and I want for her to have a good time. I'll fetch it round somehow, Dell, dear. You tell Aunt Betsey, won't you, Mis' Brown, how that I wanted to see her, but I really couldn't get over. I thank you just as much."

Mrs. Brown offered no further remarks. There was a tone of aggrieved motherhood in Mrs. Peters' voice that warned her to keep silence; she said good-bye, and pursuing her walk up the street, rung the bell at a handsome house standing in a well-kept yard, that told its own story of wealth within. She was admitted to the parlor and warmly welcomed by Mrs. and Miss Vincent, a wife of middle age and her sister-in-law.

But hardly had she begun to talk with her friends when the door opened, and in rushed four children of various ages, who after nodding at the visitor, or reluctantly shaking hands, at once monopolized the conversation. In vain did Mrs. and Miss Vincent struggle to be heard.

"Oh Mary! I was trying to tell Mrs. Brown"—

"Well, ma, I've got to go; I said I would, and"—

"Oh, yes! You told Will Johns you'd go, and you've got to! Just like a girl! I'd"—

"Milly, dear, I want to ask Mrs. Brown"—

"Well, aunt Sue, I must go if Mary goes, and there's that picnic, and"—

So it went on, a perfect Babel, which no present effort could silence, it had been so long the habit in this house for the elders to listen and the children to speak.

Mrs. Brown made only a short call; she went but a few steps further to the house of a desolate woman, a widow, who had lost her two children a month since with diphtheria. Mrs. Tenny burst into tears, as she came into the room, and Mrs. Brown put her arms about her tenderly.

"My poor friend!" was all she could say.

"O Mrs. Brown, I can't, I can't be reconciled to it. I miss them every second. Hal used to come in so bright from school—his first year to go, you know; and Susy was always at my knee or in my lap, when she was awake; and in the lonesome nights I used to listen for their soft breathing, and put out my hand to feel Susy's little tender face in the crib, and thank God I had them still, if their father had left me."

There was nothing to say to this; as of old, the mother wept for her children and refused to be comforted. Mrs. Brown tried another course.

"They were not both taken at once!" she asked.

And the mother ceased for the moment to answer her, and with the pathetic garrulousness of grief entered into detail.

"No, Hal came home from school, one day, so tired, and said his head ached.

And I tried to make him keep still on the sofa, but he was restless, and he would go out in the sunshine to see the chickens; it was a hot day in May, and I couldn't make him keep a hat on; pretty soon he sort of crawled back into the kitchen and said his 'froat' was sore, and 'fings kep' goin' round an' round an' round.' Then I sent for Dr. Smith, and he gave me some medicine and a brush and told me to put it on the inside of his throat, and rub some liniment on the outside. But Hally wouldn't let me, and he scream[illegible]kicked so he choked up right away; I couldn't do it, it hurt him so, and he wouldn't let me if I'd wanted to.

"I meant to send Susy away, but she never would stay with anybody but me, the little precious! I never could make her. So she sickened next day, and there couldn't be anything done for her; there wasn't a day between them. And now—now—my house is like a grave all the time."

In the piteous burst of sobbing that followed, could Mrs. Brown speak the thought that filled her heart and say, "My friend, you have fallen into the pit that you have digged; if your children had learned to obey you in health, they might have been with you to-day?"

She could not, deeply as she felt it; the hour for counsel was past; she could only "weep with them that weep," and betake herself to the next call on her list, for Mrs. Brown was doing parish duty this afternoon.

Mrs. Tibbets was very glad to see her.

"And how are you all to-day?" asked the minister's wife.

"Oh, we're reasonable well, all but Nelly; she got thrown down at the rink last night, and sprained her ankle real bad. I've expected all along something like that would happen to her."

"Don't you think it is a bad place for girls to go anyway?" asked Mrs. Brown.

"Land, yes! But all the young folks are possessed to go, and you can't stop 'em. I wish to goodness the men that built that rink had been further! There's all sorts go there, and they talk to everybody, and get familiar-like with folks you wouldn't have them know no more than nothing. There's about as much harm to a rink as there is to a rum hole, but it makes about as much money; so you can't stop 'em; nobody can't."

"Why do you let your girls go there?"

"Mercy! I can't help 'em goin'. Girls is as headstrong as pigs; the more you pull 'em one way, the more they go the other way. I've always wanted my children to have a good time whilst they was young; there's trouble enough ahead of 'em, so I've let 'em run, and tisn't to be expected that I can up and stop 'em now."

There was no controverting that point, so Mrs. Brown said no more.

The next house was Mr. Meeker's. Mrs. Meeker stood at the window, watching with anxious eyes her oldest son, who was experimenting with a new bicycle.

"Oh, Mrs. Brown," she said, looking over her shoulder, "come in do; I can't go away a minute from the window, I'm afraid Charley'll fall and hurt himself. He's been crazy after a bicycle, and Mr. Meeker didn't know how to get one for him—they're real costly—and I begged and begged him not to buy one, for I knew I shouldnt have a minute's peace while he was off with it; but the boy wanted it, and that's enough. What he wants he's got to have. We're behind with the taxes, and I'm fixing over my old clothes rather than ask John for a cent; but Charley's got his father's foot, as old folks say, and I don't know why he shouldn't have. Boys must be boys, you know, and I never did believe in making images of 'em, to do just so, and be prim and proper all their days. Oh, o-h! I thought he was off that time, but he wasn't. I do believe my nerves will be worn to ravelin's with that bicycle. Don't go!"

"I wont stay now, Mrs. Meeker. I know you want to watch Charley. I'll come some other time."

So, quite unattended, Mrs. Brown found her way to the door, and went on to the next house, where Miss Sophronia Packard lived all alone and took in sewing. Mrs. Brown made the usual civil inquiries, and then Miss Sophronia opened the conversation.

"I see you come from Mis' Meeker's; well I do pity that woman; she hasn't a minute's peace for them children; and here's Mis' Bunnell, next door, is just as bad, though she hasn't got but one; but her May is headstrong, now, I tell you. Why, she goes all the time! If tisn't a dance, it's a picnic, or a ride, or a sail. She's as impudent as a bumble bee, and as bumptious as a wren, but she isn't of no use in this livin' world, as I see, but to plague her ma. Why, t'other day, Mis' Bunnell found out that May was goin' over to Norwalk in a buggy, with a young feller' at eight o'clock in th' evenin', calculating' to come home by moonlight, betwix one an' two in the mornin,' and, naterally, she sot down her foot that May shouldn't go. She didn't know the feller and she knew it wasn't seemly for a gal of fifteen to go off that way with any young man, and so she told May; but, if you'll b'lieve it, Mis' Brown, that piece just put on her sack and bunnet, and walked right out of the door, and off with her feller! If I'd been her ma, she'd have got a locked door in her face when she come home."

"Oh, Miss Sophronia, do you think that would have helped the matter? A father's house ought never to be closed on a child, any more than our Father's, least of all when the child's faults are the results of the parents' folly and weakness."

"Well, mebbe there's something in that! But it does seem to me that something had ought to be done, when a girl flies right in her ma's face like that!"

"I'm afraid it is too late to do much at May's age but pray for her."

"Land! you don't suppose Mis' Bunnell thinks May needs prayin' for? Why, she thinks she's about as nigh perfect as they make 'em; she's clean eat up with that child—all the one she ever had. If you should so much as hint about prayin' for her, I guess you'd raise a muss right off!"

Mrs. Brown tried to control her face, but found it hard. Miss Sophronia's air of fine scorn was irresistible. She changed the subject, by saying:

"I am sorry Mrs. Phelps has gone away; I meant to call on her."

"Well, you can if you want too; she ain't gone," said Miss Sophronia in a very acrid tone.

"Not gone! Why, she had wanted so much to see her sister, I thought nothing would hinder her?"

"I know it, she hasn't seen Mis' King for three years, but Marian went and asked two girls, and the brother of one of 'em, to come this week and stay till after the First, and Mis' Phelps wasn't goin' to leave 'em there alone to raise hurdy; besides that, her hired girl ain't competent to do for company. But that's the fashion; the children rewl, now-a-days. I feel thankful to goodness every day that I wa'n't never beguiled into the married state, and I haven't got no youngsters a-walkin' over me, makin' a door mat of me! Not but what I might be like Miss Perkins, to be sure, if I'd had a nephew, thanks be to praise I ha'n't! But I stepped in there t'other day, and if that woman wasn't a-goin' round the keepin'-room on all fours' with her sister's boy astride of her back, and she a-sayin': 'O do stop, Sammy! I'm so tired! And he a-whippin' of her up, and a-screamin', Go 'long, hossy! go 'long hossy!' And she did go 'long, till I picked him up, with a jerk, and sot him down hard on the highest chair. My! didn't he holler! and wa'n't she mad! But I'm glad I done it!"

That night Mrs. Brown detailed what she had seen and heard in her round of calls, to her husband, as they sat together by the study fire. His face clouded darkly, but he did not tell her what heavy thoughts pierced the future, and saw, as in a vision, impending trouble for the land and the people that he loved. All that he did, when his reverie was ended, was to draw a deep sigh, and repeat, in melancholy tones, one text from the Scripture that was his counsel for both lives: "Woe to thee, oh land, when thy king is a child."

And let all the people say:

"Amen!"

How to be Happy, though Single.

BY THE AUTHOR OF "HOW TO BE HAPPY, THOUGH MARRIED."

We lately wrote a book which has been most favorably received, called "How to be Happy, though Married;" but we think that quite as much might be said on the possibility of single blessedness. Thousands of women, and even of men, cannot marry for one reason or another. Let them cultivate the contented state of mind of that old Scotch lady who said, "I wadna gie my single life for a' the double anes I ever saw."

People may admire the marriage state, and yet have their own good reasons for not entering it. Under the dying pillow of Washington Irving there were found a lock of hair and a miniature. Who will say that a man or woman ought to marry who treasures up such memorials, and thinks of all that might have been?

Impecuniosity is another reason for denying oneself the luxury of a wife. A mistake may, of course, be made as to the amount of money necessary for marriage. There are those who could drive a coach-and-two, but waiting for a coach-and-four, they are carried into the desolation of confirmed bachelorism. That man, however, is much to be pitied who leads a pure life and whose "I can't afford it" is no mere excuse. Let him continue to work and economise, and before long he will have—

"A guardian angel o'er his life presiding,
Doubling his pleasures, and his cares dividing."

To this angel he should be true in anticipation, remembering how Cornelia, mother of the Gracchi, advised her unmarried sons to keep themselves pure, so that all the blessings of a virtuous home might one day be theirs.

What is one man's meat may be another man's poison. To some persons we might say, "If you marry you do well, but if you marry not you do better." In the case of others marriage may have decidedly the advantage. Like most other things, marriage is good or bad according to the use or abuse we make of it. The applause that is usually given to persons on entering the matrimonial stage is, to say the least, premature. Let us wait to see how they will play their parts.

And here we must protest against the foolish and cowardly ridicule that is sometimes bestowed upon elderly men and women who, using the liberty of a free country, have abstained from marrying. Certainly some of them could give reasons for spending their lives outside the temple of Hymen that are more honorable than the

motives which induced their foolish detractors to rush in. Some have never found their other selves, or circumstances prevented the junction of these selves. And which is more honorable, a life of loneliness or a loveless marriage? There are others who have laid down their hopes of wedded bliss for the sake of accomplishing some good work, or for the sake of a father, mother, sister, or brother. In such cases celibacy is an honorable, and maybe a praiseworthy, state.

Most girls have not been trained, like their brothers, to useful work, and have always have been told that woman's first, best occupation is—to be a wife. To which it may be answered—

"Most true; but to make a mere business of marriage,
To call it a 'living,' 'vocation,' 'career,'
Is but to pervert, degrade, and disparage
A contract of all the most sacred and dear."

Many a girl looks on marriage as a vocation, who has never thought of the duties it involves; and I think for a woman to fail to make and keep a happy home is to be a "failure" in a truer sense than to have failed to catch a husband.

To make "old maid" a term of reproach has mischievous results, and causes many an ill-assorted marriage. Girls have been hurried into marriage by the dread of being so stigmatised, who have repented the step to their dying day. The sacredness of marriage, and the serious responsibilities it brings, are either ignored altogether, or but lightly considered, when marriage is represented as the only profession for women. There is no truth in Brigham Young's doctrine that only a woman *sealed* to a man in marriage can possibly be saved.

Let mothers teach their daughters that although a well-assorted marriage, based upon mutual love and esteem, may be the happiest calling for a woman, yet that marriage brings its peculiar trials as well as special joys, and that it is quite possible for a woman to be both useful and happy, although youth be fled, and the crowning joys of life—wife and motherhood—have passed her by or been voluntarily surrendered.

Who does not know "old maids" who are the light and the stay of homes darkened by sorrow and tottering by the strokes of affliction? "Auntie" is respected and beloved by her nephews and nieces, for she has ceased to think of her own happiness, and is always planning for the good of others. She is not soured by celibacy, but sheds upon all who come in her way the sweetness of good temper and the light of practical wisdom. She has not a home of her own, but, as Wesley did, she takes the world for her parish, and becomes the neighbor of every one who needs her help. Can a life be anything but beautiful which is lived—as are the lives of many unmarried women—in the spirit of these lines?—

"Question not, but live and labor,
Till your gaol be won;
Helping every feeble neighbor,
Seeking help from none.
Life is mostly froth and bubble;
Two things stand like stone—
Kindness in another's trouble,
Courage in your own."

The lives of many unmarried people are unhappy because they have failed to find an object in life; but when they are more fortunate, their love and powers may be drawn out quite as much as those of the married, by interesting work. They are married to some art or utility, or instead of loving one, they love all. When this last is the case, they go down into the haunts of evil, seek out the wretched, and spare neither themselves nor their money in their praiseworthy enthusiasm for humanity. Employment is a "perennial fire-proof joy" that will always make people happy, though single. If celibacy be an evil, remember what Jean Paul says of evil, that it is "like a nightmare: the instant you begin to *stir* yourself it is already gone."

No doubt it is difficult to find the work we like, but then the work we like is seldom the best for us. Those who prefer an honest work to no work need never be idle. The "spinster's sweet arts" are unselfishness, good temper, tact, and taste. Live for others. You have no idea of the value of kindness. Pleasure is very reflective, and if you give it you feel it, and pleasure which you give by a little kindness of manner returns to you with compound interest. It is related in the life of a mathematician, William Hutton, that a respectable-looking country-woman called upon him one day, anxious to speak with him. She told him, with an air of secrecy, that her husband behaved unkindly to her, and sought other company, frequently passing his evenings from home, which made her feel extremely unhappy; and knowing Mr. Hutton to be a wise man, she thought he might be able to tell her how she could manage to cure her husband. The case was a common one, and he thought he could prescribe for it without losing his reputation as a conjurer. "The remedy is a simple one," said he, "but I have never known it to fail. *Always treat your husband with a smile.*" The woman expressed her thanks, dropped a curtsey, and went away. A few months afterwards she waited on Mr. Hutton with a couple of fine fowls, which she begged him to accept. She told him, while a tear of joy and gratitude glistened in her eye, that she had followed his advice, and her husband was cured. He no longer sought the company of others, but treated her with constant love and kindness.

If it is necessary for a married woman to smile away unhappiness, it is much more so in the case of the unmarried. They must treat their friends with the smile of good humor. If old maids sometimes feel *de trop* in the world, and not much wanted by their acquaintances, it must be because they have not tact to please. You may not be able to leap into the favor of others, as the Duke of Grammont did, but you may get a hint which can be applied in other ways from the following anecdote:—The Duke of Grammont was the most adroit and witty courtier of his day. He entered one day the closet of Cardinal Mazarin without being announced. His Eminence was amusing himself by jumping against the wall. To surprise a prime minister in so boyish an occupation was dangerous. A less skilful courtier might have stammered excuses, and retired. But the Duke entered briskly, and cried out, "I'll bet you one hundred crowns that I jump higher than your Eminence!" And the duke and cardinal began to jump for their lives. Grammont took care to jump a few inches lower than the cardinal, and six months afterwards was Marshal of France.

Unmarried people who are so unfortunate that they have not to earn their daily bread should cultivate a taste for art and science. Nothing drives away *ennui* like a good hobby. On the wedding-day of the celebrated M. Pasteur, who made such extraordinary discoveries about germs, the hour appointed for the ceremony had arrived, but the bridegroom was not there. Some friends rushed off to the laboratory, and found him very busy, with his apron on. He was excessively cross at being disturbed, and declared that marriage might wait, but his experiments could not do so. The unmarried could wait more patiently for marriage, and be more happy should they never marry at all, if they would acquire a taste for art, science, and literature generally.—[Cassell's Magazine.

Minnie May's Dep't.

MY DEAR NIECES,—In the press and hurry of seeding, the garden is generally delegated to the women, and why not? I know of no more healthy or pleasant occupation. There is very little pleasure or profit, however, in digging and hand weeding a few beds, and I am sure many of you have arrived at the same conclusion. Allow your Aunt Minnie to assist you in planning a new garden this spring—but first, we must get the boys interested, as their hearty co-operation will go far toward making it a success. Don't be afraid of the undertaking as too hard; just imagine a garden containing an acre, planted, and kept in order by the women of the family (I know such a garden); but much less than that will answer our purpose provided it is large enough to be worked by a horse. Have a suitable plot manured, plowed, well harrowed and some drills made by the plow for early planting. We will have a good many rows planted with strawberries, so that by and by we may have an abundance of this delicious fruit (although not expecting a return this year); by keeping them clean and the runners pinched off, we have taken a decided step in that direction. Gooseberry and currant bushes, or slips of last year's growth, should be planted in rows far enough apart to admit of plowing and harrowing the strips of ground between. Rake the drills down fine and a little flat; plant onion sets and sow lettuce and onion seed, cress, etc., crosswise on the drill, in rows about nine inches apart, to admit of hoeing. If in the autumn our onions from the seed are only "thick necks," never mind, we will pull them, on a fine day let them wilt, tie them in bunches and hang up in a dry airy place; as sets next year they will attain full size; beets and other roots, in single rows and thinned out like a field crop. The remaining ground may be freshly drilled up, and corn and beans planted in hills on the drill, and when far enough through the ground, earth up with the hoe; put manure in the trench between two drills; rake the earth from both sides well over it. This bed may run the whole length of the garden, and be planted with cucumbers, melons, etc. By the time the vines are long enough to interfere with the "scuffler," little more weeding will be necessary; we must have cabbage, cauliflowers and tomatoes. The better way will be to raise our own plants, in order to have plenty to fill up vacancies, and it will be best to procure all our garden seeds from a reliable seedsman. And now we must subdue the weeds, not allowing them a breathing spell. The scuffler can be used between the drills, and a strip of grass may be left along each end of the garden for the horses to turn on; this may be cut green and fed to the cows. If we can't have our plot properly fenced just now, I think we will go on with the work all the same, trusting that this important matter will be attended to when the hurry is over. We hope that "our garden" may not be merely a dream of the imagination, but a pleasant reality.

MINNIE MAY.

For stains on white goods, dissolve one ounce of pure pearlash in a pint of soft water, and to this solution add a lemon peeled and cut in small slices; keep the mixture in a warm place for two days, then strain it, and bottle the clear liquid for use. A little of this poured on the stains will remove them; as soon as they disappear the cloth should be washed.

Work Basket.

KNITTED LACE EDGING.—Cast on 16 stitches. *1st Row*—Slip 1, 6 plain, increase 1, viz., by knitting 1 purl in the next stitch where the stitch following the "increase 1" must be knitted; 4 plain, increase 2, 5 plain. *2nd Row*—Slip 1, 1 plain, make 1, narrow, viz., purl 2 together; then make 1, 2 plain, narrow, make 1, narrow, make 1, narrow, 1 plain, make 1, narrow, make 1, narrow, make 1, narrow. *3rd Row*—Slip 1, 7 plain, increase 1, 4 plain, increase 1, 2 plain, increase 1, 5 plain. *4th Row*—Slip 1, 2 plain, make 1, narrow, make 1, 4 plain, narrow, make 1, narrow, make 1, 3 plain, make 1, narrow, make 1, narrow, make 1, narrow, make 1, narrow. *5th Row*—Slip 1, 7 plain, increase 1, 1 plain, increase 1, 4 plain, increase 1, 4 plain, increase 1, 6 plain. *6th Row*—Slip 1, 3 plain, make 1, narrow, make 1, 6 plain, narrow, make 1, narrow, make 1, 3 plain, increase 1, narrow, make 1, narrow, make 1, narrow, make 1, narrow. *7th Row*—Slip 1, 5 plain, narrow, 6 plain, narrow, 3 plain, narrow, 7 plain. *8th Row*—Slip 1, 4 plain, make 1, narrow, make 1, 4 plain, narrow, make 1, narrow, make 1, 2 plain, narrow, make 1, narrow, make 1, narrow, make 1, narrow. *9th Row*—Slip 1, 8 plain, increase 1, 3 plain, narrow, 1 plain, narrow, 8 plain. *10th Row*—Slip 1, 5 plain, make 1, narrow, make 1, 2 plain, narrow, make 1, narrow, make 1, 2 plain, narrow, make 1, narrow, make 1, narrow. *11th Row*—Slip 1, 5 plain, knit 3 together, 3 plain, knit 3 together, 9 plain. *12th Row*—Slip 1, 5 plain, alternate 7 times: make 1, narrow. *13th Row*—Slip 1, 6 plain, increase 1, 4 plain, increase 2, 9 plain. *14th Row*—Slip 1, 3 plain, narrow, make 1, narrow, make 1, narrow, 2 plain, make 1, narrow, make 1, narrow, 1 plain, increase 1, make 1, narrow, make 1, narrow, make 1, narrow. *15th Row*—Slip 1, 8 plain, increase 1, 4 plain, increase 1, 2 plain, increase 1, 9 plain. *16th Row*—Slip 1, 4 plain, make 1, narrow, make 1, narrow, 4 plain, make 1, narrow, make 1, narrow, 3 plain, make 1, narrow, make 1, narrow, make 1, narrow. *17th Row*—Slip 1, 6 plain, increase 1, 3 plain, increase 1, 4 plain, increase 1, 4 plain, increase 1, 8 plain. *18th Row*—Slip 1, 2 plain, narrow, make 1, narrow, make 1, narrow, 6 plain, make 1, narrow, make 1, narrow, 3 plain, narrow, make 1, narrow, make 1, narrow, make 1, narrow. *19th Row*—Slip 1, 8 plain, narrow, 3 plain, narrow, 3 plain, narrow, 7 plain. *20th Row*—Slip 1, 1 plain, narrow, make 1, narrow, make 1, narrow, 4 plain, make 1, narrow, make 1, narrow, 3 plain, make 1, narrow, make 1, narrow, make 1, narrow. *21st Row*—Slip 1, 5 plain, narrow, 5 plain, narrow, 1 plain, narrow, 6 plain. *22nd Row*—Slip 1, narrow, make 1, narrow, make 1, narrow, 2 plain, make 1, narrow, make 1, narrow, 2 plain, make 1, narrow, make 1, narrow, make 1, narrow. *23rd Row*—Slip 1, 5 plain, knit 3 together, 3 plain, knit 3 together, 5 plain. *24th Row*—Slip 1, 1 plain. Alternate 7 times: make 1, narrow. Repeat from 1st row until the required length of the edging is reached. The lower edge of this edging is finished off with crochet work. Make in every stitch of the edge 1 single or close chain stitch, 3 chain stitches, 1 close chain stitch. The upper edge of the edging is also finished with crochet work. Make 1 close chain stitch in every stitch of the edge. Make another row of close chain stitches and a third row of double crochet.

A pretty mantel can be made of pine wood painted black, the lambrequin or drapery fastened to the edge with brass-headed nails. Make your drapery of any plain dark cloth, have it straight and not more than five inches deep. Baste on one or more rows of velvet ribbon an inch and a half broad, and cover this with a network of coarse sewing silk in long stitches, using bright colors. Finish it with fringe. If you cannot buy fringe, make it, and this is a good way: Cut the material for your drapery deep enough for fringe and all, say nine inches; then with sharp scissors cut lower edge into strips four inches deep, and a quarter of an inch wide; prepare two more strips four inches deep in the same way; have them of contrasting colors; for instance, if your drapery is garnet, have one of blue and one of yellow. Fasten these strips underneath the fringe on the drapery, then take a bright colored coarse silk and tie these three fringes into little tassels, drawing the under colors forward to give a variegated appearance.

SOFA PILLOW.—The brightly colored silk neckerchiefs and handkerchiefs which are so much in use now, can be made into pretty coverings for sofa pillows, and the opposite side can be covered with serge or rep of exact shade of the handkerchief. The two parts are seamed together, and a small pillow made of feathers, wool wadding, or "excelsior," is put into it. Sew up the outside seam, and trim with cord and tassels. A very handsome pillow can be made by selecting a neckerchief which has a design in one corner only, and turn that corner back towards the centre of the 'kerchief and fill in its place with a triangle of black velvet; but those which have a brocaded border in two colors are the best to use.

Recipes.

(Kindly sent in by Miss Ferguson, Kingston, Ont.)

These recipes have been tried and found reliable.

ORANGES IN JELLY.—Boil six oranges in water until a straw will easily penetrate them, lift them carefully on a dish; boil half a pound of sugar in one pint of water, put the oranges in and let boil until they look clear, then stir in an ounce of dissolved isinglass, and let boil for a short time longer; take out the fruit carefully into your glass dish, and when the syrup is nearly cold, pour over them.

CHOCOLATE CUSTARD.—Break two sections of chocolate in small pieces, put into a pan with one quart of milk, stir until all is dissolved, stir in one tablespoonful of corn-starch, rubbed smooth in a little water; add one small cup of sugar, and let it boil for a minute, then stir in the well beaten yolks of four eggs, pour into a pudding dish and bake for half an hour. Whisk the whites of the eggs to a stiff froth, add two tablespoonfuls of sugar, spread over the top and brown lightly; serve cold or hot.

LEMON PUDDING.—Here is a recipe for a puddings, which has never been published before. Squeeze the juice out of three large lemons, after having grated all the yellow rind off; add four tablespoonfuls of sugar, and the well beaten yolks of three eggs. Take one pint of water and stir into it one tablespoonful of corn-starch, let it boil, and add the lemons, sugar and eggs, pour into a baking dish, and bake half an hour. Whisk the whites of the eggs to a stiff froth, add three tablespoonfuls of sugar, spread over the top and brown lightly.

A nice way to warm cold potatoes is to slice thin, and sprinkle lightly with salt and pepper, put a layer of bread crumbs in a baking dish, then a layer of potatoes, until they are all used, pour over a breakfast cup of milk, put a few small pieces of butter on top, and bake for an hour.

A substitute for macaroni in soup can be made as follows, and is much nicer. One egg, and as much flour as will make a hard dough. Roll thin as a six-pence, fold up in a small roll, and slice thin, dry on a plate, and put in a dry place; use when wanted.

MARBLE CAKE.—White part.—Three cups of sugar, one of butter, one of milk, whites of eight eggs, half teaspoonful of soda, one of cream tartar, essence of lemon or almond to taste, flour to make a thin batter; beat the eggs until light, cream the sugar and butter, add other ingredients, the soda and cream tartar dissolved in the milk.

SPICE CAKE.—Dark part.—Two cups of brown sugar, one of butter, one of molasses, one of milk, yolks of eight eggs and one whole one, one teaspoonful each of cloves, nutmeg and cinnamon, one of cream tartar, half one of soda; beat the yolks light, cream butter and sugar, add eggs, molasses and other ingredients, flour enough to make a rather stiff batter; put in the pan alternately a layer of dark and white, beginning and ending with the dark. Bake one-and-a half-hours.

RUSKS.—One and a half pints flour, half a teaspoonful salt, two tablespoonfuls sugar, two teaspoonfuls baking powder, two tablespoonfuls lard, three eggs, one teaspoonful each extract nutmeg and cinnamon and one pint milk. Sift together the flour, salt, sugar and powder; rub in the lard cold; add the milk, beaten eggs and extracts; mix into a dough soft enough to handle; turn out on the board; give a quick turn or two to complete its smoothness; break off into small pieces; roll them under the hand into small balls round and about as large as a small egg; lay in a well greased shallow baking pan very close together; wash over with a little melted butter and milk; bake in moderate oven about thirty minutes; when cold sift fine white sugar over them.

CROSS BUNS.—Put 2½ lbs. of sifted flour into a wooden bowl before the fire to warm; then stir, in ½ lb. of sifted sugar and a little salt, ½ a teaspoonful each of coriander seed and pounded cinnamon, a little grated nutmeg; cut into ½ pint of new milk ½ lb. of butter; then mix with the other ingredients three teaspoonfuls of yeast; stir this all well together; set it to rise; when risen form it into buns; handle it as little as possible; on each bun cut a cross with the back of a knife; bake on tins.

DESSERT.—An inexpensive and good dessert is made of one quart of sweet milk, two-thirds of a cup of uncooked rice, and a little salt. Put this in tea or coffee cups, set them in the steamer over a kettle of boiling water. Let it cook until the rice is almost like jelly. When cold turn it out of the cup. Serve with sugar and cream or with pudding sauce.

VENTILATION.—There is nothing so necessary to health as pure air. Sleeping and living apartments, and especially rooms occupied by the sick, should be well ventilated. A very simple ventilator, which allows a free current of air without producing a draught, may be made of a piece of inch board, four inches or more in width, cut to fit in the window casing. It should be long enough to preclude any draught entering on either side. Raise the sash and let it rest snugly on the top of the board. A free current of air will then pass between the upper and lower sash, and comfortably ventilate the room. In consequence of the liability of disease-germs to enter a dwelling through the sewer and drain pipes, care should be taken to have the plumbing of the house in perfect order.

How to be Beautiful.

It is quite proper, quite your duty, girls, to be as beautiful as you can. Of course, your features are unchangeable, but there is an every day beauty of demeanor that double discounts mere featural beauty. Suppose you are not endowed with a pretty mouth. Although you cannot alter its shape, if the lips be kept fresh and the teeth in perfect condition, you have made a great gain. If your mouth be large you can cultivate a classic repose of feature. Never bite your lips to make them red, or for any other reason. Bathe them occasionally in water with a little dissolved alum or borax, and apply glycerine and tincture of benzoine. This will keep your lips fresh. A good tooth beautifier is powdered sulphur, which is also a good preserver. It may be used daily. For occasional use, say once a week, the following is excellent: Pumice stone, one ounce; bicarbonate of soda, one-half ounce; powdered talc, one-half ounce. Fresh lips, clean, white teeth and breath, like frankincense and myrrh, will make up for many deficiencies in beauty of outline.

If the ear be big and obstructive, a loose arrangement of the hair or a few curled locks brushed carelessly back, will help the objectionable organ wonderfully. Never comb the hair tight back from an ugly ear.

As for the eyes, better leave them alone. Trimmed lashes often refuse to grow again. Dark eyebrows and lashes are a great promoter of beauty, and if yours happen to be lighter than your hair, especially if that is red, you might touch them lightly with a sponge dipped in black walnut bark boiled in hot water with a little alum, or apply simple walnut juice. The eyebrow may be given a slight arch and the fine line so much sought by simply pinching the hairs together between the fingers several times a day.

But it is through the complexion that you have the greatest scope for beautifying. If every pore of your skin is stuffed full of "lily white" you must expect those dreadful pimples and horrid black specks. The girl with the ugly skin must take a two or three mile walk every day; must wear shoes big enough for perfect comfort, and if the skin be thick and oily, must eschew fats and pastry. In the spring it would be well to try the sulphur remedy, and at the same time you may rub sulphur in a little glycerine on the face at night, washing it off in warm water and a few drops of ammonia in the morning. A little camphor in the water will remove all shine. And remember, girls, all face powders are snares and delusions.

TOE NAILS, INGROWING.—The ingrowing of toe nails may be caused by the wearing of tight boots or shoes, or by an improper mode of cutting the nails. Procure boots and shoes which will accommodate the toes and give the nails perfect freedom from pressure. Then scrape, with a piece or glass of a knife, the whole length of the middle of the nails, until they become tender. In this condition the edges of the nails are gradually withdrawn from the flesh, and the difficulty is removed. Toe nails should be cut straight across, or slightly concave. They should never be trimmed at the corners.

He—"You don't sing or play? Then I presume you write or paint."

She—"Oh, no! I'm like the young men we meet in society. I simply sit around and try to look intelligent."

Written for the Advocate.

Sweethearts.

Barefooted pair, we herded cows
In green Canadian meadows,
The fleecy, sailing summer clouds
Cast o'er the grass their shadows
Like falling snow, the cherry groves
With bloom were drifted over,
And all the sunny pasture fields
Where white with scented clover.
We curled dandelion rings
And fashioned basswood whistles,
And spent a time in robbing bees
Among the briers and thistles.
We gathered stones to build a house
And fence a mimic garden,
And placed our marbles made of clay,
Out in the sun to harden,
And then to watch the straying cows
From mischief, or mischances,
We climbed an elm's drooping boughs,
And rocked among the branches.
Long years have flown, this winter's night
My little playmate's sitting
Beside my hearth, a matron grave,
And busy with her knitting.
Sweethearts we've been and loving friends
Since in the warm June weather
We played in summer-scented fields,
And herded cows together.

—[MRS. WARWICK, Wingham.

Cultivate a Charitable Disposition.

In early life it is both natural and desirable for us to lay up stores of school lore for use in maturer years and make many bright plans for our future life. A vocation must be chosen, character and principles formed that after years do not often materially change, possibly our companion for life chosen, and with all these things gained and decisions made, in middle life we can well afford to dwell more upon what is beyond this world and also plan for a beautiful old age, knowing as we do the longest life has its end and that each day's experiences, or, rather, the spirit in which we accept them, adds a little bitter or sweet to the dispositions we shall have when we are aged, for these changes do not come at once, but as we live right along, cheerful and charitable, or suspicious and fault finding, so we shall be at the close of life's drama.

I can think of nothing more beautiful than a beautiful old age. We have it with us, and daily I see what a long Christain life has done for one who seems to have no thought for himself, no plans for the future, no strong hold on anything earthly, but just a sweet drifting along, looking out for everyone but himself, giving all possible lifts in the household machinery, honoring his Master in all the little things of his life, his very presence a benediction. Waiting for his Master's call, but helping everyone in his path as he waits.

In comparison with such a sweet old age, we sometimes see in other homes adding years bring only increased querrulousness and exacting selfishness, and of such we often hear the thoughtless remark, "No comfort to themselves or any one else." But if we close our eyes and imagine ourselves in their place; sensibilities sensitively acute in regard to ourselves, while faculties and powers, we unwillingly admit, daily fail; to see others fill our places and take up our much loved work; no longer any bright plans or ambitions ahead to see realized; clinging to life with all the tenacity of a will that through a long selfish life would never be brooked, and yet, realizing there is a general breaking up of all our powers and nothing left but only a fearful looking forward to death and dreading to die.

Imagining all this, cannot one have patience with those who have reached such a dreary old age? and while trying to soften their footsteps, grave-ward tending, bringing into their lives all little pleasures and interests possible, pointing them to the Saviour who has mercy for the aged as well as the young, yet, at the same time, trying to win for ourselves a cheerier, happier old age.

"But an old age serene and bright,
And lovely as a Lapland night,
Shall lead thee to thy grave."

CLARISSA POTTER.

The Importance of Cleanliness Around an Infant's Eyes.

Dr. Edward S. Peck, a New York oculist of high standing, says on this subject, in Babyhood:

Immediately after birth an infant should be kept secluded from the light; but within two days the eyes may be allowed some liberty in a lightened room; the direct rays of light should, however, be excluded from them for some days. Many infants are predisposed to gummy accretions and crust upon the lid-edges; in every case these should be removed with a little luke-warm water, to which a little borax may be added, by means of a small soft sponge, or a bit of old muslin; after which vaseline should be applied directly to the parts. As the child grows older and is taken out-of-doors, the exposure to the sunlight produces a tendency to an excessive accumulation of mucus between the lids and of crusts at the lid margins. The same rules should then be followed and cleanliness rigidly maintained. To neglect in this particular, more than to any other local cause, is due the vicious habit of styes in very young children. The glands secreting the oily substance, which is the natural lubricator of the lid edges, are apt to have the orifices choked with mucus with which dust may be caught up: a stoppage occurs, and a true stye forms. This is liable to be followed by a second and third one, producing not only pain to the little patient, but possible damage to, and distortion, of the lid. Catarrh of the tear-sac very frequently results from an uncleanly habit of the lids. In this connection it should be noted that "snuffles" and watery eyes often occur together; but, though depending usually on hereditary causes, both can be corrected, and such a view should always be taken by the mother and nurse.

Table Linen.

Always take the table cloths from the line while still damp, repeating the shaking and snapping process as long as the time and strength will permit. If allowed to become perfectly dry on the line there will be wrinkles in the table linen that it will be difficult if not impossible to iron out. Care must be taken as to how they are hung up in the first place. Do not let them be dragged all out of shape by hanging from a single clothes pin or being thrown over the clothes post, making a projecting corner that will be next to impossible to get out without wetting the cloth all over. When they have been thoroughly shaken join them evenly on a straight, firm line. Take care that the pins are clean, and the line as well. They should never be allowed to whip or flap in a very high wind. Fine linen is often seriously injured by this. A quiet day and a bright sun is the best time for doing up fine goods of this sort. Never dry them indoors or by the fire if it can be avoided. They cannot smell as clean, and have "the exquisite odor of clean clothes" that a famous knight of old preferred to all other perfume.—New York Sun.

In a small place a woman can't buy a caliker apron without the whole neighbors holdin' a inquest over it. Some think she orto have it, some think the set flowers on it is to young for her, and some think it is extravagant in her; and then they will all quarrel agin whether she orto make it with a bib, or not. The reason why men's talk, as a general thing, is better than wimmen's, is because they have bigger things to talk about.—[*Samantha Allen.*

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES.—The softening air, the waters a-glitter in the sunshine, the chirp of the robin, and the caw of the crow, remind me that April has come, and that I promised last month to speak to you of the weight of individual character. *The weight of individual character*—what does that mean? It just means this, my dear nephews and nieces, that none of you can or do live without exercising a greater or lesser influence upon those with whom you come in contact. In my last letter I referred to your influence in school especially, because I presumed that most of you were going to school during the winter months. Now, although considerable depends upon the teacher of the school, much is in your power to make your school marked for the courtesy and good behavior of its pupils. A word for the maintenance of good order from an older pupil may nip in the bud a petty insurrection; kindly advice from one's superior in *height* and knowledge is not often taken amiss by the average twelve-year-old, although he may give no apparent heed at the time. I don't know whether schools now-a-days have scenes like the following, but in those days when "Thomas, hold out your hand, sir," was as familiar as "Thomas, please rock the cradle, if it won't disturb you in your writing" is now, they were of frequent occurrence: Seven-year-old and eight-year-old have been playing, and have had a fall-out. Seven-year-old shows his spurs and boldly announces the fact that he can "lick" eight-year-old; eight-year-old, of course, would like to see him try it, and the fun commences. A blow or two, and the combatants have an admiring crowd of spectators. "Pitch into him, youngster; that's it." "Oh, you're no good—you're scared." "I'll bet on the small boy." "I'll bet on you, spider." "Go for him now." "Good boy." "Don't give up." "You're the stuff." "Lots of sand there," is the orchestral accompaniment to the performance. (For the credit of my nieces, I must say that in the olden days, if the girls interfered at all, it was to attempt to make peace; not unfrequently Johnnie's sister was crying in one corner, and Tommy's three sisters in another.) The fight over, the pugilists, neck by neck, run to the pump before the teacher comes.

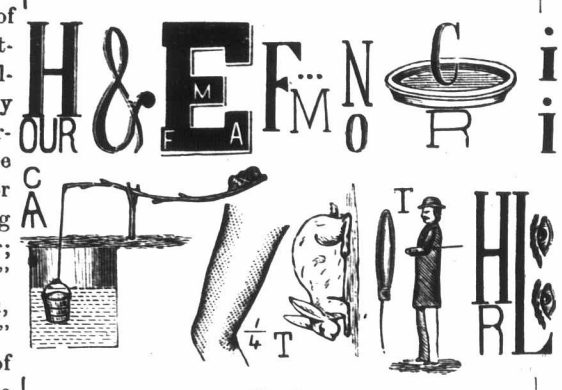
Now, if such scenes occur, I think older ones can do much to inaugurate a better state of things. A word to each, and, in many instances, the threatening parties will run off good-naturedly to play, and if you want to be useful in a quiet way, show the wee would-be Sullivans that it often requires more courage *not* to fight than to fight. He is not the coward who dares to do right. Do not think, however, that I am taking the position that a boy should never use the weapons nature gave him. I think there are times when a man or boy is justified in using his fists, and that right manfully. Suppose a great bully of a boy takes delight in teasing and abusing one who is not able to resist him. A good sound thrashing is what he wants, and honor to the one that gives it to him. Some mean specimen of human nature, which, for convenience sake, is called a man, speaks rudely to a lady on the street, or annoys her with impertinence; where is the brother or friend who could calmly permit such to be continued? In ordinary circumstances, however, I think, in nine cases out of ten, it is more manly to leave fighting to those animals for whom it was intended. The following I consider good advice on the question of fighting: "As to fighting, keep out of it if you can, by all means. When the time comes, if it ever should, that you have to refuse or accept a challenge to fight, say 'No,' if you can, only take care why you say 'No.' Its a proof of the highest courage, if done from true Christian motives. Its quite right and justifiable, if done from a simple aversion to physical pain and danger. But don't say 'No' because you fear a *licking*, and then say it is because you fear God, for that's neither Christian nor honest."

Well, well, I've filled my page and but little said, except about fighting. I would fain speak of *honor* and *honesty* and *truthfulness* and kindred qualities in your dealings with your teacher and with one another, for these, my dear boys and girls, are the only things that will last. You will forget when the school-door closes upon you, the tributaries of the Amazon, and the height of the Himalayas, but the *principles* fixed at school will abide a life time. Ever stand, then, upon the platform of Right, contend manfully for the truth, and make your school and your country better because of your presence in them.

UNCLE TOM.

Puzzles.

1—ILLUSTRATED REBUS.



NO. 2.

DIAGRAM.

o***	To wish for.
*o**	Careless.
**o*	To cleanse.
***o	Chopped meat.
**o*	To obtain.
*o**	Small insects.
o***	A cut.
*o**	A small particle.
**o*	To increase in size.
***o	An expression of sorrow.
**o*	A man's name.
*o**	Limbs of the body.
o***	A valley.
*o**	A small coin.
**o*	A temple.
***o	Animal's tusk.

The letters indicated by the zeros form the name of a noted writer. J. M. BARTLETT.

3—CROSS.

DIAGRAM.

* * *	To work.
* * *	Noise.
* * *	Evening.
* * * * * * * * *	Picking.
* * * * * * * * *	A city in England.
* * * * * * * * *	A grate.
* * *	An animal.
* * *	A Spanish title.
* * *	Antique. HENRY REEVE.

4—DROP VOWEL PUZZLE.

-f y-- w-sh t- b- m-s-r-bl- y- - m-st th-nk -b--t y- -rs-lf, -b- -t wh-t y- - w-nt, wh-t y- - l-k-, wh-t r-sp-ct p- -ple - -ght t- p-y y- -, wh-t p- -pl- th-nk -f y--, -nd th-n t- y- - n-th-ng w-ll b- p-r-.

HENRY REEVE.

5—HIDDEN NAMES OF MEN.

(a) A crab elevated himself upon a stone.
(b) Did the odor escape from the bottle.
(c) He said it was a most awful load for a horse.
(d) The lion elapsed in time to save his life.
(e) It was neither a woman nor a man who did the deed.
(f) The martingale was lost years ago.
(g) You are a rich, ardent fellow.
(h) He said to lease the farm and house.

WM. WEBSTER.

6—TRANSPOSITION.

Elt ont bontiima comk rihte flsueu otli,
Heitr oylmeh soyj nad ydtsnei orseveb:
Orn drgueanr rhae hwtl a fdsdiaiuln lseim,
Hte htsro ubt lmpsei nlaasn fo eht orop.—Ygar.

EMMA WADDELL.

7—LOGOGRIPH.

Of following words the last letters take,
Or initials will do, and that little word make.
A giant of old, both famous and bold—
Which way you like spell the name;
Uniformity dull is the next word to cull,
Still backwards and forwards the same;
From darkness to light it makes the countenance bright,
In spelling still follow the game.
When the sun has full power at the mid-day hour,
Spelt either way, tells its fierce flame.

AMOS HOWKINS.

8—DROP VOWEL PUZZLE.

Tr- - w-rth -s -n b- -ng, n-t s- -m-ng,
-n d- -ng - -ch d-y -s g- -s b-
S-m- l-ttl- g- -d—n-t -n th- dr- -m-ng
Of gr- -t th-ngs t- d- b- -nd b-.

ARTHUR T. REEVE.

9—CHARADE.

A party bound for pleasure, one fine sunny day,
Donned all their furs, and to the SECOND joyously sped away.
They came to a place marked "Dangerous," but did FIRST TOTAL take,
Till struggling hard in water cold, they found out their mistake.

ADA ARMAND.

10—DROP VOWEL PUZZLE.

- g- -d w-rd -s -n - -s- -bl-g-t- -n, b-t n-t t- sp- -k -ll r-q- -r-s -nl- - -r s-l-nc- wh-ch c-sts n-th-ng.

ADA ARMAND.

Ada Armand sends the riddle given below, which she has found in an old magazine, and asks if any of her cousins in the ADVOCATE can give the answer:

A handless man a letter did write;
He who read it had lost his sight;
The dumb repeated it, word for word,
And deaf was the man who listened and heard.

Answers to March Puzzles.

1—
WEASEL
EASEL
LEASE
SEAL
SALE
ALE
L

2—
S
ACT
SCAPE
U APE R
ANN E TOE
UNDERGROUND
NET R END
R RAT D
RACES
TEN
S

3—
P A S T E
A G A I N
S A I N T
T I N G E
E N T E R

4—Often.

5—
W I L F U L
O C T A V O
R E C K O N
D A R I N G
S H R U F F
W A R B L E
O R D E A L
R A S C A L
T O M A T O
H A L L O W

6—The Farmer's Advocate.

7—Hearts that are large are always lone,
They never manifest their best,
Their greatest greatness is unknown,
Heart knows a little, God the rest.

8—
W
E E L
D U S K Y
D E T E R
I M M I X
N E I G H
G E N E T
C O S T S
A S T E R
K N E E C A P
E M B R A C E

9—Oats, wheat, corn, barley, rye, bean, peas.

10—Tip-top.

11—How much a dunce that has been sent to Rome
Excels a dunce that has been kept at home.

Names of Those who Sent Correct Answers to March Puzzles

Drusilla A. Fairbrother, Annie C. Rothwell, E. A. Manning, Arthur T. Reeve, Adolphus B. Fichett, Mary Morrison, Ada Armand, Louisa F. Redmond, Mary E. Hunt, Emma Waddell, Gertrude Pomeroy, Helen Cornell, Annie M. Lackie, Hugh Barrett, Amos Howkins, A. Russell Boss, Wm. Webster,

Henry Reeve, J. M. Bartlett, Maggie S. Canfield, A. C. Whittaker, D. M. Carstairs, Tillie Herrett, Ida B. Armes, Robert Wilson, Emma Dennee, Wm. H. Whittaker, H. A. Johnston, Wm. B. Anderson, Dora Switzer, Eulalia E. Farlinger.

Stock Notes.

Mr. Wm. Hodgson, of Brooklin, reports the demand for Cotswolds to be much better than it was a few years ago.

Messrs. Banks & Hilt, of La Porte, Ind., have purchased the imported Clydesdale Stallion Pickwick, whose illustration appeared in the November issue of this journal. We hear the price paid was $3,000.

The Hon. M. H. Cochrane, of Hillhurst, P. Q., has forwarded his catalogue of Shorthorn cattle, which will be disposed of by auction on April 28th. This is a very important sale and should be well attended. See advertisement in another column.

Another fine horse has left Middlesex. Mr. G. A. Routledge, of Lambeth, has sold his fine carriage horse Rysdyk jr., to Peter McCrae, of Centerville, P. E. I. We trust he may prove himself as popular as a stock producer there as he has in this county, as many of his colts now command high figures.

PERCHERON HORSES.—The greatest number of Percheron horses owned and offered for sale by any one establishment in America at the present time, is the Island Home stud at Grosse Isle, Wayne Co., Michigan, Savage & Farnum, proprietors. Those of our readers who contemplate the purchase of a horse or mare for breeding purposes, should write them at once for catalogue and all information desired. Address them Savage & Farnum, Island Home Stock Farm, Detroit, Mich.—Advt.

Messrs. M. Cook & Sons, Aultsville, Ont., write that they have lately made some important additions to their herd of Holsteins, and also some sales from it. Among the additions is the noted bull "Sir Archibald," the leading prize winner at the Industrial and Provincial Fairs in 1885 and 1886; "Jennie B. 3rd's Barrington," got by the celebrated bull "Barrington," and out of "Jennie B. 3rd," a very handsome yearling; "Hamming 3rd," out of "Hamming," with a 99-lb. per day milk record, and by "Neptune jr.," son of "Neptune," the most noted Aaggie bull in America. The sales are: "Lord Byron," who has so long stood at the head of their herd, to J. C. Bowen, Fraserfield, Glengarry, who keeps over 100 cows. "Val Jumbo," to D. M. Macpherson, Lancaster, President of the Eastern Ontario Dairymen's Association, and the owner of over 60 cheese factories. Both of these gentlemen are well known throughout dairying circles, and the significance of these sales to the Holstein's reputation as a practical dairyman's cow can be seen. "Lord Byron 8th" to T. R. Lyons, Waterville, N. S., over 1,000 miles to the east.

AYRSHIRES.—We are in receipt of a neatly bound volume (474 pages) containing the pedigrees of Ayrshire cattle registered in the "Canada Ayrshire Herd Record"—the name given to the book. It contains 21 pages of an introduction, giving the history of the Ayrshire breed, and other valuable information. In our correspondence columns we publish a letter which we received from the President, Mr. Wm. Rodden, Plantagenet, Ont., who has taken an active part in searching the pedigrees and keeping them free from adverse criticism, and he has succeeded in presenting to the Ayrshire breeders of Canada a volume of which they may feel proud. The work is purely a farmers' undertaking, uncorrupted by government or other influences, and is a specimen of what they can accomplish when they put their minds to work. This is the first enterprise of the kind started in Canada, but, judging by the manner in which the Government have muddled other herd books, great damage may accrue by the rival Government concern. The Ayrshires deserve greater prominence than they have received, and it would be a great loss to the farmers of Canada if a split takes place in the organizations. Every lover of Ayrshires, and all intending purchasers, should send for a copy of the Record.

NEW ADVERTISEMENTS.

ADVERTISING RATES.

The regular rate for ordinary advertisements is 25c. per line, nonpariel, or $3 per inch. No advertisement inserted for less than $1. Special contracts for definite time and space made on application.

Advertisements unaccompanied by specific instructions inserted until ordered out, and charged at regular rates.

The FARMER'S ADVOCATE *is the unrivalled advertising medium to reach the farmers of Canada, exceeding in circulation the combined issues of all the other agricultural publications in the Dominion. Send for an advertising circular and an estimate.*

SPECIAL NOTICE.

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