Soils and Crops

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Clean Cows and Clean Milkers.

Healthy cows secrete healthy milk. Bacteria and dirt get into the milk after it is drawn from the cow or in the process of milking. The cow is not the guilty party. Milk does not come from the cow entirely free from bacteria, because it is impossible to keep the teats of the cow sterile; however, we can keep them clean and reduce contamination from this source. The ducts of the teats and the body temperature of the cow afford ideal conditions for the bacteria to multiply and, the best we can do, the lower ducts of the teats will contain a considerable number of bacteria. By using the first few jets of milk to wash out the ducts, the milk that goes into the pail will be practically free from bacteria. If proper care is taken at this stage of production, the few bacteria which get into the milk from this source are of but little consequence.

On the other hand, cows that have local diseases of the udder may give milk which at times is contaminated with the bacteria which cause this disease. There is a well-founded opinion in medical circles that such germs can live and pass into the body of the user and cause the same disease as the cow was affected with. This shows us that tuberculosis of the udder may readily be transmitted to human beings, or to young stock. Milk from unhealthy cows should never be used by human beings, or to feed young stock on the farm. No matter how well the other requirements are met, if the cows producing the milk are not all in good health we fail.

After proper precautions in milking we are confronted by other troubles. First, it is exposed to dust and dirt in the stable, which consists largely of dried manure and urine from the floor. The cow is not a particularly clean animal and the same materials that are found on the floor will be found, in a greater or less degree, dried upon her flanks, belly and tail. If the long hair on the cow's tail, flanks and udder are not clipped and brushed and the udder washed the movements of the cow and milker set in motion a rain of this bacteria-laden dust and the swishing of the cow's tail only adds to the trouble.

The dried excrement dust is rich in organic matter, and loaded with bacteria from the intestines and urinary passages of the cow, which thrive and multiply on the food thus given them. By adhering to this solid dirt they get into milk and find ideal places to grow and multiply. When we drink such milk we take in many of the former inhabitants of the cow's stomach and intestines. The thought becomes repulsive when we remember that the cow may be throwing off tuberculosis bacilli before the disease appears elsewhere. There is greater danger in milk being contaminated from this source than before it leaves the udder. Such bacteria cause serious diseases when taken into the human stomach and intestines. Dried excrement from the cow's body will cause this kind of contamination and undoubtedly plays even a greater part when the cows are kept in a filthy, dust-laden stable so common on dairy farms.

Hay and straw dust will give rise to no very serious diseases, but it will tend to hasten the souring of the milk, and cause various bacterial growths that will impart a disagreeable odor and taste to the milk. Such dust is as much out of place so far as clean milk is concerned as the other. Lactic acid germs are always present where conditions are right for their growth and development, and while they do not affect the sanitary qualities of the milk, they do affect its keeping qualities.

The milkers and handlers of milk in the dairy rooms are a prolific source of contamination. Unclean methods of milking and handling of the products afford opportunities for the pollution of the milk by disease organisms, as well as dust and dirt that adheres to the milker's hands and clothing. Here is where such disease bacteria as typhoid, scarlet fever and diphtheria get into the milk. Milk as it comes from the healthy cow does not contain these bacteria. They come from the outside after the milk is drawn from the cow. Any person who has been attending a sick person can not work among cows or in the dairy room without being a source of danger to all who use the milk from such a dairy. Typhoid, diphtheria and scarlet fever outbreaks without number prove this point with their deadly results.

In the care of dairy utensils there is still further chance of contamination. This trouble is not from bacteria that commonly adhere to these utensils but from those introduced in handling and washing. Washing and caring for the dairy utensils is very exacting from the standpoint of cleanliness and the quality of the water used. A supply of bacteria-laden water which will leave some of the bacteria on the utensils is an insidious source of danger to consumers of milk. When the milk goes into these utensils there is a fresh supply of these bacteria ready to thrive and multiply on their new supply of food and they grow and multiply with disastrous results. If typhoid germs are in well-water they will have a chance to contaminate any milk that goes into the utensils after they have been washed in such water. Numerous other kinds of bacteria such as those that cause ropy, colored and slimy milk are frequently in well-water that is used in washing the dairy utensils.

Cooling the milk immediately after it is drawn from the cow will retard the development of bacteria and the more the temperature is lowered the more the bacterial growth will be retarded. Milk that is promptly reduced in temperature to forty degrees Fahrenheit, and held at that temperature until ready for use, will keep for a long time. When the milk is shipped to the city the trouble is invariably with the morning milk, which goes into the cans without being properly cooled. In the fresh milk the bacteria soon exceed that in the older milk that has been properly cooled. Cooling the milk does not kill any of the disease-producing bacteria or the lactic acid bacteria, so that it can not take the place of cleanliness in the production of milk. All of the bacteria present in cold milk will become active as soon as the temperature conditions become favorable. Cleanliness is of first importance and cooling is next.

Many instructive and entertaining articles have been written on the subject of clean milk, and if all of this advice could be carried out, a practically clean product could be made. But the success of such a plan involves expenses that would work hardship upon many of the producers at the present time. This is not saying that good milk cannot be made at present prices, but to show that the dairymen who have a few cows can make clean milk without having any very elaborate equipment. He can keep his milk clean by simply giving attention to the few simple details of handling the milk and the small expense involved will require but a small outlay of time and money. Among the essentials of clean milk I would name a healthy cow, milked in a clean stable, by a clean milker and a clean covered pail, and handled only by clean and healthy attendants in a clean dairy room and put into clean shipping cans and immediately cooled down to forty or fifty degrees and held at that temperature until ready to be shipped. By clean and sanitary milk I mean only such a degree of cleanliness as outlined in this article, and which does not involve expenses that are entirely out of reach of the dairyman's means. Healthy cows and cleanliness will give milk that is bacteria free. Cold will keep it in this condition. We can not get sanitary milk from cold, dirty milk, or from warm, clean milk. Both factors are essential to success.

Most of the dirt which gets into milk falls into the pail during milking. A large part of this dirt may be kept out by the use of a small top or partially covered pail.

In producing clean milk it is not more knowledge that we need so much as it is the desire to do decently the things we already know. It is easy for the scientist to tell us how to keep harmful bacteria out of milk, but in our every day work we are doing pretty well if we succeed in keeping out something that is called by a different name.

Corn Borer Causing Serious Damage.

Owing to the extensive spread of the European Corn Borer in the Province of Ontario and the States of New York, Pennsylvania and Ohio, in 1921, fifty official entomologists and agriculturists of Canada and the United States recently met at Sandusky, Ohio, and St. Thomas, Ontario.

It was recognized that the natural spread of the insect and its establishment over large areas, makes extermination impossible and it was agreed that efforts be directed to check further spread so far as possible and to promote the speedy development of practical control measures.

The conference adopted the following methods of control, which have been found of value:—

(1) Cut corn close to the ground and as early as possible.

(2) Ensile entire crop wherever possible, and this should include all waste from canning factories.

(3) Shred or cut cornstalks before feeding, since this kills many borers and promotes consumption of the fodder.

(4) Uneaten corn stalks, including corn stover in field, lot or barn or parts of stalks should be completely plowed or burned before May 15th. Such material should not be used for bedding or thrown into manure.

(5) Fall plowing, thoroughly done, especially early, kills many borers. Heavy rolling prior to plowing is suggested.

(6) Burn weeds and grasses in or near infested corn.

(7) Early planted corn is most likely to become infested; consequently, somewhat later planting usually results in relatively less injury.

Fighting Quack Grass Without a Hoe.

One of the farmer's problems is to get a crop that he wants, avoid a crop that he does not want, and get out on the right side of the ledger. One of the methods of getting rid of such pests as thistles and quack-grass that has been suggested is to put a cement pavement over the place and keep it there for a few years, or as a cheaper substitute: cover the land with tarred paper till the existing plants are smothered out, all of which seems paying too much, assuming that the desired result could be obtained.

Another method, not involving much use of the hoe, and which looks good on paper, however it might work out in practice, has been suggested, viz., to seed the plant to alfalfa and crop the alfalfa till the weeds are choked out. If that would work it would seem hard to beat; but, like the story of the Swede who wanted his chum to jump from the dock to the ferry, and suggested that he might make it in a couple of jumps, there might be an initial difficulty in getting the stand of alfalfa.

Perhaps such suggestions may look like the cogitations of a man too lazy to work, hunting for some easy way; but if such men really find the easy way they are public benefactors. If they fail they are called dreamers. We judge by the results. Fact is, to be honest, none of us care to do work for nothing.

But to get back to the subject, we all start out in the spring, hoe in hand, or with some more effective instrument, resolved to keep the land clean this year. But by the time the days get hot and the weeds come fast, they begin to get the better of us, and soon the battle is lost again for us and won by the weeds. No one feels this difficulty more than the mail-order farmer, who is compelled by force of circumstances to accept such results as he can get from others. But even for the man on the job it is no easy trick. To any who are interested in getting results of this kind, the following experience is recited:

Last spring we decided to put in some sunflowers for silage on a plat that had quite a patch of solid quack-grass on it; and by such cultivation as could be obtained we tried to hold the quack back till the sunflowers got going, and it looked for a while like a losing game; but fighting one weed with a more vigorous and thrifty one is pretty good logic, and surely the reader will admit that the sunflower is a hustler. Well, pretty soon the sunflowers were reaching up higher than the quack could; and unlike corn, the broad leaves of the sunflowers left no spaces between for the sunlight to get down to where the quack was, and the groundlings began to look rather pale but still there.

Then came the second part of the play. The sunflowers were then about six or eight feet high and fairly stocky. As a method of getting rid some of the quack without laying off from the haying, we turned the sheep into the field. They immediately began turning the quack into mutton without charge, picking only the lower leaves of the sunflowers that would soon fall off anyway, and doing little other harm. This done, they were turned out. Now the ground looks pretty clean, without any labor expense to get it, and we hope the quack will not be so robust next spring.

Sand or gravel is better bedding than straw for shipping hogs. Straw heats.

The Autumn o' the Year.

When the leaves are turning red,
And the long hot days are over;
When the silo's full o' corn
And the barn is full o' clover;
When potato diggings on
And the husking time is near—
I kind o' like the rush o' things
In the autumn o' the year.

Then we roll out in the morning
Long before the rising sun,
Ere the breaking of the day
Have our early chores all done.
The griddle cakes are baking
And the cook is full o' cheer—
I kind o' like the mornings
In the autumn o' the year.

When the twilight shadows quicken
And the evenings grow apace,
And we form the family circle
In a kind o' homely grace,
With papers, books and fancy-work
The passing hours to cheer—
I kind o' like the evenings
In the autumn o' the year.

Now the silver threads appearing
On the heads o' loving wives,
Tells us that the years are passing
And it's autumn of our lives;
That the time of our departure
And our gathering in is near;
Still we hail with growing pleasure
The autumn o' the year.

Inspection of Fruit.

Of late years great improvement has taken place in the handling and classifying of fruit in Canada intended for shipment. Twenty-five years ago there was danger of our losing our export trade, particularly in apples, owing to carelessness, first in sorting and next in packing. In 1901 the Fruit Marks Act was passed by the Dominion Parliament, its object being the elevation of the standard of the commercial output of fruit. The administration of the Act fell to the Fruit Branch of the Dominion Department of Agriculture. Eight inspectors were appointed whose work was confined almost entirely to ports of export. Testimony as to improvement was almost immediately forthcoming from brokers and in market reports. For eleven or twelve years the work was practically confined to the docks at Montreal, St. John, and Halifax, and to the large consuming centres like Toronto, Winnipeg, Regina, Calgary and Vancouver. In 1913 additional inspectors were appointed, and a year later the system of inspection had been extended to all commercial fruit-growing districts. This year no fewer than sixty inspectors have been working among the growers and packers, not only inspecting the fruit after packing, but also givng instructions in the proper methods of picking, grading and shipping, thus preventing loss in marketing and protecting the consumer. If fruit shipped is found not up to standard, the packer is notified and given a demonstration in grading. If the grade is not lowered by the packer, the inspector may mark the package "below grade" or place the proper grade mark thereon. If a shipper requires it, he is supplied with a copy of the official report referring to his fruit. Inspectors are also authorized to inspect cars, thus insuring prompt settlement of disputes between shipper and consignee. Experienced traffic men are stationed at several points to give advice on long distance shipments; complaints of improper loading or handling are investigated; improved methods of car loading are demonstrated, and advice given on distribution.

The Welfare of the Home

PLAY-UTILITY OF THE CARDBOARD BOX

By Mrs. Richard K. Thomas

Have you a card-board box in the house? If you have two, all the better, a half-dozen, better still, for whether you are a mother with one child or a half-dozen, ranging from six months to twelve years old, you will never find yourself at a loss when the old toys pall, or the day is rainy.

Of course the box must have qualifications; and a few accessories are necessary, according to the ages of your children. The accessories are so simple that any household may have them or the children may make them.

As early as six to twelve months, baby tires of his rattle. Give him the lid of a clean white box, or make two slits and tie his rattle to it. It will never cease to amuse him anew. Do not forget the qualifications, clean and white. Then if he puts it in his mouth it will do him no harm.

In his second year the child will enjoy a whole box or several boxes, which he can take apart. Also give him a large lid, into which his toys may be piled and turned out again.

The child of two or three years begins to want accessories. A string attached to a box makes it into a fine wagon or coach. No wheels are necessary. Pulling and carrying are the first activities suggesting themselves to a child and a little girl likes a few covers with the boxes, such as clean cloths to make a bed for dolly.

With the new experiences of the fourth and fifth years which are going to be reproduced continually, the box gains additional value. A half-dozen boxes joined with strings makes a train, a few spools provide wheels and a smokestack. A large box and a few small ones make a tea table and chairs. The painted engine and the real tea table may have lost their charm. The box toy is your alternative.

At the pre-school age a pair of scissors, at your suggestion, and a few paper fasteners, which you help adjust, awaken new possibilities. Boxes of less stiff and heavy cardboard are more adaptable to the scissors. Wagons with wheels that turn, or tables and chairs with legs are a result. One big box in which to put the furniture serves as the doll house. The suggestions that follow the idea of a "house for dolly" will be amply forthcoming from the children themselves.

With another and another year, while hands grow better trained, possibilities widen rapidly. All kinds of furniture (made without your assistance), rows of houses, stores, a whole community in fact, may be the outcome. Your big boys and girls can find endless amusement indoors or out, making their own accessories, and collecting the boxes themselves.

Further suggestions are unnecessary. They are for the children themselves to make. You will find they are able to make them much more rapidly than you can yourself.

What I wish to impress upon you who are mothers or even you who know children whose play materials are limited, is the value of weighing the "play-utility" of an article before throwing it away. Do not discard things which hold possibilities for the traning or entertainment of your child. And save, at least, the cardboard box.

THE SUNDAY SCHOOL

OCTOBER 16.

Paul Writes to the Christians at Corinth. 1 Cor. 1: 10, 11; 13: 1-13. Golden Text—1 Cor. 13: 13.

Connecting Links—We are fortunate in having one lesson this month from Paul's great Epistles. There is a wealth of interest and instruction in these letters which our International Series almost entirely misses. The mistaken idea that every lesson must contain a story, or be based on a story, leads to the neglect of very much of the finest literature of both the Old and the New Testament.

In connection with this reading we should review once again the story of Paul's coming to Corinth in his second missionary journey, and his experiences there, and the story of what happened in Ephesus on his third journey. For it was from Ephesus that this Epistle was written in reply to letters and personally delivered messages which he had received from his friends of the Christian fellowship in Corinth.

We recall, therefore, how Paul first came to Corinth, about the year 51 A.D., after having been driven by persecution from Philippi, and from Thessalonica, and from Berea, and after a discouraging experience in Athens. We recall his loneliness, his discouragement, his weakness, his distress of mind, and how he was comforted and strengthened by cheering news brought him from Macedonia by his fellow-workers, Silas and Timothy. After they came and in reply to messages which they brought, Paul wrote his letters to the Thessalonians, which are among the earliest writings of the New Testament, and in which he tells something of these experiences (see 1 Thess. 3: 1-8; compare 1 Cor. 2: 1-5.) Three years or more later he is at Ephesus, and there receives such communications from Corinth as lead him to write several letters, two only of which (or possibly also part of a third) have been preserved.

1: 10-11. **"That there be no divisions among you."** It can hardly be doubted that Paul would be now, as then, an advocate of Christian unity. He had heard, he wrote, that there were divisions and contentions among them. There had been various Christian teachers and leaders with them after Paul's departure, and the parties had grouped themselves under their respective names. So there was a party of Paul, another of Apollos, another of Peter (—Cephas), and another which called itself the Christ-party. Just what the differences between them were we do not know, and it probably does not much matter. They seem to have argued on the ground of the superior excellence, or wisdom, or eloquence of their teachers, or upon the ground of baptism by one or another of them. Paul urges their oneness and fellowship in Christ. He points to the helplessness of the world's wisdom to save men, and to the fact that the very gospel which they have received is esteemed foolish and offensive by Greek and by Jew. There is in it, unquestionably, he says, a profound wisdom, but not the wisdom of that age, nor such as would divide the followers of Christ. He urges also the fact that they, the Apostles, whom the Corinthians would make heads of their respective factions, were not seeking such places of exaltation. For the gospel's sake they were poor, they were persecuted, they were ridiculed and despised. "Even unto this present hour," he said, "we both hunger, and thirst, and are naked, and are buffeted, and have no certain dwelling place; and labor, working with our own hands." They bring wealth, and power, and gladness to others, but are denied these things themselves. How foolish then to make their names the symbols of division and strife.

13: 1-3. **"And have not charity."** Paul deals with several questions, in this Epistle, which were of prime importance to the young Christian society. They were chiefly social questions, about some of which he saw clearly that there might be honest differences of opinion. He counsels patience, self-control, thoughtfulness for others, and above all love (charity). Of the three fundamental Christian virtues, faith, hope, and love, he puts love first. Without it all else is vain. Love crowns and completes the others, and is itself the "bond of perfectness." Division, strife, quarrels about custom and usage and form, and name, will vanish at the magic touch of love. Eloquence without love is but soulless sound. Prophetic gifts, insight, knowledge, even faith, are nothing without love. Almsgiving, martyrdom, are of no account if love be absent.

For love "suffereth long, and is kind." Love is patient, kindly, not envious, not puffed up with vain pride, gentle, unselfish. Love does not readily take offence, sees good and not evil in the acts and words of others, is made glad not by the discovery of error, but by the finding of the truth. Love is strong, to bear, to believe, to hope, and to endure. It "never fails," other gifts and accomplishments fail and pass, but not love.

"That which is perfect." Love is compared to that which is perfect. Knowledge and the gift of prophecy are both partial. Love supersedes them both. He who loves is as the grown man who has "put away childish things." He is as one who, with unclouded vision, looks into the face of God. He anticipates heaven. His heart is clean. By loving he keeps God's law and is like God.

Application.

The man in whom dwells the love of Christ "thinketh no evil" or "taketh no account of evil." This is one of the surest signs of a loving heart just as the reverse is the sign of an evil heart. When the weary camel falls in the desert the vultures sweep down upon it and tear it to pieces. When a man or woman falls into sin, there are those who immediately condemn and say, "I told you so." Love takes the kindly attitude. Love is quicker to detect virtues than vices. It notes the odor of flowers, quicker than the odor of carrion. When a man's character is in doubt, love gives the accused the benefit of the doubt.

The eyes of love will see goodness and virtue when others fail to find anything but faults. Look at the different way in which people think of children. One outsider gives his view of a neighbor's boy and what a view it is! There never was such an idle, mischief-making, good-for-nothing boy since the world began. But just listen to that boy's mother talk about him and, Oh, my! you'll almost be looking for his wings. She sees, she knows, she understands; and just because of her love she recognizes splendid qualities which the fault-finder never thinks of. Love is not blind, the eyes of love are the only eyes that really see.

Encouraging Nature Study

One day last spring, a little girl asked me if it were true that robins liked to eat other things than worms. I replied that robins would eat fruit when they were thirsty if they could find no water.

"Oh, just when they're thirsty," she exclaimed in a tone of surprise. "Then I had better give them a basin of water, because father gets terribly provoked at the robins when he sees them in our cherry tree or in the strawberry patch."

I told her that in the strawberry patch robins were much more likely to hunt the grubs and cutworms that injure the roots of the vines than to eat the strawberries, but that they did like cherries. I asked her if she would like to make friends with the birds and fix a place in her garden where they could drink when they were thirsty or bathe and splash about in the warm weather. She was delighted with the idea of making something useful and wanted to know how to build a bird bath. I gladly promised to help her make one, and accordingly I went to her home one morning soon after our conversation. Together we gathered several baskets full of small stones from a vacant lot near her home, then we selected a spot in an open space in her garden where we set up a pyramid about three feet high. After we had finished it we filled a big flower-pot saucer with water and placed it on top of the pyramid.

When the warm weather came the birds used this bath so much that the water had to be changed several times a day. But the pleasure of watching the different birds that came to the garden to quench their thirst and splash about in the cool water more than compensated for the slight trouble of filling the bath. The other members of the child's family became as much interested in their feathery friends as the little mason who had built the bath, and the practical father observed with satisfaction that his fruit trees were less attractive to the birds.

Butter Scoring Contests.

This is the third year of the Dominion Educational Butter Scoring Contest conducted by the Dairy and Cold Storage Branch of the Department of Agriculture at Ottawa. Last year and the year before four creameries in each province contributed a fourteen pound sample each month from May to October inclusive for the competition. This year six creameries in each province are competing, a different creamery each month from May to October sending in a sample. The scores for the first three months, May, June and July, of this year show Manitoba and Alberta leading with an average of 96.7 points, Quebec next with 96, Nova Scotia following with 94.5, Saskatchewan with 94.3, British Columbia with 94.2, Ontario 93.7, New Brunswick 93.6 and Prince Edward Island 93.3. Manitoba leads in flavor with the others according to score except that British Columbia is eighth and Ontario ninth. The average per cent. of salt added at churning was 2.37 pounds, the average per cent. salt in the butter was 1.45. Testing shows that from 1 to 1¾ per cent. salt is about right for the export trade. In the opinion of the judges, the texture, incorporation of moisture, and salting, so far this season, are more uniform than in previous contests. The average per cent. of moisture in the butter, it should be stated, was 14.05. The color, however, varied from almost white to a deep June shade.

But God has made no better things
In all the stars that rise and set
Than life that grows by cherishing
And cannot falter or forget.

'Tis with our judgments as our watches, none go just alike, yet each believes his own.—Pope.

Most people overestimate their sorrows and undervalue their joys.