

GAPEWORMS OF CHICKENS AND TURKEYS*

A ROUNDWORM which produces unmistakable symptoms of disease is the gapeworm, *Syngamus trachea*. This parasite occurs in turkeys and chickens but with a decided difference in effects. As a rule, the gapeworm will live in chickens only when the chickens are very young, the first few weeks of life being the danger period. The chicks that live through the acute stage of gapeworm disease soon lose the worms, and therefore, do not remain carriers. On the other hand adults as well as young turkeys commonly harbour gapeworms and usually show no bad effects, and it is apparently the infested turkey that is the chief cause of the spread of gapes to chicks. Exceptionally young turkey poults suffer from gapes and very exceptionally gapeworms may be found in a mature chicken.

Gapeworms are attached to the wall of the windpipe or trachea, on its inner surface. The male and female worms are joined together so that the two worms form a Y.

Symptoms and damage produced by parasite.—The worms clog the windpipe of chicks, and because of an insufficient supply of air young chicks which have gapeworms in the windpipe will open the beak and gape; this behaviour has given rise to the name “gapes” as applied to the disease. There is often a convulsive shaking of the head with a hissing cough. This continuous effort to obtain air prevents the chicks from feeding; this and also the fact that the worms are bloodsuckers weaken the chickens so that they become thin and pale. Death may result from suffocation or from general weakness.

Life-History of the parasite.—This parasite has a direct life-history. Eggs of the parasite are coughed up from the windpipe and swallowed by the chicken or turkey which harbours the worms, these eggs pass out in the droppings, develop and some of them hatch. Either the infective eggs or the young roundworms which hatch from them may then be swallowed by fowls in the act of feeding or drinking. Within a week the young worms will have reached the lungs, and from there they work their way up into the windpipe and may be fully developed within another week or ten days.

Earthworms may play an important part in the spread of gapes. The infective eggs or the young gapeworms which have hatched in the soils from the eggs in the fowls' droppings may be eaten by earthworms, they burrow into the body muscles of the earthworm and may remain alive for considerable period. The earthworm in these cases is not a necessary intermediate host of the parasite; it is merely a mechanical carrier or reservoir protecting the young gapeworms from conditions such as drought and high and low temperatures, conditions which would otherwise kill the young parasites. Earthworms may thus carry the young gapeworms over from one warm season to another.

* Extracted from U.S. Department of Agriculture Farmers' Bulletin, No. 1652.

Another important factor in the spread of gapes is the fact that turkeys may carry gapeworms throughout their whole life and thus may spread them to young chickens, if turkeys and chickens are being raised together.

Prevention.—Raising young chicks entirely separate from turkeys and areas ranged by turkeys is the most important preventive measure. If gapeworm disease has been present in the vicinity, dry sandy soil should be selected for young chicks to run on, since such soil is unfavourable to earthworms, or young chickens should be shut up until the dew has dried off in the mornings, when most of the earthworms which have come to the surface will have disappeared.

Treatment.—No treatment has been found to be thoroughly satisfactory. Mechanical removal although a slow, difficult and rather dangerous procedure may be accomplished by the insertion of a loop of horse hair down the windpipe and the rotation of the loop in such manner as to dislodge the worms from the wall and entangle them in the hair, which is then withdrawn. A small quill feather, which is stripped off all its web except a small tuft at the end, may also be used in place of the hair; a little kerosene or oil of turpentine put on the feather will aid in loosening the worms and later will cause the chick to sneeze or cough and thus help to bring up the worms. Wire extractors made by commercial firms are used in the same manner.

Various medicinal treatments have been advocated but none can be regarded as of proved value.

MEETINGS, CONFERENCES, ETC.

RUBBER RESEARCH SCHEME (CEYLON)

BOARD OF MANAGEMENT

A meeting of the Board of Management of the Rubber Research Scheme (Ceylon) was held in the New Secretariat, Colombo, on April 28th, 1932.

Present.—Dr. W. Youngman (in the chair); Mr. C. W. Bickmore, C.C.S., Deputy Financial Secretary; Messrs. I. L. Cameron; B. F. de Silva; C. E. A. Dias, J.P.; J. Farley Elford; H. R. Freeman, M.S.C.; James P. Fernando; F. H. Griffith; J. D. Hoare; J. L. Kotalawala, M.S.C.; C. A. Pereira; Colonel T. Y. Wright; and Mr. J. I. Gnanamuttu (Secretary). Mr. T. E. H. O'Brien, Director of Research, was present by invitation.

FINANCE

The Balance Sheet and the Income and Expenditure Account of the Board for 1931, and the Auditor-General's report thereon showing them to be in order, were accepted. With reference to collections from the cess, which amounted to Rs. 172,835 in 1931, the Chairman drew attention to the possibility of this revenue shrinking in 1932 and suggested Rs. 100,000 might not be an unlikely eventuality. A minimum of Rs. 100,000 per annum was necessary in order to carry on the work undertaken, and he thought it most wise that the Board should have at least this sum in hand as a reserve so that in the event of any possible contingency the Board would be able to carry on for a period of say one year; this point to be borne in mind in connection with any expansion that might be proposed. Rs. 115,000 had been placed on fixed deposit since the last meeting.

FUTURE DEVELOPMENT

The following resolution passed by the Estate Products Committee of the Board of Agriculture was read: "that the Committee invite the attention of the Board of Management of the Rubber Research Scheme to the urgent need of acquiring more land for experimental purposes."

Mr. T. E. H. O'Brien, who had been recently appointed Director of Research to the Scheme, made a statement as to the future policy. He outlined the functions for which the Board was established as laid down in the Ordinance. These were: (1) investigations concerning clearing and planting, (2) steps to provide improved planting material, (3) investigations concerning the maintenance and improvement of existing rubber areas, including replanting, (4) demonstration of methods of cultivation and manufacture, (5) experiments concerning existing and new methods of manufacture, (6) investigations concerning the application and use of raw rubber, and (7) measures for bringing the results of the above to the notice of growers, including small-holders.

The area of rubber in Ceylon was approximately 500,000 acres and the further area of virgin land suitable for rubber had been estimated at 100,000 acres. There seemed however little likelihood at present of an

increase in the planted area. The future of the rubber industry in Ceylon seemed to centre round the possibilities of the improvement of part of the existing area and the replanting of the other part with improved material.

The Board would have to consider whether it was preferable to test foreign and local clones on virgin or replanted land. He recommended that problems that were peculiar to Ceylon should receive their exclusive attention and that results of research elsewhere should be relied on upon subjects of more general application. The establishment of isolated seed gardens for the production of seed from proved clones was a work of importance. The Scheme should have a sufficient area of mature rubber under its own control for comparison of different tapping systems and for the study of means of prevention of soil erosion, of methods of replanting and for experiments on top budding of old rubber. The Research Scheme should be in a position to answer enquiries from estates from its own first-hand experience, and also to demonstrate sound methods of preparation in its own factory. Experimental apparatus had to be installed for the preparation of concentrated latex to enable rubber to be used in a number of new directions. Special measures had to be adopted for bringing information to the notice of small-holders, including the employment of a Ceylonese officer in the Kalutara District, to begin with, and the preparation of a short manual in Sinhalese. He suggested a consideration of the technical staff required for the development of research and a survey of the funds likely to be available.

A discussion ensued as to whether a new scheme should be considered in the light of Mr. O'Brien's recommendations, or whether the scheme already submitted by a Committee of the Board should be proceeded with. It was resolved that the Estate Committee be re-appointed to examine the financial position and the advisability of opening any further land.

It was also decided that certain queries of the Hon'ble the Minister for Agriculture upon its previous recommendations be referred to the Committee, which now consists of Messrs. F. H. Griffith, C. E. A. Dias, I. L. Cameron, B. F. de Silva, J. L. Kotalawala and Mr. T. E. H. O'Brien (Convener).

Several reports upon areas of land inspected by the Director of Research were committed for examination by the Committee.

POLICY GOVERNING EXPERIMENTAL WORK

After discussion of the terms under which experiments may be undertaken by the technical officers upon private land, it was resolved:

“that any experiments carried out by the officers of the Scheme should be on condition that they took no responsibility, and that the results obtained from such experiments would be available for publication if so desired by the Scheme”.

An offer of land in Kegalle for experiments by the Scheme was referred to the Estate Committee for report.

JOINT LONDON ADVISORY COMMITTEE WITH MALAYA

The Chairman read correspondence relating to the constitution of the new London Joint Ceylon and Malaya Advisory Committee. The names provisionally suggested from London were as follows:

F. A. Stockdale, Esq., C.B.E., nominated by the Colonial Advisory Council of Agriculture and Animal Health,

Sir George Maxwell, nominated by the Malayan Governments,
A member to be nominated by the Ceylon Government,
Messrs. P. J. Burgess, W. J. Gallagher, and H. E. Miller, representing
Malayan interests and nominated by the Rubber Growers' Association,
Sir Herbert Wright, and Messrs. G. H. Masefield and G. Brown,
representing Ceylon interests and nominated by the Rubber
Growers' Association,
Two nominees of the Research Association of British Rubber Manu-
facturers, representing manufacturing interests,
The Director of the Imperial Institute,
The Director of the Botanical Laboratories, Imperial College of
Science and Technology,
The Director of the Imperial Mycological Institute, and
The Director of the Rothamsted Experimental Station.

OTHER BUSINESS

A telephone connection to the Director's bungalow was sanctioned.