

PARASITOLOGY

PARASITOLOGY

(Founded by G. H. F. Nuttall, F.R.S.)

EDITORS

D. W. T. CROMPTON *and* B. A. NEWTON

EDITORIAL ASSISTANT

M. ELISABETH PAINTER, Ph.D.

ADVISORY BOARD

L. G. GOODWIN, F.R.S. (*Chairman*)

R. ANDERSON	D. I. GIBSON	J. F. RYLEY
D. R. ARTHUR	L. P. JOYNER	G. SALT, F.R.S.
J. R. BAKER	C. R. KENNEDY	S. R. SMITHERS
J. BARRETT	ANN M. LACKIE	K. VICKERMAN
ELIZABETH U. CANNING	D. L. LEE*	D. WAKELIN
L. H. CHAPPELL	R. J. LINCOLN	P. F. V. WARD
S. COHEN, F.R.S.	J. LLEWELLYN	P. J. WHITFIELD
R. R. A. COOMBS, F.R.S.	S. H. P. MADDRELL	H. H. WILLIAMS
F. E. G. COX	BRIDGET M. OGILVIE	R. A. WILSON
G. A. M. CROSS	M. ELAINE ROSE	C. A. WRIGHT
D. A. ERASMUS	J. H. ROSE	

* Representing the British Society for Parasitology

VOLUME 80, 1980

CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE

LONDON NEW YORK NEW ROCHELLE
MELBOURNE SYDNEY

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, N.Y. 10022

© Cambridge University Press, 1980

Printed in Great Britain at the
University Press, Cambridge

CONTENTS

(All rights reserved)

PART 1 FEBRUARY 1980

	PAGE
NELLAIPPAN, K. and RAMALINGAM, K. Stabilization of egg-shell in <i>Paraplerurus sauridae</i> (Digenea: Hemiuridae)	1
SHAW, M. K. The ultrastructure of the epidermis of <i>Diplectanum aequans</i> (Monogenea)	9
MAKI, JUN and YANAGISAWA, TOSHIO. Acid phosphatase activity demonstrated in the nematodes, <i>Dirofilaria immitis</i> and <i>Angiostrongylus cantonensis</i> with special reference to the characters and distribution	23
MARTIN, JEAN. Scanning electron microscope studies of the small intestine of rats maintained on a low protein diet and infected with <i>Nippostrongylus brasiliensis</i>	39
KENNEDY, M. W. Effects of the host immune response on the longevity, fecundity and position in the intestine of <i>Trichinella spiralis</i> in mice	49
KENNEDY, M. W. Immunologically mediated, non-specific interactions between the intestinal phases of <i>Trichinella spiralis</i> and <i>Nippostrongylus brasiliensis</i> in the mouse.	61
WARD, P. F. V. and HUSKISSON, N. S. The role of carbon dioxide in the metabolism of adult <i>Haemonchus contortus</i> , <i>in vitro</i>	73
KUSEL, J. R., STONES, L. and TETLEY, L. Damage to surface membrane of <i>Schistosoma mansoni</i> by pristane (2, 6, 10, 14 tetramethyl pentadecane) and other hydrophobic compounds	83
TAVARES, C. A. P., CORDEIRO, M. N., MOTA-SANTOS, T. A. and GAZZINELLI, G. Artificially transformed schistosomula of <i>Schistosoma mansoni</i> : mechanism of acquisition of protection against antibody-mediated killing	95
INFANTE, R. B., HERNANDEZ, A. G., RIGGIONE, F. and DAWIDOWICZ, K. A partial purification of leishmania amastigotes from cutaneous lesions, a new method	105
RAUTENBERG, P., REINWALD, E. and RISSE, H.-J. Evidence for Concavalin A binding sites on the surface coat of <i>Trypanosoma congolense</i>	113
NANTULYA, V. M. and DOYLE, J. J. Studies on <i>Trypanosoma (nannomonas) congolense</i> III. Antigenic variation in three cyclically transmitted stocks	123
NANTULYA, V. M. and DOYLE, J. J. Studies on <i>Trypanosoma (nannomonas) congolense</i> IV. Experimental immunization of mice against tsetse fly challenge	133

	PAGE
MILDER, REGINA and KLOETZEL, JUDITH. The development of <i>Trypanosoma cruzi</i> in macrophages <i>in vitro</i> . Interaction with lysosomes and host cell fate	139
ABRAHAMSOHN, I. A. and KLOETZEL, J. K. Presence of <i>Trypanosoma cruzi</i> antigen on the surface of both infected and uninfected cells in tissue culture	147
SANDERSON, C. J., THOMAS, JENNIFER A. and TWOMEY, CHERYL E. The growth of <i>Trypanosoma cruzi</i> in human diploid cells for the production of trypomastigotes	153
LETCH, C. A. The life-cycle of <i>Trypanosoma cobitis</i> Mitrophanow 1883	163
MACKAY, L., PERRIN, L., LEEMANS, E. and LAMBERT, P. H. The diagnosis of malaria infection using a solid-phase radioimmunoassay for the detection of malaria antigens. Application to the detection of <i>Plasmodium berghei</i> infection in mice	171
VARGHESE, T. Coccidian parasites of birds of the avian order Columbiformes with a description of two new species of <i>Eimeria</i>	183
<i>Trends and Perspectives</i>	
RYLEY, JOHN F. Recent developments in coccidian biology; where do we go from here?	189

PART 2 APRIL 1980

KURIS, ARMAND M., POINAR, GEORGE O. and HESS, ROBERTA T. Post-larval mortality of the endoparasitic isopod castrator <i>Portunion conformis</i> (Epicaridia: Entoniscidae) in the shore crab, <i>Hemigrapsus oregonensis</i> , with a description of the host response	211
ALTAIF, K. I., AL-ABBASSY, S. N. and ABBOUD, H. B. The response of Awassi sheep to re-infection with <i>Haemonchus contortus</i> larvae	233
RADLETT, A. J. The structure and possible function of the ventral papillae of <i>Notocotylus attenuatus</i> (Rudolphi, 1809) Kossack, 1911 (Trematoda: Notocotylidae)	241
BOUT, D., ROUSSEAU, R., CARLIER, Y. and CAPRON, A. Kinetics of classes and sub-classes of total immunoglobulins and specific antibodies to <i>Schistosoma mansoni</i> during murine infection	247
WILSON, R. A. and LAWSON, J. RUTH. An examination of the skin phase of schistosome migration using a hamster cheek pouch preparation	257
MILLER, PATRICIA and WILSON, R. A. Migration of the schistosomula of <i>Schistosoma mansoni</i> from the lungs to the hepatic portal system	267

	PAGE
SMITHERS, S. R. and GAMMAGE, K. Recovery of <i>Schistosoma mansoni</i> from the skin, lungs and hepatic portal system of naive mice and mice previously exposed to <i>S. mansoni</i> : evidence for two phases of parasite attrition in immune mice	289
JAMES, S. Isolation of second-generation schizonts of avian coccidia and their use in biochemical investigations	301
JAMES, S. Thiamine uptake in isolated schizonts of <i>Eimeria tenella</i> and the inhibitory effects of amprolium	313
HEMPELMANN, E. and WILSON, R. J. M. Endopeptidases from <i>Plasmodium knowlesi</i>	323
HOWARD, R. J. and SAWYER, W. H. Changes in the membrane microviscosity of mouse red blood cells infected with <i>Plasmodium berghei</i> detected using <i>n</i> -(9-anthroyloxy) fatty acid fluorescent probes	331
KOSINSKI, R. J. Antigenic variation in trypanosomes: a computer analysis of variant order	343
DOYLE, J. J., HIRUMI, H., HIRUMI, K., LUPTON, E. N. and CROSS, G. A. M. Antigenic variation in clones of animal-infective <i>Trypanosoma brucei</i> derived and maintained <i>in vitro</i>	359
HIRUMI, H., HIRUMI, K., DOYLE, J. J. and CROSS, G. A. M. <i>In vitro</i> cloning of animal-infective bloodstream forms of <i>Trypanosoma brucei</i>	371
TANNER, M., JENNI, L., HECKER, H. and BRUN, R. Characterization of <i>Trypanosoma brucei</i> isolated from lymph nodes of rats	383
<i>Trends and Perspectives</i>	
LACKIE, ANN M. Invertebrate immunity	393

PART 3 JUNE 1980

LAMBERT, MONIQUE and EUZET, LOUIS. <i>Polycliphora nezumiae</i> gen. et sp. nov. (Monogenea: Diclidophoridae) a gill parasite of <i>Nezumia aequalis</i> (Macrouridae) from Senegal	413
WASTI, S. S., HARTMANN, G. C. and ROUSSEAU, A. J. Gypsy moth mycoses by two species of entomogenous fungi and an assessment of their avian toxicity	419
YOUNG, R. R. and TRAJSTMAN, A. C. A rapid technique for the recovery of strongyloid infective larvae from pasture and soil samples.	425
NÉMETH, I. and JUHÁSZ, S. A trypsin and chymotrypsin inhibitor from the metacestodes of <i>Taenia pisiformis</i>	433
CLARKE, A. J. and PERRY, R. N. Egg-shell permeability and hatching of <i>Ascaris suum</i>	447

	PAGE
TECHASOPONMANI, REAM and SIRISINHA, S. Use of excretory and secretory products from adult female worms to immunize rats and mice against <i>Angiostrongylus cantonensis</i> infection	457
McHARDY, N. Passive protection of mice against infection with <i>Trypanosoma cruzi</i> with plasma: the use of blood- and vector bug-derived trypomastigote challenge	471
SIRAG, S. B., CHRISTENSEN, N. Ø., FRANDSEN, F., MONRAD, J. and NANSEN, P. Homologous and heterologous resistance in <i>Echinostoma revolutum</i> infections in mice	479
KEMP, D. H. and BOURNE, A. <i>Boophilus microplus</i> : the effect of histamine on the attachment of cattle-tick larvae—studies <i>in vivo</i> and <i>in vitro</i>	487
BIRD, A. F. and LOVEYS, B. R. The involvement of cytokinins in a host-parasite relationship between the tomato (<i>Lycopersicon esculentum</i>) and a nematode (<i>Meloidogyne javanica</i>)	497
ROVIS, LUCIANA and BAEKKESKOV, STEINUNN. Sub-cellular fractionation of <i>Trypanosoma brucei</i> . Isolation and characterization of plasma membranes	507
GLAUERT, AUDREY M., OLIVER, RHONDA C. and THORNE, KAREEN J. I. The interaction of human eosinophils and neutrophils with non-phagocytosable surfaces: a model for studying cell-mediated immunity in schistosomiasis	525
JOHNSON, J. G., EPSTEIN, N., SHIROISHI, T. and MILLER, L. H. Factors affecting the ability of isolated <i>Plasmodium knowlesi</i> merozoites to attach to and invade erythrocytes	539
PEIRCE, M. A. A simple staining technique to demonstrate the sporozoite refractile globule in coccidian parasites	551
RUFF, M. D. and WILKINS, G. C. Total intestinal absorption of glucose and L-methionine in broilers infected with <i>Eimeria acervulina</i> , <i>E. mivati</i> , <i>E. maxima</i> or <i>E. brunetti</i>	555
<i>Trends and Perspectives</i>	
IRVIN, A. D. and BOARER, C. D. H. Some implications of a sexual cycle in <i>Theileria</i>	571

PARASITOLOGY

SUBSCRIPTIONS may be sent to any bookseller or subscription agent or direct to Cambridge University Press, P.O. Box 110, Cambridge CB2 3RL. Subscriptions in the U.S.A. and Canada should be sent to Cambridge University Press, 32 East 57th Street, New York, N.Y. 10022. All orders must be accompanied by payment. The subscription price of volumes 80 and 81, 1980, is £26.00 net (including postage) for a volume of three parts (US \$75.00 in the U.S.A. and Canada) payable in advance (£52.00 or US \$150.00 per year); separate parts cost £11.00 net or US \$32.00 each (plus postage).

BACK VOLUMES. Vols. 1–39: Inquiries should be addressed to Wm. Dawson & Sons Ltd, Cannon House, Folkestone, Kent. Vols. 40 onwards: quotations for parts still in print may be obtained from the Cambridge or New York offices of the Cambridge University Press.

COPYING. This journal is registered with the Copyright Clearance Center, P.O. Box 8891, Boston, Mass. 02114. Organizations in the U.S.A. who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of U.S. copyright law) subject to payment to C.C.C. of the per-copy fee indicated in the code on the first page of the article. This consent does not extend to multiple copying for promotional or commercial purposes.

ISI TEAR SERVICE, 3501 Market Street, Philadelphia, Pennsylvania 19104, U.S.A., is authorized to supply single copies of separate articles for private use only.

FOR ALL OTHER USE, permission should be sought from the Cambridge or New York offices of the Cambridge University Press.

CLAIMS for missing issues can only be considered if made immediately after receipt of the subsequent issue.

ADVERTISING. Details of advertising in *Parasitology* may be obtained from the publisher.

The previous part was published on 27 March 1980

PARASITOLOGY

Volume 80, Part 3, June 1980

CONTENTS

	PAGE
LAMBERT, MONIQUE and EUZET, LOUIS. <i>Polycliphora nezumiae</i> gen. et sp. nov. (Monogenea: Diclidophoridae) a gill parasite of <i>Nezumia aequalis</i> (Macrouridae) from Senegal	413
WASTI, S. S., HARTMANN, G. C. and ROUSSEAU, A. J. Gypsy moth mycoses by two species of entomogenous fungi and an assessment of their avian toxicity	419
YOUNG, R. R. and TRAJSTMAN, A. C. A rapid technique for the recovery of strongyloid infective larvae from pasture and soil samples	425
NÉMETH, I. and JUHÁSZ, S. A trypsin and chymotrypsin inhibitor from the metacestodes of <i>Taenia pisiformis</i>	433
CLARKE, A. J. and PERRY, R. N. Egg-shell permeability and hatching of <i>Ascaris suum</i>	447
TECHASOPONMANI, REAM and SIRISINHA, S. Use of excretory and secretory products from adult female worms to immunize rats and mice against <i>Angiostrongylus cantonensis</i> infection	457
MCHARDY, N. Passive protection of mice against infection with <i>Trypanosoma cruzi</i> with plasma: the use of blood- and vector bug-derived trypomastigote challenge	471
SIRAG, S. B., CHRISTENSEN, N. O., FRANDSEN, F., MONRAD, J. and NANSEN, P. Homologous and heterologous resistance in <i>Echinostoma revolutum</i> infections in mice	479
KEMP, D. H. and BOURNE, A. <i>Boophilus microplus</i> : the effect of histamine on the attachment of cattle-tick larvae—studies <i>in vivo</i> and <i>in vitro</i>	487
BIRD, A. F. and LOVEYS, B. R. The involvement of cytokinins in a host-parasite relationship between the tomato (<i>Lycopersicon esculentum</i>) and a nematode (<i>Meloidogyne javanica</i>)	497
ROVIS, LUCIANA and BAEKESKOV, STEINUNN. Sub-cellular fractionation of <i>Trypanosoma brucei</i> . Isolation and characterization of plasma membranes	507
GLAUERT, AUDREY M., OLIVER, RHONDA C. and THORNE, KAREEN J. I. The interaction of human eosinophils and neutrophils with non-phagocytosable surfaces: a model for studying cell-mediated immunity in schistosomiasis	525
JOHNSON, J. G., EPSTEIN, N., SHIROISHI, T. and MILLER, L. H. Factors affecting the ability of isolated <i>Plasmodium knowlesi</i> merozoites to attach to and invade erythrocytes	539
PEIRCE, M. A. A simple staining technique to demonstrate the sporozoite refractile globule in coccidian parasites	551
RUFF, M. D. and WILKINS, G. C. Total intestinal absorption of glucose and L-methionine in broilers infected with <i>Eimeria acervulina</i> , <i>E. mivati</i> , <i>E. maxima</i> or <i>E. brunetti</i>	555
<i>Trends and Perspectives</i>	
IRVIN, A. D. and BOARER, C. D. H. Some implications of a sexual cycle in <i>Theileria</i>	571

© Cambridge University Press 1980

The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, N.Y. 10022

Printed in Great Britain at the University Press, Cambridge