Vol. 1, No. 1

my colling

March, 1908

PARASITOLOGY

A SUPPLEMENT TO THE JOURNAL OF HYGIENE

EDITED BY

GEORGE H. F. NUTTALL, F.R.S. Quick Professor of Biology in the University of Cambridge

AND

A. E. SHIPLEY, F.R.S. University Lecturer in the Advanced Morphology of the Invertebrates



CAMBRIDGE AT THE UNIVERSITY PRESS

LONDON: CAMBRIDGE UNIVERSITY PRESS WAREHOUSE, FETTER LANE (C. F. CLAY, MANAGER) AND H. K. LEWIS, GOWER STREET NEW YORK: G. P. PUTNAM'S SONS LEIPSIC: BROCKHAUS BOMBAY AND CALCUTTA: MACMILLAN & CO., LTD.

Price Seven Shillings net.

[Issued March 31, 1908]

REPORTS ON PLAGUE INVESTIGATIONS IN INDIA

ISSUED BY THE ADVISORY COMMITTEE APPOINTED BY THE SECRETARY OF STATE FOR INDIA, THE ROYAL SOCIETY, AND THE LISTER INSTITUTE.

(Forming three extra numbers of the Journal of Hygiene: vol. VI. no. 4, Price 6s. net; vol. VII. no. 3, Price 6s. net; and vol. VII. no. 6, Price 6s. net.)

CONTENTS OF THE FIRST PLAGUE NUMBER, September 1906.

Introduction

I. Experiments upon the transmission of plague by fleas

- II. Note on the species of fleas found upon rats, *Mus rattus* and *Mus decumanus*, in different parts of the world, and on some variations in the proportion of each species in different localities. By the Hon. N. Charles Rothschild
- The physiological anatomy of the mouth-parts and alimentary canal of the Indian rat flea, *Pulex cheopis*, Rothschild III.
- IV. On the effect upon virulence of passage of B. pestis through rats by subcutaneous inoculation without intermediate culture On the effect upon virulence of passage of *B. pestis* through rats by cutaneous inoculation
- V. without intermediate culture
- VI.
- VII.
- A note on the immunity of Bombay rats to subcutaneous injection of plague cultures On the infectivity of floors grossly contaminated with cultures of B. pestis On the number of plague bacilli in the blood, urine, and faeces respectively of rats which VIII. had died of plague
- IX. On the quantitative estimation of the septicaemia in human plague X.
 - On the existence of chronic plague in rats in localities where plague is endemic

116 pp., with 6 Plates and 6 Folding Tables.

CONTENTS OF THE SECOND PLAGUE NUMBER, July 1907.

- XI.
- The diagnosis of natural rat plague The pathological histology of the spleen and liver in spontaneous rat plague, with obser-XII. vations on the experimental infection. By J. C. G. Ledingham, M.B., B.Sc., M.A. Transmission of plague by feeding rats with infected material On the significance of the locality of the primary bubo in animals infected with plague
- XIII.
- XIV. in nature
- Further observations on the transmission of plague by fleas, with special reference to the fate of the plague bacillus in the body of the rat flea (P. cheopis)XV.
- Experimental production of plague epidemics among animals. (Second Communication) Experiments in plague houses in Bombay. (Second Communication) On the external anatomy of the Indian rat flea (P. cheopis), and its differentiation from XVI. XVII.
- XVIII. some other common fleas
- XIX.
- On the natural occurrence of chronic plague in rats A note on man as a host of the Indian rat flea (*P. cheopis*) XX.

154 pp. with 6 Plates.

CONTENTS OF THE THIRD PLAGUE NUMBER, December 1907.

- XXI. Digest of recent observations on the epidemiology of plague
- The epidemiological observations made by the commission in Bombay City Observations made in four villages in the neighbourhood of Bombay XXII.
- XXIII.
- General considerations regarding the spread of infection, infectivity of houses, etc., in Bombay City and Island Observations in the Punjab villages of Dhand and Kasel. XXIV.
- XXV.
 - 302 pp., with 23 Plates, and 76 maps and charts.

CAMBRIDGE UNIVERSITY PRESS WAREHOUSE,

C. F. CLAY, MANAGER.

London: FETTER LANE, E.C.

A SUPPLEMENT TO THE JOURNAL OF HYGIENE

EDITED BY

GEORGE H. F. NUTTALL, F.R.S. Quick Professor of Biology in the University of Cambridge

AND

A. E. SHIPLEY, F.R.S. Reader in Zoology in the University of Cambridge

Volume I. 1908



CAMBRIDGE AT THE UNIVERSITY PRESS

LONDON: CAMBRIDGE UNIVERSITY PRESS WAREHOUSE, FETTER LANE (C. F. CLAY, MANAGER) AND H. K. LEWIS, GOWER STREET EDINBURGH: 100, PRINCES STREET BERLIN: A. ASHER & CO. LEIPSIC: BROCKHAUS NEW YORK: G. P. PUTNAM'S SONS BOMBAY AND CALCUTTA: MACMILLAN & CO., LTD.

[All Rights reserved]

Cambridge :

PRINTED BY JOHN CLAY, M.A. AT THE UNIVERSITY PRESS.

CONTENTS.

No. 1 (March).

	PAGI	S
JORDAN, K. and ROTHSCHILD, The Hon. N. C. Revision of the No.	m-	
Combed Eyed Siphonaptera. (Figure, Plates I-VII.) .	. 1	L

No. 2 (June).

CASTELLANI, ALDO. Note on a Liver Abscess of Amoebic Origin in a	
Monkey. (Plate VIII.).	101
IMMS, A. D. On the Larval and Pupal Stages of Anopheles maculi-	
pennis, Meigen. (Plates IX and X.)	103
NUTTALL, GEORGE H. F. and GRAHAM-SMITH, G. S. The Mode of Multiplication of <i>Piroplasma bovis</i> and <i>P. pitheci</i> in the Circulating Blood compared with that of <i>P. canis</i> , with Notes on other	
species of $Piroplasma$. (Plate XI and Diagrams I—IV.) .	134
NUTTALL, GEORGE H. F. Note on the Behaviour of Spirochaetae in	
Acanthia lectularia	143
NUTTALL, GEORGE H. F., COOPER, W. F. and ROBINSON, L. E. The Structure and Biology of <i>Haemaphysalis punctata</i> , Canestrini and	
Fanzago. I. (Plates XII-XVI.)	152
MASTERMAN, E. W. G. Hirudinea as Human Parasites in Palestine .	182
HARDING, W. A. Note on a Gnathobdellid Leech [Limnatis sp.?]	
from Angola	186
SHIPLEY, A. E. Note on Cystidicola farionis Fischer. A thread-	
worm Parasitic in the Swim-bladder of a Trout	190
LEIPER, R. T. Note on the Anatomy of Cystidicola farionis	193

Contents

No. 3 (October).

	PAGE
TURNER, G. A. Bilharziosis in South Africa	195
CLELAND, J. BURTON. Note on Spirochaetes in Castration Tumours	
of Pigs	218
NUTTALL, GEORGE H. F. and GRAHAM-SMITH, G. S. Notes on the	
Drug Treatment of Canine Piroplasmosis	220
DURHAM, HERBERT E. Notes on Nagana and on some Haematozoa	
observed during my travels	227
MINCHIN, E. A. Note on the Polymorphism of Trypanosoma	
gambiense. (Plate XVII.)	236
NUTTALL, GEORGE H. F., COOPER, W. F. and ROBINSON, L. E. On the	
Structure of "Haller's Organ" in the Ixodoidea. (Plate XVIII	
and one Text Figure.).	238
NUTTALL, GEORGE H. F. and GRAHAM-SMITH, G. S. The Development	
of Piroplasma canis in Culture. (Plate XIX and one Text	
Figure.)	243
NUTTALL, GEORGE H. F. and STRICKLAND, C. Note on the Prevalence	
of Intestinal Worms in Dogs in Cambridge .	261

No. 4 (December).

SHIPLEY, A. E. A Cause of Appendicitis and other Intestinal Lesions	
in Man and other Vertebrates	263
SHIPLEY, A. E. Note on the Occurrence of Triaenophorus nodulosus	
Rud. in the Norfolk Broads	280
HARDING, W. A. Note on Leeches sent by Dr E. W. G. Masterman	
from Palestine	282
Communication received from the Society for the Destruction of	
Vermin	284
DOBELL, C. CLIFFORD. Some Notes on the Haemogregarines Parasitic	
in Snakes. (Plate XX.)	288
NUTTALL, GEORGE H. F. The Transmission of Trypanosoma lewisi by	
Fleas and Lice	296
NUTTALL, GEORGE H. F. and STRICKLAND, C. On the Presence of an	
Anticoagulin in the Salivary Glands and Intestines of Argas	
persicus	302

Contents

PATTON, W. S. Inoculation of Dogs with the Parasite of Kala Azar (Herpetomonas [Leishmania] donovani) with some Remarks on the	
Genus Herpetomonas	311
WENYON, C. M. A Trypanosome and Haemogregarine of a Tropical American Snake. (Plate XXI.)	314
PATTON, W. S. The Haemogregarines of Mammals and Reptiles .	318
PATTON, W. S. and STRICKLAND, C. A Critical Review of the Relation of Blood-sucking Invertebrates to the Life Cycles of the Trypanosomes of Vertebrates, with a Note on the Occurrence of a Species of Crithidia, C. ctenophthalmi, in the Alimentary Tract of Ctenophthalmus agyrtes, Heller	322
NUTTALL, GEORGE H. F., COOPER, W. F. and ROBINSON, L. E. On the Structure of the Spiracles of a Tick—Haemaphysalis punctata, Canestrini and Fanzago. (Plates XXII, XXIII.)	347
LEBOUR, MARIE V. A Contribution to the Life History of Echino-	911
stomum secundum, Nicoll. (Plate XXIV.)	352
PARSONS, ALLAN C. Filaria volvulus, Leuckart, its Distribution, Structure and Pathological Effects	359
FANTHAM, H. B. The Schizogregarines: A Review and a New	
Classification	369
INDEX OF AUTHORS	413
INDEX OF SUBJECTS	415

v

PAGE

PARASITOLOGY

A SUPPLEMENT TO THE JOURNAL OF HYGIENE

INTRODUCTION

WHEN the Journal of Hygiene was founded it was announced that papers on Parasitology "in relation to hygiene and preventive medicine" would be published in its pages. It has however been felt for some time that the Journal was becoming unduly burdened with papers dealing with the anatomy of mosquitoes, fleas, protozoa and other parasites—of great importance in themselves—but having only an indirect relation to hygiene and preventive medicine.

The remarkable development of parasitology in recent years, and the increase in our knowledge of the part played by parasites in human and animal diseases, demand a means of publication, in the English language, of original papers dealing with the subject in its widest sense. It is proposed in future to relegate all such papers to *Parasitology*.

The fundamental discoveries upon the modes of infection in plague, malaria, sleeping sickness, yellow fever, ankylostomiasis, elephantiasis, and other important diseases, affecting man and animals, render it evident that the cooperation of specialists in different fields is required for the proper elucidation of the complex problems which surround the causation of these diseases. The successful study of such diseases, as are carried through the agency of invertebrate hosts, demands therefore not only investigations into the processes which occur in the affected vertebrate, but also observations on the structure and life-history of the pathogenic organism, and of the alternative host, or hosts, which serve to spread the disease. Thus, a knowledge of the structure and biology of mosquitoes, biting flies and ticks is necessary for a comprehensive knowledge of the etiology of malaria, trypanosomiasis, spirochaetosis and piroplasmosis, and a knowledge of fleas and their habits is essential in the study of plague. Further, recent discoveries relating to parasitic

Introduction

worms, especially those which produce filariasis, ankylostomiasis, and various intestinal diseases, have given a great stimulus to the study of the entozoa.

Papers on the subjects we have mentioned are now scattered in journals of widely different character, into some of which they are but grudgingly admitted. We trust that *Parasitology* will fulfil the purpose the editors have in view, of encouraging the study of parasitology, especially in relation to disease, by providing a means for the publication of papers relating to pathogenic and disease-transmitting parasites.

It is therefore hoped that this publication will appeal not only to medical men at home and abroad, but to veterinarians, zoologists and agriculturalists.

A paper by Dr K. Jordan and the Hon. N. C. Rothschild on the structure and classification of a group of fleas, some of whose members are now known to play an important part in the spread of plague, constitutes the first number of *Parasitology*.

The following papers have been promised for the succeeding numbers:—"Further studies on the anatomy and life-history of Anopheles maculipennis," by A. D. Imms. "The structure and biology of the Tick (Haemaphysalis punctata)," by G. H. F. Nuttall, F.R.S., W. F. Cooper, B.A., and L. E. Robinson. "On two new species of Human Entozoa," by R. T. Leiper, M.B. (London School of Tropical Medicine). "On the relation of Entozoa to intestinal disease in vertebrates," by A. E. Shipley, F.R.S. "Studies on Spirochaeta Duttoni," by G. H. F. Nuttall, F.R.S., "Comparative studies on the Piroplasmata," by G. H. F. Nuttall, F.R.S., and G. S. Graham-Smith.

Parasitology, though a supplement to the Journal of Hygiene, will be issued in the form of a separate yearly volume of four to five hundred pages. The parts will be issued when sufficient material has accumulated. Subscribers to the Journal of Hygiene can obtain Parasitology at an annual subscription of 15s., other subscribers at 21s. a year.

> G. H. F. N. A. E. S.