

THE PARASITE COLLECTION

(A). 1. History and Evolution:

The parasite collection was also started in 1891 and is actually made up of two collections; one is the National Museum Helminthological Collection, the other the Bureau of Animal Industry (B.A.I.) Parasite Collection. Type specimens and parasites from new hosts or localities and those that for some other reason may merit such action are deposited in the U.S. National Museum Collection. Specimens sent for routine identification are deposited in the B.A.I. Collection. Until 1932 the U.S. National Museum Collection was housed in the Natural History Building of the Smithsonian Institution of Washington, D.C. In that year it was moved to the Department of Agriculture and a member of the staff of the Zoological Division was appointed its official custodian. In 1936 the Helminthological Collection of the Zoological Laboratory of the Public Health Service, Bethesda, Maryland, was made a part of the National Museum Collection since there seemed to be little to be gained by maintaining two such collections in the Washington area. In 1942 the parasite collections were moved from Washington, D.C. to the Animal Parasite Laboratory, Agricultural Research Center, Beltsville, Maryland. The National Museum Collection contains specimens deposited in it by many world famous foreign parasitologists as well as specimens from the early collections made in the United States. The two collections now have more than 50,000 lots of specimens, and are growing at the rate of about 800 accessions annually.

In 1953 when the Zoological Division was dissolved the Parasite Collection was included in the Helminth Section of the Animal Disease and Parasite Research Branch, of the Agricultural Research Service. In 1957, one year

after the Branch became a Division and the Helminth Section became the Helminthological Investigations Research Group, this work was moved from the last-mentioned group and was named the Parasite Identification and Distribution Investigations Research Group. The head of this group has not yet been designated.

(A). 2. Purpose and Objectives:

The Parasite Collection serves as a National depository for documented specimens such as the types and paratypes of new species described from North American animals. It is also a most valuable working tool in identification work because it contains many thousands of specimens with which a parasite presented for identification can be compared. Without such a collection it would be most difficult in many instances to obtain the accurate identification of a parasite. This information is fundamental to an understanding of the cause, the method of infection, the disease itself, and its treatment.

The objectives of this work are to complete and maintain a reference collection of accurately identified and labeled parasites in good condition from this country as well as specimens of parasites of domestic and wild animals in foreign countries that may be injurious to American livestock if they were introduced into the United States. These specimens would be available for comparison with specimens received by the Division for identification and for the study of scientists working with parasites and parasitic diseases of animals who could either visit the collection or request the loan of the specimens in which he was interested.

In the near future, it is also hoped that provision can be made for the incorporation of private collections of parasites, that have been received but are still waiting to be accessioned, into the U.S. National Museum

Collection and for the preparation of educational exhibits of parasites to show to visitors from schools, agricultural extension groups, visiting scientists and veterinarians and to the general public.

(A). 3. Current Work:

The staff of the parasite identification section receives specimens for identification from many sources from all over the world and loans specimens on request from qualified scientists who have a bonafide interest in systematic parasitology. Specimens are entered in the collection in the following categories: Trematodes (flukes), Cestodes (tapeworms), Nematodes (roundworms), Acanthocephala (thornheaded worms), Gordiacea (hairworms or hair snakes), Protozoa (one-celled animals), Linguatulids (tongueworms), Arachnida (ticks and mites), and parasitic insects (flies, lice, fleas and bugs). Data included on the label accompanying the specimens are as follows: Scientific name of parasite, scientific name of host, location in host, locality from which host originated, name of collector and date collected, name of person making the identification, and remarks indicating any other pertinent information. The specimen is given a serial and a location number, and all of this information is put on a card and filed in an alphabetical index of parasites, arranged according to genera and species, with a list of the hosts from which the parasites were collected. This information is also listed in a cross reference host file and in the master record book of the collection which now numbers 12 volumes.

In making a complete and accurate identification of a specimen it is often necessary to consult numerous books and references and scientific contributions from specialists of many countries. The collection of accurately labelled specimens is often very helpful and often saves much valuable time for those having the responsibility for making the

identification. In 1958 about 800 specimens were handled in connection with this work. About 54 loans of specimens were made to 13 foreign countries. Fifteen percent of the correspondence was with foreign parasitologists.

(B) Accomplishments and their Significance:

Since the beginning of the parasite collection, not only have the parasitologists and zoologists of the Department of Agriculture made contributions to it, but also specialists in the National Institutes of Health, the Medical Services of the Army and Navy, the Food and Drug Administration, and the Fish and Wildlife Service have made notable contributions. The private collections of Dr. G.A. MacCallum, Dr. Edwin Linton, Dr. H.B. Ward, Dr. H.J. VanCleave, and Dr. George R. Lafue have or are to become part of this International Collection of parasites. Several European investigators have contributed paratypes and other valuable specimens from their private collections.

Identified specimens in the collection have aided greatly in identifying tapeworm cysts, larval nematodes from fish, chicken ascarids from eggs, and fragments of worms found contaminating foods, which have been received from County and State Health Agencies as well as from the Food and Drug Administration for identification. Previously identified specimens in the collection made possible the identification of nematodes from codfish cakes served in a New York City hospital recently.

For the past 50 years specialists in the identification of parasites have been called upon to identify ticks and mites collected at border stations by quarantine and regulatory officials. In these instances specimens in the collection from foreign countries have been very helpful in making the identifications for a direct comparison of the suspected species

could be made with the injurious exotic species and correct decisions made.

Since 1950 about 8,000 lots of specimens have been handled by the staff responsible for the parasite collection.

In addition to being called upon to make identifications of various suspected zoological objects that were parasites or thought to be parasites, this Research Group has been one of the chief sources of information concerning the correct scientific names for the various species of parasites. Many parasitologists in this country and abroad request help with various problems involving taxonomy and nomenclature and for help in determining the proper synonymy and homonymy of scientific names. In many instances this group has been the court of last resort in settling differences of opinion in these matters. Much of the original material on which such decisions must be based is to be found in the card index of the Index-Catalogue of Medical and Veterinary Zoology.

This work must be done by expert systematic parasitologists because an error made in the identification of any parasite might lead to the establishment of an injurious species in the United States or to the failure to recognize the presence of one already established. It could also lead to errors in the development of methods to prevent further infection of livestock and in the choice of treatment for the removal of the parasite.

Not less than 531 papers have been published by personnel of this Division on the basis of work done on the parasite collection of this laboratory. Of these, 73 were on parasites of ruminants, 52 on parasites of poultry, 29 on parasites of cats and dogs, 26 on parasites of man, 19 on the parasites of horses, 17 on the parasites of swine, and 315 on miscellaneous parasites, including those of arthropods, fish, amphibians, reptiles, and wild birds and mammals.

(c). Major Problem Areas:

This kind of scientific research does not often result in front-page news, but it is fundamental to all experimental work with parasites and is necessary for the proper identification of the causative agent of parasitic disease, and of parasites contaminating foodstuffs. Funds and personnel have both been lacking because of the failure of persons in charge of appropriations to realize the importance of this kind of work and the very real contribution it makes to veterinary medicine and to public health problems. With adequate financial support this work can be made to contribute a great deal more to an understanding of parasites and parasitic diseases of animals and man.

(d).

Opportunities:

In the field of parasite identification there remain many species to be described and many taxonomic groups to be studied for the purpose of clarifying the present unsatisfactory classification and determining new bases upon which a sound classification can be based. In certain groups there are species that are very similar in structure thus making accurate identification most difficult. More knowledge is needed in order to identify immature forms of parasites that are occasionally sent in for identification. The parasites of many animals are not well known because collections from these sources have been infrequent. These parasites should be collected and studied in order to broaden and extend our knowledge of the morphology and relationships of parasites.

Veterinarians, physicians, public health workers, agricultural extension workers, livestock men, and the general public could be made aware of these parasites and parasitic diseases by the building of educational exhibits featuring parasites of various kinds, which would call attention to the importance and kind of work that we do. Adequate support of this work would result in an increase in our knowledge of parasites and their relationship to animal and human health problems.