

THE JOURNAL OF HYGIENE

(Founded in 1901 by G. H. F. Nuttall, F.R.S.)

EDITED BY

R. M. FRY, M.A., M.R.C.S.

IN CONJUNCTION WITH

H. J. BENSTED, O.B.E., M.C., M.R.C.P.

W. I. B. BEVERIDGE, D.V.Sc., M.A.

A. W. DOWNIE, M.D., F.R.S.

R. I. N. GREAVES, M.D.

J. O. IRWIN, M.A., D.Sc., Sc.D., F.S.S.

E. T. C. SPOONER, M.D.

Sir GRAHAM WILSON, M.D., LL.D., F.R.C.P., D.P.H.



CAMBRIDGE UNIVERSITY PRESS

Bentley House, 200 Euston Road, London, N.W. 1
American Branch: 32 East 57th Street, New York 22, N.Y.

Subscription per volume £4. 10s. (\$17.50) (4 parts)

Single parts 30s. 0d. (\$5.00)

SERUM
TRANSAMINASE REAGENTS
OF BRITISH MANUFACTURE
PRODUCED BY
BURROUGHS WELLCOME & CO.

Amongst other advantages the 'Wellcome' Brand Reagents are calibrated to give results in International Units in accordance with modern usage. Prepared for use as a modification of the colorimetric method of Reitman and Frankel (1957).

MR34 GOT Substrate 24/- per 100 ml. bottle
MR36 GPT Substrate 24/- per 100 ml. bottle
MR37 Colour Developer 24/- per 100 ml. bottle
MR38 Standard Solution 6/- per 10 ml. bottle
GOT Kit comprising MR34, MR37 and MR38 complete 55/-
GPT Kit comprising MR36, MR37 and MR38 complete 55/-

FRESH — ACCURATE — SIMPLE
REQUIRES NO SPECIAL EQUIPMENT

SOLE UNITED KINGDOM DISTRIBUTORS

GEORGE T. GURR LIMITED

137/144 NEW KINGS ROAD, LONDON, S.W.6
Tel: RENown 5482 Cables: MICROSTAIN, LONDON, S.W.6

MICHROME STAINS

Biological Reagents, etc.

over 3000 available, including

Aquamount	Laktoseal	Sudan Black
Celloidin	Leishman Stain	Sun Yellow
Clearmount	Lipid Crimson	Tryptidine Blue
Cristalite	Luxol Fast Blue	Trypsin
Fluormount	Methyl Green	Urease
Fluoroil	Naphthalene Violet	Violamine 3B
Giemsa Stain	Optoil	Wright Stain, &c.

TRIFALGIC ACID for electrophoresis, etc.

104-page catalogue available on request.

New books by Edward Gurr:—Now ready

"STAINING ANIMAL TISSUES", 637 pp., 84/-

"ENCYCLOPAEDIA OF MICROSCOPIC STAINS",
500 pages, Royal 8vo, price 95/-

Ready shortly:

"RATIONAL USE OF DYES IN BIOLOGY AND
GENERAL STAINING METHODS". Price 84/-

EDWARD GURR, LTD.

42 Upper Richmond Road West
LONDON, S.W.14

Telephones: PROspect 8228/9

Service, uniform high quality, reliability, and
immediate delivery

The Journal of General Microbiology

Editors: B. C. J. G. KNIGHT and A. F. B. STANDFAST

Vol. 35, No. 3

35s.

June 1964

- W. J. RYAN. Moraxella commonly present on the conjunctiva of guinea-pigs.
S. DE PETRIS, GIOANNA KARLSBAD and R. W. I. KESSEL. The ultrastructure of S and R variants of *Brucella abortus* grown on a lifeless medium.
GIOANNA KARLSBAD, R. W. I. KESSEL, S. DE PETRIS and L. MONACO. Electron microscope observations of *Brucella abortus* grown within monocytes *in vitro*.
J. H. STUY and DORIS STERN. The kinetics of DNA uptake by *Haemophilus influenzae*.
D. J. D. NICHOLAS, W. J. REDMOND and M. A. WRIGHT. Effects of cultural conditions on nitrate reductase in *Photobacterium sepiaria*.
B. DIXON and A. H. ROSE. Observations on the fine structure of *Saccharomyces cerevisiae* as affected by biotin deficiency.
M. HERZBERG and J. H. GREEN. Composition and characteristics of cell walls of smooth strains of *Salmonella typhimurium* and derived rough variants.
D. E. BIANCHI. An endogenous circadian rhythm in *Neurospora crassa*.
N. LAZAROFF and W. VISHNIAC. The relationship of cellular differentiation to colonial morphogenesis of the blue-green alga, *Nostoc muscorum* A.
- R. A. J. WARREN and J. B. NEILANDS. Microbial degradation of the ferrichrome compounds.
D. E. BRADLEY. The structure of some bacteriophages associated with male strains of *Escherichia coli*.
C. H. HASSALL and K. LAWRENCE. The relationship of a phenolic metabolite and a morphological character of *Aspergillus rugulosus*.
D. L. MOULD, W. SMITH and A. McL. DAWSON. The elution behaviour of scrapie brain tissue through calcium phosphate columns.
P. HELENA MÄKELÄ. Genetic homologies between flagellar antigens of *Escherichia coli* and *Salmonella abony*.
P. H. GRAHAM. The application of computer techniques to the taxonomy of the root-nodule bacteria of legumes.
MARGARET GEMMELL. The physiological characters and flagellar arrangement of motile homofermentative lactobacilli.
Proceedings of the London Meeting of the Society, 6, 7 and 8 April 1964.

Subscription 80s. per volume of 3 parts.

Orders should be sent to

CAMBRIDGE UNIVERSITY PRESS
BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W.1

**THE
JOURNAL OF HYGIENE**

THE JOURNAL OF HYGIENE

(*Founded in 1901 by G. H. F. Nuttall, F.R.S.*)

EDITED BY

R. M. FRY, M.A., M.R.C.S.

LATELY DIRECTOR OF THE PUBLIC HEALTH LABORATORY, CAMBRIDGE

IN CONJUNCTION WITH

H. J. BENSTED, O.B.E., M.C., M.R.C.P.

Lately Director of the Central Public Health Laboratory, Colindale

W. I. B. BEVERIDGE, D.V.Sc., M.A.

Professor of Animal Pathology in the University of Cambridge

A. W. DOWNIE, M.D., F.R.S.

Professor of Bacteriology in the University of Liverpool

R. I. N. GREAVES, M.D.

Professor of Pathology in the University of Cambridge

J. O. IRWIN, M.A., D.Sc., Sc.D., F.S.S.

Of the Medical Research Council's Statistical Research Unit,
London School of Hygiene and Tropical Medicine

E. T. C. SPOONER, M.D.

Dean, London School of Hygiene and Tropical Medicine

Sir GRAHAM S. WILSON, M.D., LL.D., F.R.C.P., D.P.H.

Lately Director of the Public Health Laboratory Service

VOLUME LXII. 1964

CAMBRIDGE
AT THE UNIVERSITY PRESS
1964

PUBLISHED BY
THE SYNDICS OF THE CAMBRIDGE UNIVERSITY PRESS
Bentley House, 200 Euston Road, London, N.W.1
American Branch: 32 East 57th Street, New York 22, N.Y.

*Printed in Great Britain at the University Printing House, Cambridge
(Brooke Crutchley, University Printer)*

Contents

No. 1 (MARCH 1964)

	PAGE
GILLIES, R. R. Colicine production as an epidemiological marker of <i>Shigella sonnei</i>	1
NOBLE, J. E. Intradermal cholera vaccination	11
BANIČ, S. A new enrichment medium for salmonellae	25
CREWTHORPE, W. G. and MCQUADE, A. B. Disinfection of woollen blanket	29
STEWART, G. T., HOLT, R. J., COLES, H. M. T. and BHAT, K. M. Replacement coliform flora in carriers of intestinal pathogens	39
SMITH, GILLIAN TILDEN. A survey of measles antibodies in different populations	45
SMITH, C. E. GORDON, McMAHON, DOLORES A., O'REILLY, K. J., WILSON, A. L. and ROBERTSON, J. M. The epidemiology of louping ill in Ayrshire: the first year of studies in sheep	53
WATKINS, J. F. Observations on antigenic variation in a strain of <i>Trypanosoma brucei</i> growing in mice	69
LIESS, B. and PLOWRIGHT, W. Studies on the pathogenesis of rinderpest in experimental cattle. I. Correlation of clinical signs, viraemia and virus excretion by various routes	81
MORROW, A. W. and BUCKLEY, L. S. Factors affecting the growth of virus of foot-and-mouth disease on surviving explants of bovine tongue epithelium	101
BUCKLAND, F. E., DOGGETT, JENNIFER E. and TYRRELL, D. A. J. The specificity of the antibody responses of human volunteers to certain respiratory viruses	115
BARBER, CELLA. The site of specific substances in capsulated organisms	121

No. 2 (JUNE 1964)

COSSART, Y. E. Influenza haemagglutination-inhibition antibodies in Sydney	127
DUMBELL, K. R. and BEDSON, H. S. The use of ceiling temperature and reactivation in the isolation of pox virus hybrids	133
BEDSON, H. S. and DUMBELL, K. R. Hybrids derived from the viruses of alastrim and rabbit pox	141
BEDSON, H. S. and DUMBELL, K. R. Hybrids derived from the viruses of variola major and cowpox	147
HINUMA, YORIO, MURAI, YOSHIMICHI, FUKUDA, MINORU, NUMAZAKI, YOSHIO, ISHIDA, NAKAO and NAKAO, TOORU. An outbreak of aseptic meningitis associated with Coxsackie B5 and A9 viruses in Northern Japan, 1961. Virological and serological studies	159
GARDNER, P. S. and COOPER, CHRISTINE E. The feeding of oral poliovirus vaccine to a closed community excreting faecal viruses	171
TERZIN, ALEXANDER L. 'False positive' complement fixation with psittacosis-trachoma antigens due to antibodies in complement preparations	179
TERZIN, A. L., VEDROS, N. A. and JOHNSTON, J. B. Serological studies on group- and species-specific antigens of trachoma and inclusion conjunctivitis (TRIC) agents	185

	PAGE
LEMCKE, RUTH M. The serological differentiation of <i>Mycoplasma</i> strains (pleuro-pneumonia-like organisms) from various sources	199
LOWBURY, E. J. L., BABB, J. R., BROWN, VIVIEN I. and COLLINS, B. J. Neomycin-resistant <i>Staphylococcus aureus</i> in a burns unit	221
LOWBURY, E. J. L. and COLLINS, B. J. The egg-yolk reaction of <i>Staphylococcus aureus</i> isolated from burns	229
LEVITT, JULIA and POLSON, A. Physical and serological investigation of Rift Valley fever antigens	239
PLOWRIGHT, W. Studies on the pathogenesis of rinderpest to experimental cattle. II. Proliferation of the virus in different tissues following intranasal infection	257

No. 3 (SEPTEMBER 1964)

PUBLIC HEALTH LABORATORY SERVICE WORKING PARTY. Salmonellae in abattoirs, butchers' shops and home-produced meat, and their relation to human infection	283
TAYLOR, BARBARA C. and NAKAMURA, MITSURU. Survival of shigellae in food	303
JACKSON, THOMAS F. M. and SMYTH, D. A. An outbreak of <i>Salmonella typhimurium</i> food poisoning	313
GEORGALA, D. L. and BOOTHROYD, MARGERY. A rapid immunofluorescence technique for detecting salmonellae in raw meat	319
PLOWRIGHT, W., LAWS, R. M. and RAMPTON, C. S. Serological evidence for the susceptibility of the hippopotamus (<i>Hippopotamus amphibius</i> Linnaeus) to natural infection with rinderpest virus	329
FINTER, N. B. Interferon production and sensitivity of Semliki Forest virus variants	337
LEMCKE, RUTH M. The relationship of a type of <i>Mycoplasma</i> isolated from tissue culture to a new human oral <i>Mycoplasma</i>	351
GRAY, DAVID F. and POOLE, ROSALIND. The specificity of cellular immunity .	353
BUCKLAND, F. E. and TYRRELL, D. A. J. Experiments on the spread of colds. 1. Laboratory studies on the dispersal of nasal secretion	365
SMITH, J. W. G. Simultaneous active and passive immunization of guinea-pigs against tetanus	379
ROWE, F. P. and REDFERN, R. The toxicity of 0.025% warfarin to wild house-mice (<i>Mus musculus</i> L.)	389
STALLYBRASS, F. C. The incidence of the serological groups of <i>Candida albicans</i> in southern England	395

No. 4 (DECEMBER 1964)

DAVIE, JOHN. A complement fixation technique for the quantitative measurement of antigenetic differences between strains of the virus of foot-and-mouth disease	401
CAUNT, ANNE E. and TAYLOR-ROBINSON, D. Cell-free varicella-zoster virus in tissue culture	413
MURPHY, A. M. The isolation of an unclassified virus from an outbreak of infantile diarrhoea	425

Contents

vii

	PAGE
CHAPPLE, PAUL J. and LEWIS, N. D. An outbreak of myxomatosis caused by a moderately attenuated strain of myxoma virus	433
VOGELSANG, TH. M. The campaign against typhoid and paratyphoid B in western Norway. Results of cholecystectomy	443
EMANUEL, MARIE L., MACKERRAS, I. M. and SMITH, D. J. W. The epidemiology of leptospirosis in North Queensland. I. General survey of animal hosts .	451
BATTEY, YVONNE M., SMITH, D. J. W. and BARROW, G. J. The epidemiology of leptospirosis in North Queensland. II. Further observations on the hosts in the Mossman district	485
GRAY, R. D. An improved formate lactose glutamate medium for the detection of <i>Escherichia coli</i> and other coliform organisms in water	495
SAGGERS, B. A. and STEWART, G. T. Polyvinyl-pyrrolidone-iodine: an assessment of antibacterial activity	509
KINGSTON, D. and NOBLE, W. C. Tests on self-disinfecting surfaces	519