

Soils and Crops

Address communications to Agronomist, 73 Adelaide St. West, Toronto.

The White Grub in Eastern Canada—Methods of Control.

The Dominion Entomologist reports that from information gathered, particularly by Mr. H. P. Hudson of the Entomological Laboratory, Strathroy, Ont., it is expected that injury by the white grub will be effected this year in Eastern Canada. This important insect has been receiving much attention during recent years. The complete life cycle of the insect requires from three to four years. In association with studies on the life-history of the common kinds of white grubs, these observations have been made on the crop rotations followed on farms where the grubs have been decidedly injurious, and also on farms where little or no injury has occurred. As the insect spends the greater part of its life in the soil, where it is not possible to treat the pest, it has been found that almost complete control can be obtained by following a short crop rotation in which grubs, beetles or a mixture of the same shall not occupy the land for more than two years, and preferably not more than one. In infested fields where grubs are present measuring from one-half to one inch in length the following crop rotation has been found to give almost complete control—

First year: plant the infested field to clover and seed to clover.

Second year: clover hay crop. Plow under the clover sod in the spring of the third year, and plant the land to corn or potatoes.

Fourth year: plant the land to oats and re-seed to clover.

From the above rotation it is seen that the hay crop only occupies the land one year, and that with every four years two crops of clover are grown. This plan, besides giving practical control, will maintain the land in a high state of fertility. Similar procedure should be followed in breaking up an old pasture, except that the sod should be fall plowed and worked as frequently as possible.

If pigs are allowed a free run of badly infested pasture land, they will root out many of the grubs and materially help to control the pest. Domestic poultry feed readily on white grubs, and should be encouraged to follow the plow as much as possible. Black birds, crows and other birds, as well as skunks, also feed on the grubs.

Best Feeding Rations for Young Chickens.

As a preliminary step in the study of the nutrition of poultry the Central Experimental Farm at Ottawa made a test with twelve pens of forty-two young chickens last year. These birds were fed for a five-week period, during which time the weekly gain in weight was carefully noted. The annual report of the Farms for that year states that the basal ration in this experiment consisted of finely ground corn, wheat and oats and finely ground bran, shorts and cornmeal. Pen No. 1 received the basal ration only, the rations in the other pens being supplemented by one or more feeds, e.g., greens, eggs, meat, and milk. Pen No. 1, the poorest, lost 31 birds or 10 per cent, and gained 5.26 ounces per bird; while in Pen No. 11, which had a ration similar to No. 9 but had milk to drink, the mortality was 7 birds, but the gain of 5.87 per cent, was the highest per average. The relative value of these four feeds can be well shown by a comparison of the results when they were fed singly in addition to the basal ration. Pens 2, 3, 4, and

The Dairy

Dairymen buy milking machines for one of three reasons, for all three reasons. First, because they realize a milker will save them labor if they do the milking themselves, or labor hire if they have many hands. Second, the milking machine saves time. Third, a first-class milking machine milks the same way every day, and the treatment which the cows receive is not dependent upon the whim or humor of a hired man. The three motives, in short, are time saved, labor saved, and the good effect on cows, or increased milk production.

In my particular case, all three of these items were duly considered, and I made up my mind that it would be economy for me to buy a milking machine that would accomplish for me those three things. At that time I was milking only ten cows, but with the intention of increasing my herd, which I have since done.

I bought one of the best milkers and do not hesitate in saying it is everything the manufacturers said it would be. I have been using it twice a day now for the past nine months, and it has always given me complete satisfaction. The cows really seem to like it, and while I have not kept records, and have added new cows to my herd from time to time, I am firmly convinced that the cows I had before installing the milker are now giving more milk than they did when I milked them by hand.

It used to take an hour and a half to milk ten cows, whereas I now milk fourteen in about one hour. I have not had a case of teat or udder trouble since putting in the milker. The milker is easy to clean and keep sanitary. Its upkeep has been nothing, with the exception of a few rubber teat-cup liners, which expense is not worth mentioning. I follow the operating instructions to the letter and find that it pays.

Nine months' experience with mechanical milking has made me such a saving that I believe I am safe in saying that a good milking machine will actually pay for itself in a year. And if I had to go back to the old method of hand milking, I feel pretty sure that dairying would soon lose its attractiveness to me.

To forget wrong is the best revenge. Look out for squalls when the clothesline breaks.

The calendar should contain a month of Will as well as a month of May.

There was once a man who had to drive down a stake to tell where he left off weeding the onion row. However, after he got a farm of his own, that sort of thing came to an end.

Here's Father's Chance to Do Mother a Mighty Good Turn

By F. W. Ives

It was raining. The mud was deep and the roads badly cut up. So, when the top of the ridge was reached, the radiator of my car had boiled dry. A dim light through the misty dusk showed a farmhouse. I walked up to the door, where my knock was answered by a bent old woman who gave me two pails and said: "You will find the path to the spring around in back."

Now, that path wound down into a ravine about 80 feet below the house. The spring was fully 100 yards from the back door. When the top was reached, I was in about the same condition as the car—wet, muddy and hot. I was also filled with wonder as to why it was necessary to carry so much water up hill when so much was falling on the roofs of the buildings.

The old woman said she had lived there fifty years, that she had made at least three trips to the spring each day, that she always took two buckets, and that on washdays more trips were made.

The spring offered opportunity for a hydraulic ram and a plentiful supply of water. Likewise, there was the barn with a driveway on a knoll, a little higher than the ceiling of the house. What a fine place for a cistern! Plenty of water from the roof to more than supply all the needs with no pumping.

When I reached home that evening, some calculations showed the following facts: In carrying the water from the spring, this woman had walked a distance equal to that from Montreal to Vancouver and return, or one-fourth the distance around the world. In doing this, she had ascended and descended a mountain 150 times as high as the highest in the world. She had carried 1,100 tons of water all this distance.

All this vast amount of work was useless. A small expenditure of money would have put water in the house with no work on the part of the housewife. With average rainfall, 33 tons of water could have been stored in a cistern from the roof of the barn in the course of a year, or four times as much as the woman had carried up the hill. The spring was large enough for a water ram to force over 400 tons of water to the kitchen in one year. At the time this incident occurred, a ram, complete with fittings, and a kitchen sink, might have been installed at a cost of \$61 for materials. A cistern might have been constructed in the approach to the barn, and connected with a sink, for a total cost, including labor, of less than \$200.

Of course, \$200 is quite an expense. But does a farmer hesitate to purchase a binder costing \$200? The average farm uses a binder about six working days each year. The average binder lasts about six or seven seasons with our careless ways. This cistern, if built right, would last fifty years. The water will be used 365 days every year.

You say, "The binder is necessary in order to save labor."

Very well, I say, "Why should not the housewife save labor as well?"

When a young man is courting, he seldom asks "her" if she is willing to carry 1,100 tons of water to the kitchen, and a tank in a building or built into a bank is likely to be more satisfactory. The attic tank should all ways be set in a metal pan provided with a drain. Leaks, condensation, or breaks from freezing will then be taken care of automatically. All tanks should be provided with an overflow a size larger than the inlet pipe.

The amount of water that may be collected from a roof will depend upon the annual rainfall, the size of the roof, and the ability of the spouting and gutters to handle the maximum fall.

Calculating Cistern's Capacity. The mean annual rainfall in Ontario, for example, is very close to 35 inches. Of this, it is reasonable to expect that 25 inches may be conducted into a cistern. The loss of 10 inches comes through small showers, which rarely come from the roof, moisture absorbed by the roofing material, from evaporation, snow blown from the roof, and overflow of gutters in heavy showers.

To find the amount of water that may be collected from a given roof in Ontario, we would first measure the ground area of the structure. This area multiplied by the total rainfall will give the volume of water. Thus, a building 30x40 feet has an area of 1,200 square feet. Multiply this by the equivalent of 25 inches, or 2 feet, and we find a volume of 2,400 cubic feet, or 20,000 gallons. Now, if we are using water constantly, it will not be necessary to make the cistern to hold the full amount. An 8,000-gallon cistern will hold the water from any wet season in another Ontario.

The easier water is obtained the more it will be used, and that is exactly what we wish to lead to. In the average family where the water is carried, the daily consumption may be as low as two gallons for each person. With an unlimited supply, this quantity will be as high as 60 to 80 gallons. This water will be used for more frequent bathing, for better laundry work, cooking, washing and toilet purposes. It will be safe to compute the size of cistern or daily water supply, as the case may be, on a basis of 40 gallons each day for

to the force of gravity and the friction of the water passing through the pipe. The cost of installing a pitcher pump complete should not exceed \$15 in addition to the cost of the sink.

The Gravity Tank.

Another successful scheme is to mount a tank just above the sink. This tank, with a capacity of from 30 to 50 gallons, is pumped full by the men in the morning, and will hold enough for ordinary household purposes for one day. A force pump is usually necessary for this sort of work. On one farm the pumping is done by a hand pump each morning as the stock tank is being filled, there being a three-way valve installed at the pump. When turned in one direction, the water fills the house tank, and when turned the other direction the water goes to the stock tank. This is merely a modification of the gravity tank as sometimes placed in the attic. Its good feature is that of being inexpensive. It has the disadvantage of taking up valuable space in a small kitchen; also, if the water is used for drinking, it will get quite warm before the day is over. An insulating jacket will help to keep the water cool. The gravity tank has many applications. It may be located on a tower, in the attic or upper storey of the house or on an outbuilding, on a hill, in the bank approach to the barn, or on any other convenient elevation within a reasonable distance of both the supply and the house. The gravity tank may be filled in numerous ways, depending on local conditions. I have seen these tanks filled by force pump, by hydraulic ram, from a spring located on a hill above the tank, from the roof of the barn or house, and from a flowing well. The possibility of a gravity system should be carefully considered before installing an expensive mechanical water-supply outfit.

Where it is possible, the gravity system may not be the cheapest in first cost, but if the water is obtained by gravity or by hydraulic ram the cost of operation is very small.

Nor must the windmill be overlooked. Because the wind does not blow every day, many have abandoned the wind power in favor of gasoline or kerosene. With the prices of these fuels constantly rising higher, the cheap wind power must be seriously considered. The secret of a satisfactory water supply from wind-driven pumps lies in the gravity tank of a capacity large enough to tide over the calm days. Improved windmills, with ball or roller bearings, large oil reservoirs, and scientifically designed vanes and blades take advantage of the lightest breezes.

Gravity tanks of all kinds are susceptible to trouble. Freezing in winter is likely to burst the tank, especially one of small dimensions and square shape. In the case of the large tanks or cisterns for storing water over long periods, carelessness in closing faucets may result in the loss of the entire supply. This may be remedied by the use of good self-closing cocks. Freezing may be taken care of by careful packing of pipes and other exposed surfaces. A tower tank, as usually erected, is not very arduous, and a tank in a building or built into a bank is likely to be more satisfactory. The attic tank should all ways be set in a metal pan provided with a drain. Leaks, condensation, or breaks from freezing will then be taken care of automatically. All tanks should be provided with an overflow a size larger than the inlet pipe.

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The Welfare of the Home

The Favorite Child—By Frances A. Gray

It was the one unmarried member of our little group who quite innocently started the discussion. Something had been said about Hortense and her children and Grace remarked, "Isn't little Jack, Hortense's favorite child?"

The Sentimental Mother was shocked. "My dear," she exclaimed reproachfully, "no mother worthy of the name loves one child more than another! It's impossible for a mother to have a favorite among her children."

But the Practical Mother, as usual, brushed aside mere superficialities. "Nonsense!" she retorted, "it is impossible that any woman who has more than one or two children should not have a favorite, even if she never admits the fact to herself. Within one family the children will often differ very widely in natural disposition, temperament and every possible trait. If a mother has several children it is almost certain that there will be one among them who is naturally more congenial to her than the others." She paused, and then added with her surprising frankness, for she is one who openly admits what other people are apt to conceal and deny even to themselves, "Now my little girl is too much like me for us to get along harmoniously. She is quick and high-strung, too, and, frankly, she often gets on my nerves. But little Frank is exactly like his father—very calm and placid and easy-going, and I'm really much more fond of him."

There is something undeniably true in the point of view of the Practical Mother. It is possible that in one of her children a mother may find a more congenial and responsive nature than in any of the others. But the question is not whether it is natural for her to feel such a preference, but whether she is justified in letting it affect her attitude toward her children so that the fact becomes noticeable to other people and even to the children themselves.

In large families, we frequently see each grown person or two children in the family.

Where the roofs are not large enough to supply the needs of the family, the following scheme has been used: A basin about 40 feet square was made in the top of a rise above the level of the tank. The basin was paved with concrete reinforced with fencing, and sloped to a central drain provided with a trap to prevent entrance of trash. The water was conducted through a filter to the tank located farther down the slope, and from there was piped to the house. This supply nets about 30,000 gallons each year. The land upon which it was built was practically valueless for any other purpose.

The hydraulic ram is a possibility where a spring has a flow of three gallons or more per minute. A watch with a second hand, a vessel of known capacity, and a small dam to flow the water into the vessel are all that are needed to determine the flow. There must also be an opportunity to get a fall of three feet or more below the spring for the operation of the ram. Roughly speaking, the ram will elevate the water about ten times as high as the available working head or fall, and will pump about one-seventh of the water furnished it. The hydraulic ram is not a perpetual-motion machine, but it is a faithful servant. I have known a ram that operated for ten years without stopping, except when the spring failed in an extremely dry season.

Of the mechanically driven water supply systems there are many. A great degree of perfection has been reached by a considerable number of these systems.

A Special School for Farm Boys and Girls.

The Agricultural School at Kemptonville, Ontario, which concluded in April the first term of the regular course, is the outcome of an effort of the provincial department of agriculture to provide suitable educational equipment for young farmers in the eastern part of the province. The cost of the undertaking is being defrayed entirely from the Dominion grant to the province under the Agricultural Instruction Act. The regular two-year course has been planned along practical lines, and is calculated to make better farmers of those who take advantage of it. Twenty-five farm boys constituted the first student class.

In addition to the regular course, an extensive course of three weeks was put on during the winter months, which was attended by seventy-three boys. It is the intention another year to add courses for girls in domestic science.

The school has ample land for farming purposes attached to it, and the farm is not only proving to be a valuable object lesson, but is being made a centre from which good seed and good live stock is being distributed.

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parents who give a certain prestige and power to the eldest, permitting him to dictate to the whole family. Even more frequently we see parents, but especially mothers, who favor the youngest child, granting him greater consideration though expecting less from him than from the others; in short, petting him all through his lifetime. "Middle children" are seldom the recipients of extra favors unless in the case of an only girl or an only boy in a family of the opposite sex. I recall one little incident of a stepfather of one girl and five boys which I thought quite touching. He had a beautiful book which they all wanted very much but which they refused to own together. Naturally, he was uncertain to whom he should give the book, but finally, handing it to the third boy, he said, "I'm sorry I haven't a book for each one of you, but I think I'll give this to you, Harry. You aren't the oldest and you aren't the youngest and you aren't the only girl, so you don't get many extras." Then, patting him on the shoulder, he added with a smile, "Besides, I was a middle child myself."

Parents should watch very carefully to avoid partiality, for if they do not, the moment is sure to come when the children will discover it. As soon as any such partiality becomes evident, the favored child is apt to become "spoiled," and the seeds of that ugly quality of jealousy are sown in his sisters and brothers.

A child's nature should be allowed to unfold in the sunny atmosphere of love and trust. By studying his needs, parents can help to bring out the best in him, thus forestalling that coldness and lack of sympathy which we regret to see between parents and those adult children whose attitude toward life is embittered because, when they were young and affectionate, they were subjected to the chilling effect of the consciousness that a little sister or brother always stood first in their parent's affections.

ed. It is believed that from this centre was distributed, during the past year, more pure seed than from any other government institution in Canada. During the year the school held two sales of purebred stock, a plowing match, and several field days for junior farmers. Furthermore, the institution is developing as a real community centre. These activities taken together indicate that the school's influence will do much to benefit farming in Eastern Ontario.

Teaching a Calf to Drink.

A calf that is weaned from its mother should be kept without food for at least twelve hours, at the end of which time it will be hungry and will usually drink milk from a pail much more readily than when not hungry. Warm, fresh milk from the mother should be put into a clean pail and held near the floor, in front of the calf, which will generally start to nose about the pail.

Place one or two fingers in the calf's mouth, and draw the hand down into the milk as the calf begins to suck the fingers. The calf in this way gets a taste of the milk and often starts to drink without further trouble. If not, the process must be repeated. But sometimes the calf refuses, and force must be resorted to. The feeder, facing the same direction as the calf, straddles its neck and backs the calf into a corner. The pail of milk should be held in one hand and the nose of the calf should be grasped with the other. Place two fingers in the calf's mouth. The calf's nose is then forced into the milk.

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Promises of the New Generation

"Mrs. Scott promised to furnish sandwiches for the Parish tea this afternoon. It's time to commence serving and she hasn't sent them; they say she's gone motoring with friends—what shall we do?"

I hurried across the street to make sandwiches of what available material I could find in the house, and I reflected upon Matilda Scott and her kind. What, after all, was the reason that not only she but many other women could not be depended upon to keep promises and carry their legitimate share of responsibility? As I looked out of the window the answer came.

Sally Brown was passing with her mother. Her shrill entreaty reached my ears.

"Mamma, let me have another candy!"

"No, Sally, you promised you'd not ask for another when I let you have the last one."

"Just one more, please, Mamma!"

"No."

"Just one more, I'll not ask for another one, I promise."

"Well—just one more, then."

"Goody! One—or two."

How easily Sally slid out of that promise!

It seemed a trivial thing, perhaps, and yet such small promises and their keeping form the foundation for conscientious girlhood and boyhood, womanhood and manhood. If children are to possess a sense of responsibility they must be capable of responding to obligations, they must be trustworthy; and there is but one beginning offered for the development of these qualities, namely, the everyday occurrences in the life of the little child. It is a matter for eternal vigilance.

My mind slipped back to a call upon a young neighbor. It had not been a satisfactory call, due to the constant and unnecessary interruptions of the little daughter of the family.

"Sarah," her distressed mother pleaded, "you promised not to interrupt when Mother had friends."

"Yes, but Mother, just get it for me this time."

"No, I must not be disturbed."

Sarah swung on her mother's chair, buzzed in her ear.

"Sarah!"

"Mother, just this time!"

"Very well, just this time. Excuse me a moment, Mrs. — while I get it for her."

Then I recall a supper party where the hostess excused herself at least six times during the meal to ascend to the nursery in answer to the demands of her small son; explaining, "He promised he wouldn't call, but I think he must want something."

Wearily I spread the last sandwich and prepared to go back to the Parish house. Matilda Scott was probably spinning along country roads and saying complacently, "I promised to furnish sandwiches for the Parish tea this afternoon, but when this delightful invitation came I never gave it another thought." And twelve to one her friend nodded without a shade of disapproval.

At Sixty-Two.

Just sixty-two? Then trim thy hair light
And get thy jewels all reset.
'Tis past meridian, but still bright yet,
And lacks some hours of sunset yet.
At sixty-two
Be strong and true.
Scour off thy rust and shine anew.

'Tis yet high day, thy staff resume,
And fight fresh battles for the truth;
For while of age but youth's full bloom,
A ripper more transcendent youth.
A wedge of gold
Is never old;
Streams broader grow as downward rolled.

At sixty-two life is begun,
At seventy-three begin once more;
Fly swiftly as you near the sun,
And brighter shine at eighty-one.

At ninety-five
Should you arrive,
Still wait on God, and work and thrive.

Keep thy locks wet with morning dew,
And freely let thy graces flow;
For life well spent is ever new,
And years unclouded younger grow.
So work away,
Be young for aye,
From sunset breaking into day.

Things Divine.

These are the things I hold divine,
A trusting child's hand laid in mine,
Rich brown earth and wind-tossed trees,
The taste of grapes and the drone of bees,
Lilacs blooming, a drowsy moon,
The flight of geese and an autumn moon,
The dappled fawn in the forest bush,
Simple words and the song of a thrush,
A waiting fire when the twilight ends
A gallant heart and the voice of friends.

The cock of the walk is finally cooked in the pot.

He alone is rich who makes a proper use of his riches.

A good joke must have a good point, but it should never be aimed at any one in particular.

Writing poetry is a good means of livehood, if you have something else to keep alive on.