

PARASITES OF THE ANATIDAE

by G. Lapage

AT a conference on 16 March 1956, between Dr Matthews, Mr Jennings and Dr Soulsby of the Department of Animal Pathology, Cambridge, and myself, it was decided that my time should be given in the first instance to the compilation of a check list of parasites recorded from the Anatidae, and that Dr Soulsby should continue to examine dead birds for helminths.

Because bibliographical research could only be done in a centre provided with good zoological and veterinary literature, it was decided that this work should be done at Cambridge and that experimental work should be deferred for the present.

It soon became evident that the compilation of an adequate check list was a considerable task and would take up all my time. The system adopted uses Copeland-Chatterson cards. The entries on these cards have been written by hand, this being quicker and more convenient. Later the cards can be typed, particularly if the list is to be published.

The cards have been designed to give the following information:

1. The names of the authors of the papers recorded.
2. The titles of the papers and the references to the journals or books in which they are published. When a paper is not in English a note is made as to whether an English summary is included. A note is also made as to whether it is illustrated.
3. The Class to which the parasites belong, i.e. Protozoa, Cestoda, Trematoda, Nematoda, Acanthocephala, Arthropoda, Hirudinea.
4. The generic and specific names of the parasites found.
5. Taxonomy of families, genera, species, etc., of parasites where discussed.
6. Whether the parasite species recorded is new; if so, whether it is described and figured.
7. The generic and specific names of the birds infected and the localities in which the birds were found. These notes on the localities may help in future studies of the geographical distribution of parasites and in the correlation of the incidence of parasites with the migrations of the birds. The names used are those given in *Key to the Wildfowl of the World*, by Peter Scott.

In some instances it has not been possible to refer the bird-host to particular species mentioned in the *Key*. In these instances the possible alternatives have been entered on the cards. The locality helps also in its exact identification. Further consultation of the literature will clear up many of these doubtful identifications. In some instances the authors have merely given 'duck' or 'goose' or 'domestic duck or goose' or 'swan', and there seems to be no certain means of identifying the bird-hosts, although it is almost certain that they were *Anas platyrhynchos*, *Anser anser* and *Cygnus olor*.

8. The site occupied in the bird-host by the parasite, e.g. gizzard, intestine, oviduct, blood, etc.

9. The names of any intermediate hosts.
10. Pathology of the infection.
11. Chemotherapy of the infection.
12. Whether the bird-hosts were infected experimentally.
13. Details of any other losses incurred.
14. Any other useful information.

Holes in the cards will eventually be punched for each of the above items, Species of parasites and hosts have not yet been allocated holes in the cards. and probably they will not be needed.

A detailed discussion of the information already accumulated is premature, because a great many references remain to be entered on cards, but the following notes will indicate the amount of knowledge we already have and the scope of the information:

Cards completed	603
References noted for further consultation or not yet consulted.	427

Total references 1030

To these must be added a number of reprints, host-lists in textbooks and similar sources of information yet to be combed. Progress is necessarily slow. Much help has been given by various friends or by correspondents. *Helminthological Abstracts*, Vols. I-XV, have been a most valuable source, and the earlier *Bibliography of Helminthology* has also been combed. I am putting aside my own reprints, and others sent, as the nucleus for a reference collection at Slimbridge.

Number of genera of parasites recorded on the cards so far	130
Number of species of parasites recorded	419
(of these 190 belong to the single tapeworm genus <i>Hymenolepis</i>)	
Number of unidentified species of parasites	32

Only 4 genera of Protozoa and 7 of Arthropoda have been recorded. The dearth of information about external parasites is probably due to the fact that most examinations have been of dead birds, which external parasites will have left. Most work on the external parasites and the protozoa requires the catching and handling of wild birds, which presents considerable difficulties.

Parasites belonging to one or more genera and one or more species have been recorded from all save 10 of the 40 genera of Anatidae.

Provisional List of the more Dangerous Genera of Parasites

All parasites cause damage of some kind and, although some not on this list usually do relatively little harm, the condition of the host-bird may be such that relatively harmless parasites have a decisive effect on the bird's health. Also, we know as yet far too little about the pathogenic effects of many species recorded, and less about the combined effects of several species infecting the same individual bird. Much more work is needed on the effects of many species.

<i>Acuaria</i>	<i>Dicrocoelium</i>	<i>Hymenolepis</i>
<i>Amidostomum</i>	<i>Diphyllbothrium</i>	<i>Hypoderaeum</i>
<i>Apatemon</i>	<i>Drepanidotaenia</i>	<i>Hystrichis</i>
<i>Capillaria</i>	<i>Echidnophaga</i>	<i>Leucocytozoon</i>
<i>Catatropis</i>	<i>Echinoparyphium</i>	<i>Liponyssus</i>
<i>Choanotaenia</i>	<i>Echinorhynchus</i>	<i>Menopon</i>
<i>Cittotaenia</i>	<i>Echinuria</i>	<i>Metorchis</i>
<i>Cotylurus</i>	<i>Echinostoma</i>	<i>Microfilariae</i>
<i>Cyathostoma</i>	<i>Eimeria</i>	<i>Ornithobilharzia</i>
<i>Davainea</i>	<i>Filicollis</i>	<i>Ornithofilaria</i>
<i>Dermanyssus</i>	<i>Heterakis</i>	<i>Parastrigea</i>

<i>Plasmodium</i>	<i>Raillietina</i>	<i>Trichobilharzia</i>
<i>Polymorphus</i>	<i>Schistogonimus</i>	<i>Trichostrongylus</i>
<i>Prosthogonimus</i>	<i>Strigea</i>	<i>Typhlocoelum</i>
<i>Pseudamidostomum</i>	<i>Syngamus</i>	<i>Tyzzeria</i>
<i>Pseudobilharziella</i>	<i>Tetrameres</i>	<i>Zygocotyle</i>

Examination of Blood Smears from Pink-footed Geese

In October 1956 some 200 blood smears from Pink-footed geese caught by rocket-nets in northern Britain were sent to me for examination. Glassware, stains and reagents for dealing with these were supplied by the Cambridge School of Veterinary Medicine, through Dr Morgan, Lecturer in Veterinary Parasitology. The parasites to be looked for in these films are *Plasmodium* and *Haemoproteus* in the red blood cells, *Leucocytozoon* in the white blood cells and microfilarial larvae in the plasma. All of these should be readily seen. So far, however, no parasites at all have been found in these films. Each film is being examined for about ten minutes with an oil immersion lens. Using this method, Levine and Hanson (1953, *J. Wildlife Management*, **17**, 185) found in the blood smears of 353 Canada Geese, *Leucocytozoon simondi* in 31 (9.1%), *Haemoproteus* sp. in 5, *Plasmodium* sp. in 1 and microfilariae in 4.

It is therefore not to be expected that many of the films from the Pinkfooted Geese will show parasites, especially as only one film was taken from each bird. The incidence of these parasites in their blood is conditioned by the birds' contact with the vectors of the parasites: mosquitoes for *Plasmodium* and blackflies (Simuliidae) for the others. There is little information about the time during which these parasites persist in the blood. Examination of a further batch of films taken in 1957 is now proceeding.

VISCERAL PARASITES IN WILDFOWL

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DURING the 1956-57 season 46 viscera were examined in order to ascertain the type and degree of parasitism which occurs under natural conditions. Ten species of wildfowl were represented in the samples, the distribution being as follows: Shoveler 3, Mallard 3, Teal 15, Wigeon 12, Greylag Goose 1, Velvet Scoter 3, Common Scoter 4, Goldeneye 1, Shelduck 3, Tufted Duck 1. With the exception of three viscera which were sent by Mr J. L. Hirst of Morecambe, the rest were sent by the Kent Wildfowlers' Association. The author is extremely grateful to the gentlemen concerned who have helped with this survey.

Parasites found

Nematodes (Roundworms):

Amidostomum anseris

Tetrameres fissispina

Echinuria horrida