



Cut down the "darn"

An accidental interview (for which a neighbour's radio was largely to blame) with Lotie Lippe, whose daily 15-minute broadcast is tuned out by millions.

"Good morning, everybody! Well do I remember as a young girl how women used to say, when asked how things were, 'Oh, sew-sew.' Sometimes they would even say 'Oh, darn-darn,' and hence the expression 'Darn it'—in the sense of, er, 'Darn it!'"

Strange though it may seem, it looks as though we men-folk might extract a useful tip from Mrs. Lippe's remarks. It is this: When the lady of the house begins to use the word "darn" more frequently than usual it probably means it is time for someone or other to get new sox.

And the wise move, then, is to buy *Atlantics*—both for your own comfort and satisfaction and for domestic peace. *Atlantics* wear so much longer!

35c. to \$1
Atlantic Sox
Marling made for Maritime Men
ATLANTIC UNDERWEAR LTD.
MONCTON, N.B.

Lecture Subject Animal Parasites At P. W. College

Treatment of Livestock Diseases By Dr. T. W. M. Cameron, of McDonald College.

Following is the lecture on animal parasites delivered by Dr. T. W. M. Cameron, M.A., M.R., C.V.S., Ph.D., Director of the Institute of Parasitology, MacDonald College, Tuesday evening at Prince of Wales College.

Live stock, on account of its natural increase, would be one of the most remunerative forms of capital investment were it not for the enormous waste due to disease, ill-health and poor condition, which annually converts much of this potential wealth into actual loss. The spectacular form which these losses may take is familiar to the public, although Canada is fortunately free from the great animal plagues of the old world.

Diseases of stock may be roughly classified under three main categories, viz: those due to microbes, those associated with food stuffs and those resulting from parasites. The more important microbial diseases are, perhaps those best known to the farmer. The control of them is largely in the hands of the government, local authority or veterinary expert. Many of these infections spread rapidly, by contagion, from animal to animal and are due to invasion by single species of microorganisms which characteristically multiply, enormously and rapidly, in the bodies of the stricken animals.

Of the vital importance of chemical substances in food, our knowledge is of very recent origin. The diseases which follow upon a lack of certain chemicals are insidious in onset and cumulative in effect; but they obviously cannot be spread by one animal to another. The farmer may be said to have some acquaintance with the general principles which underlie the causation of these so-called deficiency diseases for he has learnt how advantageous it is to supplement the natural food of his crops by adding certain chemicals to the soil.

The diseases which arise from infestation with parasites differ fundamentally from those already mentioned. In their production numerous complex factors are concerned and the principles underlying their spread and prevention are perhaps the least known. The National Research Council and the Empire Marketing Board have recently established, in conjunction with the McGill University, an Institute of Parasitology to investigate these factors—especially as they affect us in Canada. The Institute is situated on MacDonald College Campus in its own building and with its own staff. It is the only Institute of its kind in the Dominion and it is the only Institute in the Empire founded primarily to work on animal parasites. Accordingly, while its first and main duty is and always must be, towards Canada, it is hoped that it will help the whole Empire in helping to solve one of the most serious groups of problems affecting the welfare of animals, both wild and domesticated. The object of my talk today is chiefly to indicate some of the general conclusions to which our studies are leading, especially in so far as they bear on the control of the internal parasites of farm animals.

Internal Parasites

The farmer is, of course well aware that internal parasites occur in his animals, since, from time to time, one of the larger species may be found passed in the droppings. He may suspect too that the poor condition of his stock is, in some way associated with their presence; but, (although fewer deaths may actually result from the direct activities of these organisms than from microbial disease.) I doubt if he adequately realizes that the steady drain upon the production of mutton, beef, pork and horse-power must, in Canada alone, represent many millions of dollars annually. The bulk of the internal parasites are parasitic worms. Although none

are actually so small as to be invisible, they are easily overlooked, even in a careful examination, on account of their extreme slenderness and transparency. The roundworm of the pig and of the horse as well as some of the Tapeworms are among the few exceptions. Now these parasitic worms are not related in any way to the common earthworm. They have relatives in the microscopic eel-worms which live upon decaying vegetable matter and upon bacteria in the soil and mud. Other relatives invade and cause disease in potatoes, tomatoes and the bulbs of flowering plants, such as the daffodil. Others again have adapted themselves to modern civilization and may be found in the paste-box of the book-binder and paperhanger and in the vinegar on the breakfast table. There is no doubt that the parasitic forms which now live in animals are descended from free-living ancestors but this colonization must have taken place centuries ago, for the present day free-living eelworm cannot survive or remain parasitic, even for a short time, in the bodies of living animals. The internal parasites of stock are always the offspring, now of other internal parasites.

Other Damage

But, internal parasites do not merely deprive animals of nourishment. They cause damage by blockage, by mechanical irritation and by piercing and eroding the delicate internal tissues of the body. They also produce secretions and excretions of a poisonous nature. These, on absorption, may lower the general condition of the infested animal and render it more susceptible to microbial disease.

Lightly Infected Animals

I turn now to the consideration of lightly infested animals: those which harbour parasites but show no obvious signs of disease. As these parasites do not multiply and as the symptoms of disease arise only from the accumulative effects of large numbers, such lightly infested animals may appear, at first sight to be of no importance. When it is recalled, however, that these, like the more heavily infested forms, are continually passing potentially infective material on to the fields, it will be realized that they are important reservoirs which must come into consideration in any scheme of disease control. A further important fact is the marked susceptibility of young animals to parasitic infestation. These not only acquire infection easily but they are less resistant and succumb more readily. Their natural growth may be so seriously affected that they become "runts" and "bad doers" and be a permanent source of expense to the farmer. This is particularly noticeable in young pigs.

Efficient remedies are now known for some, although not all of the more important parasitic diseases. These remedies, however, are essentially poisonous and their administration is attended with risk unless under skilled supervision or on the advice of the veterinary surgeon. The eggs and larvae are easily kill-

of which have entered the body as contamination of food. The development of the eggs is suspended until they are conveyed out of the body in the excrement of the infested animal.

This discovery that the eggs of internal parasites must leave the body and are passed in the droppings of farm animals is one of fundamental importance; and it has been utilized by the parasitologist as a means of diagnosing the nature and extent of infection of living animals. The technique is simple. From a careful examination of a small portion of the droppings of a suspected animal with the aid of the microscope, an accurate diagnosis can be made—for the various species of parasites give rise to eggs which possess constant and distinctive peculiarities to size, shape and design.

Important Delivery

Another important discovery is that freshly passed droppings are not a source of infection to another animal although they may contain millions of the eggs of parasites. These eggs have to undergo further development before the infective stage is reached. This development occupies a time varying with different species from a few days to several weeks, dependent to some extent upon temperature, moisture and other external conditions. A knowledge of the length of this period of delay is of very great importance in prevention. After the egg has undergone its essential change into a young parasite it may remain for several months in a quiescent form on the pastures. There is thus a gradual accumulation of infective material which gives rise to the unpleasant platitude that "Permanent Pastures Perpetuate Parasites." In some species the young parasite is retained within the thick egg shell during the whole of this period and infection results from swallowing the microscopic eggs. In other species, the young parasites hatch from the egg shell and climb, often for considerable distances, on the grass. They can only do so however, while the grass is wet or damp with dew and many of them cannot withstand drying. In other cases again the further life of the young outside of the body, after they have hatched from the microscopic eggs in the dung, is much more complicated and may be passed in the body of some small invertebrate in the soil or in water before the infective stage is reached. The details vary with each species; a knowledge of them all is, however, essential for a proper understanding of the best method of control. Another conclusion of great importance which I must mention is that the parasites of the various types of farm animals are not interchangeable. The parasites of horses can only develop in other horses—those of sheep and cattle in other ruminants, and so on. There are one or two important exceptions; for the liverfluke of sheep can cause disease in horse, pig and rabbit, and some of the parasites of the dog, in a rather special way, give rise to important diseases in horses, sheep and cattle. But the general statement is true and pastures heavily infested by parasites from one kind of animal could be cleared without danger if cropped by another kind of farm animal.

Thus a field heavily infested with the red-worm of horses could be cleared if sheep cropped it closely. Whether it is a practical policy to establish a "rotation of croppers" is a matter which the farmer must decide for himself. The interesting thing however, is that the infective stages of parasites which cannot establish themselves are digested when they get into the wrong host.

Red Worms In Horses

Another problem which is serious in Canada is the infection of horses with red worms. Every horse practically is infected and sometimes the worms occur in innumerable numbers. Now these parasites were present in horses when they roamed the dry prairies and consequently they acquired great powers of resistance to drying. Now that we confine our horses in warm stables and moist grass lands, they find life very easy and they have multiplied enormously. Many of them are blood suckers and they are the most common source of debility and lack of stamina in these animals. Their control is a problem still to be solved but a series of experiments at the Institute suggests that the answer to this is within sight, and this is true of man as well as

Certain remedies, however, are coming into use for preventive purposes. All the animals on a given area whether they be diseased or merely carriers, are given simultaneous treatment. The cost and technical difficulties are, in many cases, prohibitive, at least for the present. That this method is likely to prove one of the most important factors in prevention is certain, but much more work must be carried on before it can be generally used.

Let us consider now how we can apply some of the results of laboratory research to the animal industries, and use the facts to explain and prevent its losses. Pigs, for example, are notoriously infested by large roundworms. It is a matter of common observation that these cause little harm to the fully-grown pigs. Nevertheless among their young there are often heavy losses, while the survivors are frequently under-sized. These disastrous results usually follow an outbreak of bronchitis or pneumonia among the sucklings, and it has recently been shown that these symptoms are actually due to the migration, through the liver and lung tissue, of microscopic young of the roundworm. The young pigs swallow the roundworm eggs passed weeks before by the sow. These hatch, giving rise to microscopic forms, which, leaving the stomach, swarm into the blood stream, are carried to the lung, pass thence into the air passages and return to the gut, finally becoming adult. A scheme combining medical treatment of the sow with hygienic up-bringing of the litter has proved in the States highly successful in controlling this disease.

Cites South Africa

The sheep industry in South Africa has recently benefited from an ingenious application to the control of stomach wire worm, of some of the general principles which I have enunciated. The sheep are left upon the infested pastures and continue to pick up from the grass the young infective stages of the stomach worm. As it takes the young worm more than a month to grow adult and to reach the stage of egg production the sheep are treated once every four weeks with a drug which destroys the immature worm. This routine is continued for a year. At the end of that time the sheep have grazed the pastures entirely free from infections and they are themselves also free from parasites. No further infection can arise unless introduced again by fresh, unclean stock.

This wire worm is common in all parts of Canada but it is only one representative of a large group of related species which infest sheep. Some of these, like the wire worm, are blood suckers, and we can apply this system to their control; others, however, damage the host in other ways and unfortunately we have been unable to find any drug which successfully kills them. However, as parasitic disease depends primarily on the numbers of parasites present and as we always find a mixed infection in sheep, this plan always does some good to the animal.

One of the most costly of our worms is that which causes Nodular disease in sheep. This is found all over the eastern parts of the Dominion and not only seriously interferes with the health of our lambs but renders the intestines of infested animals quite useless for the manufacture of sausage casings. In consequence of this we have to import over a million dollars worth of these annually to replace those we should, and could, supply ourselves if we could get rid of the worms. The disease is caused, not by the fully grown adults but by young worms shortly after they enter the body. They migrate into the gut wall where they cause the production of nodules. Very often too, a microbe goes into them and converts the nodule into what is virtually a boil. This is a problem which is receiving serious attention at the Institute and one day we may be able to make eradication possible. Till then, however, much can be done by killing adults in the large intestine of sheep by means of enemas and by preventing infection in lambs by bringing them up on "bare lots" and feeding them from raised troughs to avoid contamination.

Worms are not confined to the larger animals of course, or even to those generally domesticated. Every species of wild animal harbours parasites and some of these are readily transmissible to their domesticated relations. Thus, the large liver fluke of North America is really a deer parasite and yet in some parts of Canada it has become an important cattle parasite. We are consequently anxious to know what forms are present in all our wild fauna and we have a survey actually in progress for this purpose.

This is not the only important point in relation to these parasites of wild animals. They are often important to the wild host itself—especially if we confine it in a park or bring it under domestication. One of our main problems is to intensively study the parasites of our fur animals. Take our fox industry for example, worms are one of the most serious factors with which the fox breeder has to deal and only a constant battle prevents his stock from becoming super-infested.

Drink to the Health Charlottetown's Two New Stores OPENING Saturday, July 29

Holman's, Charlottetown, have completed remodeling their main store—new floors have been laid—new counters—new shelving—new painting and decorating—changed over entirely. The last finishing touches are on and from the past few weeks effort there have emerged two beautiful new modern stores. On the left of the main entrance is the

Quality China Shoppe And Gift Nook

Here Quality reigns. Quality Dinnerware in Semi-Porcelain and exquisite China in the dainty new patterns and colors. Sterling and Sheffield Silverware—both flat silver and Hollow-ware. Odd pieces of China, Pottery and quality Glassware. The new Gift Nook just teems with suggestions that will solve your gift problems, whether Bridal Showers, Bridge Prizes or Wedding Gifts, and they are so very inexpensive too. On the right of the Main entrance is the new

5 and 10c Department

This is a new venture and for Opening Day there will be startling Opening Day Bargains at the Popular Price Range of 5c, 10c and up. Here is just one special that will be worth while coming for and one that will help to drink to the health and prosperity of your two new stores.

5 CUP SIZE POTTERY TEA POT
with
HALF POUND TASTY TEA
to Personal Callers Saturday **29c**

CROCKERYWARE, GLASSWARE and KITCHENWARE
You'll like the display

HOLMAN'S NEW STORES

Benefits of Research

It is generally accepted that the vast improvement in the health of men in our tropical possessions is attributable to the application of the results of research in tropical medicine. These researches were chiefly in the domain of parasitology. These researches were chiefly in the domain of parasitology. If a study of the animal parasites of man has, within so short a time, led to these striking results, may we not fairly claim that the encouragement of research into the natural history and mode of spread of the domain of parasitology. If a study of the animal parasites of man has, within so short a time, led to these striking results, may we not fairly claim that the encouragement of research into the natural history and mode of spread of the domain of parasitology. If a study of the animal parasites of man has, within so short a time, led to these striking results, may we not fairly claim that the encouragement of research into the natural history and mode of spread of the domain of parasitology.

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While parasitism is serious in a country such as this, it is in tropical lands, with their warm moist climates, and careless hygiene, that it reaches its fullest importance—place each year.

portant respects. The flies do not frighten the cattle and eggs are laid while the animal is at rest, several in a row on the same hair. This takes place also much earlier than in the case of *H. bovis* and is generally completed about a fortnight before the latter commences. The botflies (*Gastrophilus*) are closely related to the warble flies but their larvae develop in the intestinal tract of equines and the "bots" are easily recognized and known to us all. But, there are three species of bot-flies in this country and only one of these is harmless. Unfortunately this species is spreading in Eastern Canada and yearly becoming more important. The common botfly lays her eggs on the hairs of the legs whereas the nose bot-fly—*G. nasalis*—lays hers around the throat and her presence often renders horses uncontrollable with fear. The third species—*G. haemorrhoidalis* deposits her eggs on the hair of the lips and causes even more fear than *G. nasalis*.

The maggots of the common botfly attach themselves to the firm osophagus mucous membrane of the stomach and are probably harmless. Those of *G. nasalis* however, prefer the gastric mucosa and congregate around the pyloric end as well as actually in the duodenum. The bots of *G. haemorrhoidalis* prefer the same habitat and are often found attached to the rectum and cause great annoyance in the latter situation.

The presence of the bots of these two last species is a common cause of colic and is often much more serious than is generally realized. All species are easily destroyed by carbon disulphide, which to be most effective, should be given in early winter—December and January.

Not Consistent

The conversation was on diet. "Yes," said Smith, "I've eaten beef all my life."
"But do you think it really has done you any good?" she asked.
"I feel as strong as an ox," he replied.
"That's strange," she ventured "I've been eating fish for about three months and I can't swim a stroke."

for NEURITIS

One thing that helps is to warm a dish, pour in Minard's, then rub the liniment gently in.
Pain eases off!

MINARD'S

"KING OF PAIN"
LINIMENT

Itching, Burning Terrific for Seven Weeks. Cuticura Healed.

"I suffered with acute eczema for seven weeks. It first started on my face with a rash and then spread practically all over my body. The itching and burning were terrific, and when scratched only irritated and spread more. It certainly caused great disfigurement, especially on my face, and also prevented me from sleeping."
"Seeing your advertisement for Cuticura Soap and Ointment I sent for a free sample of each. I purchased one, and after using two cakes of Cuticura Soap and two boxes of Cuticura Ointment I was completely healed." (Signed) Mr. W. Tuffley, 821 St. Maurice St., Montreal, Que.

Soap 2c. Ointment 25c and 50c. Telcum 2c. Sold everywhere. Sample each free. Address Canadian Depot: Lyman Agency, Limited, 280 St. Paul Street, W., Montreal.

Cuticura

280 St. Paul Street, W., Montreal.

CENTRAL GUARDIAN

This column is reserved for Queen's County news of local interest but advertising of a new nature may be inserted at a cents a word strictly payable in advance.

GET YOUR HOLIDAY CAKES

and goodies at the Home Baking Booth at the City Hospital Festival, Tuesday afternoon and evening, August 1st, Baby Day on Hospital Grounds. 2053-7-28-41.

WILL ADDRESS MEETING

Rev. W. M. Kannawin, D.D., Secretary of the Board of S. Schools, and Young Peoples' Societies, will address a meeting in the Presbyterian Church, Tryon, on Saturday evening, July 29th at 7.45 o'clock. All are cordially invited.

HERE FROM QUEBEC

—Mr. and Mrs. H. L. Rolleston, and their son, Mr. P. R. Rolleston, Quebec, are at present visiting Charlottetown. They came by car, and experienced good roads all the way, and enjoyed the journey immensely. The only uninteresting part was that covered by the new Matapedia road, which runs for the most part through bush. They are guests of Mr. and Mrs. C. M. Shannon, Brighton, and expect to remain here for the remainder of the week.

Mrs. James Harris of Charlottetown, who had been visiting her son, H. J. Harris, for some weeks has returned home. Her daughter, Miss Maude, graduate of Aberdeen Hospital, who recently received her R.N., accompanied her home to remain for a time.—New Glasgow News.

Mr. Russel Phillips, manager of the Stellarton branch of The Canadian Stores is on vacation and with Mrs. Phillips, her sister, Miss Margaret Calder, Mrs. A. L. Horne and Miss Verda MacDonald, left today on a motor trip to Cape Breton. Returning later in the week Mr. and Mrs. Phillips will go over to Prince Edward Island.—New Glasgow News.

STUDENTS WILL HAVE TO SPEED UP OR PAY

CALGARY, July 27—(C.P.)—School board trustees of this city are considering a plan whereby high school students taking longer than the five years allotted for completion of their courses would be forced to pay "repeaters' fees." "Students who fall repeatedly and take more than five years to finish their high school courses are often merely taking up classroom space," said D. C. Bayne, secretary treasurer of the board, "Payment of fees for repeating subjects would improve their school progress."

BIG PROPERTY BOOST

REGINA, July 27—(C.P.)—More than 80 acres of property have been developed here for the World's Grain Exhibition and Conference and the annual Regina Exhibition.

Minard's agent for Lamenens.