

THE JOURNAL OF HYGIENE

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

EDITED BY

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

PROFESSOR OF BACTERIOLOGY AND IMMUNOLOGY IN THE UNIVERSITY OF LONDON

AND

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

READER IN BACTERIOLOGY IN THE UNIVERSITY OF CAMBRIDGE

IN CONJUNCTION WITH

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

Professor of Animal Pathology in the University of Cambridge

A. W. DOWNIE, M.D.

Professor of Bacteriology in the University of Liverpool

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

Sir WILSON JAMESON, G.B.E., K.C.B., M.D., F.R.C.P., D.P.H.

Some time Chief Medical Officer, Ministries of Health and Education

G. S. WILSON, M.D., F.R.C.P., D.P.H.

Director, Public Health Laboratory Service (Medical Research Council)

A. FELIX, D.Sc., F.R.S.

Director, Central Enteric Reference Laboratory and Bureau,
Public Health Laboratory Service (Medical Research Council), London



CAMBRIDGE UNIVERSITY PRESS

LONDON: BENTLEY HOUSE, N.W.1

NEW YORK: 32 EAST 57TH STREET, 22

Price Twenty-two Shillings and Sixpence net

GURR'S

Established 1915



STANDARD STAINS AND REAGENTS FOR MICROSCOPY KNOWN AND USED THROUGHOUT THE WORLD

WRITE for any of the following literature:

Catalogue of Stains B 4

Gurr's Commentary No. 12

Q.R. Laboratory Notes

Biological Staining Methods, 5s. 6d.
post paid

Catalogue of Accessories A.C. 1953

GEORGE T. GURR LTD.

Laboratories:

136/138 NEW KINGS ROAD
LONDON, S.W.6

No connexion with any other business of similar name

BRAND **MICHROME** BRAND

MICROSCOPICAL STAINS

| | |
|------------------------|--------------------|
| Azur 1, 2, A, B, C & L | Mannitol |
| Brom Phenol Red | May-Grunwald Stain |
| Cresyl Fast Violet | Night Blue |
| Evan's Blue | Rosolic Acid |
| Giemsa Stain | Thionin |
| Janus Green, B | Toluidine Blue |
| Lacmoid | Trypan Red, etc. |

Stains and Reagents for Fluorescence Microscopy
Organic Laboratory Chemicals, etc.
Biological Laboratory Apparatus

Now ready: "Practical Manual of Medical & Biological Staining Techniques" (330 pages, price 26/- post free) by Edward Gurr.

UNIFORM HIGH QUALITY, RELIABILITY,
IMMEDIATE DELIVERY

EDWARD GURR, LTD.
42 UPPER RICHMOND ROAD
EAST SHEEN, LONDON, S.W.14

Telephones: Prospect 8051 & 7606
Cables: Micromlabs London

Price lists on application

BOOKS ON HYGIENE

H. K. LEWIS & Co. Ltd., can supply all Standard Works and Text-books on Hygiene and Sanitary Science, and all branches of Medicine and Surgery. Large selection available. Catalogues on request.

MEDICAL AND SCIENTIFIC LIBRARY

ANNUAL SUBSCRIPTION FROM TWENTY-FIVE SHILLINGS

The Library includes all standard and recent works in all branches of Hygiene and Sanitary Science.

Bi-monthly List of New Books and New Editions added to the Library sent post free to any address regularly on request.

THE LIBRARY CATALOGUE revised to December 1949, containing a classified Index of Authors and Subjects. 35s. net; postage 1s. 3d. To subscribers to the Library, 17s. 6d.; postage 1s. 3d. Supplement 1950-1952. To subscribers 3s. net; to non-subscribers 6s. net; postage 6d.

Secondhand Department. A constantly changing large stock of Medical and Scientific Literature on view, classified under subjects. Libraries or small collections purchased.

LONDON: H. K. LEWIS & Co. Ltd., 136 GOWER STREET, W.C.1

Telephone: EUSton 4282. Telegrams: Publicavit: Westcent: London
Business hours: 9 a.m. to 5.30 p.m. Saturdays to 1 p.m.

THE JOURNAL OF HYGIENE

*Printed in Great Britain at the University Press, Cambridge
(Brooke Crutchley, University Printer)
and published by the Cambridge University Press
London: Bentley House, N.W. 1
American Branch: New York
Agents for Canada, India, and Pakistan: Macmillan*

THE JOURNAL OF HYGIENE

(FOUNDED IN 1901 BY G. H. F. NUTTALL, F.R.S.)

EDITED BY

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

PROFESSOR OF BACTERIOLOGY AND IMMUNOLOGY IN THE UNIVERSITY OF LONDON

AND

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

READER IN BACTERIOLOGY IN THE UNIVERSITY OF CAMBRIDGE

IN CONJUNCTION WITH

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

Professor of Animal Pathology in the University of Cambridge

A. W. DOWNIE, M.D.

Professor of Bacteriology in the University of Liverpool

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

Sir WILSON JAMESON, G.B.E., K.C.B., M.D., F.R.C.P., D.P.H.

Some time Chief Medical Officer, Ministries of Health and Education

G. S. WILSON, M.D., F.R.C.P., D.P.H.

Director, Public Health Laboratory Service (Medical Research Council, London)

A. FELIX, D.Sc., F.R.S.

Director, Central Enteric Reference Laboratory and Bureau, Public Health
Laboratory Service (Medical Research Council, London)

VOLUME LII. 1954

CAMBRIDGE
AT THE UNIVERSITY PRESS

1954

CONTENTS

No. 1 (MARCH 1954)

| | PAGE |
|---|------|
| SINGER, JAQUES and BAR-CHAY, JOSEPH. Biochemical investigation of Providence strains and their relationship to the <i>Proteus</i> group | 1 |
| MACLEOD, D. R. E. Immunity to salmonella infection in mice | 9 |
| REID, D. B. W. and MACLEOD, D. R. E. The relation between dose and mortality for <i>Salmonella dublin</i> . (With 2 Figures in the Text) | 18 |
| FERGUSON, G. S. and ROBERTSON, A. The use of the milk ring test in a survey of the incidence of bovine brucellosis in southern Scotland | 24 |
| BEVERLEY, J. K. A., BEATTIE, C. P. and ROSEMAN, CISSIE. Human toxoplasma infection. (With 2 Figures in the Text) | 37 |
| MYERS, K. Studies in the epidemiology of infectious myxomatosis of rabbits. II. Field experiments August–November 1950, and the first epizootic of myxomatosis in the riverine plain of south-eastern Australia. (With 3 Figures in the Text) | 47 |
| BRUCE, H. M. Feeding and breeding of laboratory animals. XIV. Size of breeding group and production in mice. (With 3 Figures in the Text) | 60 |
| THOMSON, SCOTT. The number of bacilli harboured by enteric carriers. | 67 |
| MOORE, B. A survey of beach pollution at a seaside resort. (With 3 Figures in the Text) | 71 |
| BROOKSBY, J. B. and WARDLE, ELLA. Titration of the virus of foot-and-mouth disease in culture. (With Plates 1–3 and 3 Figures in the Text) | 87 |
| CHI-YEN CHU, DAVID and HOYT, ROBERT E. Reactions of TVi and Ballerup Vi haptenes with antisera against Vi-coated erythrocytes | 100 |
| CRUICKSHANK, J. C. Observations on brucella species based on the examination of 800 strains. (With Plate 4 in the Text) | 105 |
| HOYLE, L., JOLLES, B. and MITCHELL, R. G. The incorporation of radioactive phosphorus in the influenza virus and its distribution in serologically active virus fractions | 119 |

No. 2 (JUNE 1954)

| | |
|--|-----|
| TERZIN, A. L., BORDJOŠKI, M. N., MILAVANOVIĆ, M. V., STOJKOVIĆ, LJ. V. and DIMIĆ, M. N. Some viral, rickettsial and leptospiral infections diagnosed in Serbia. A serological study. (With 1 Figure in the Text) | 129 |
| LANE-PETTER, W. An intensive system for guinea-pigs. (With 2 Figures in the Text) | 151 |
| VAN DEN ENDE, M., LINDER, ANNE and KASCHULA, V. R. Experiments with the Cyprus strain of blue-tongue virus: multiplication in the central nervous system of mice and complement fixation | 155 |
| HOLMES, MARGARET C. and WILLIAMS, R. E. O. The distribution of carriers of <i>Streptococcus pyogenes</i> among 2,413 healthy children | 165 |

| | PAGE |
|--|------|
| HOYLE, L. The release of influenza virus from the infected cell. (With Plates 5–10) | 180 |
| MORAN, P. A. P. The dilution assay of viruses | 189 |
| WHEATLAND, A. B. Factors affecting the formation and oxidation of sulphides in a polluted estuary. (With 11 Figures in the Text) | 194 |
| STUART-HARRIS, C. H., GNESH, GLADYS M. and GORDON, IRVING. Serological studies during the 1953 epidemic of influenza A in New York State. (With 4 Figures in the Text) | 211 |
| BEALE, A. J. A comparison of the soluble antigen production by tissues infected with preparations of extracellular and intracellular influenza virus. (With 2 Figures in the Text) | 225 |
| HOBBS, BETTY C. and SMITH, MURIEL E. The control of infection spread by synthetic cream | 230 |
| SHEWAN, J. M. The bacteriology of dehydrated fish. III. Observations and experiments made during small-scale commercial production. (With 1 Figure in the Text) | 247 |
| KERR, W. R. and ROBERTSON, MURIEL. Passively and actively acquired antibodies for <i>Trichomonas foetus</i> in very young calves. (With 2 Figures in the Text) | 253 |
| CARLIER, GWENDOLINE I. M. An eight-year survey of the ringworm flora of Birmingham. (With 5 Figures in the Text) | 264 |

NO. 3 (SEPTEMBER 1954)

| | |
|--|-----|
| LACEY, B. W. A new selective medium for <i>Haemophilus pertussis</i> , containing a diamidine, sodium fluoride and penicillin. (With Plate 11 and 11 Figures in the Text) | 273 |
| GOULD, J. C. and MCKILLOP, ELIZABETH J. The carriage of <i>Staphylococcus pyogenes</i> var. <i>aureus</i> in the human nose | 304 |
| LENNOX, MARY, HARVEY, R. W. S. and THOMSON, SCOTT. An outbreak of food poisoning due to <i>Salmonella typhi-murium</i> with observations on the duration of infection. (With 1 Figure in the Text) | 311 |
| TRIBE, D. E. Observations on the feeding behaviour of rats and chicks deficient in vitamin E | 315 |
| FENNER, FRANK and MARSHALL, I. D. Passive immunity in myxomatosis of the European rabbit (<i>Oryctolagus cuniculus</i>): the protection conferred on kittens born by immune does. (With 1 Figure in the Text) | 321 |
| MYERS, K., MARSHALL, I. D. and FENNER, FRANK. Studies in the epidemiology of infectious myxomatosis of rabbits. III. Observations on two succeeding epizootics in Australian wild rabbits on the riverine plain of south-eastern Australia 1951–1953. (With Plates 12 and 13, and 4 Figures in the Text) | 337 |
| SPICER, C. C. The generation method of analysis applied to mortality from respiratory tuberculosis. (With 2 Figures in the Text) | 361 |
| PARNELL, R. W. The physique of Oxford undergraduates. Relationship with weight variation, schooling and habits | 369 |

| | PAGE |
|--|------|
| BARR, MOLLIE, GLENNY, A. T. and STEVENS, MURIEL F. The combination of anti-toxin with toxin and toxoid. (With 4 Figures in the Text) | 379 |
| CHIM, K. A. A nomogram for 50 % end-point interpolation. (With 1 Figure in the Text) | 397 |
| BAILEY, NORMAN T. J. Maximum-likelihood estimation of the relative removal rate from the distribution of the total size of an intra-household epidemic | 400 |
| LOWBURY, E. J. L. and FOX, JEAN. The epidemiology of infection with <i>Pseudomonas pyocyanea</i> in a burns unit | 403 |
| LARTIN, W. J. The age-specific death-rates in England and Wales. (With 1 Figure in the Text) | 417 |

NO. 4 (DECEMBER 1954)

| | |
|---|-----|
| HANARIN, I. An investigation of <i>Neisseria gonorrhoeae</i> by a red cell sensitization technique | 425 |
| FORAN, P. A. P. The dilution assay of viruses. II | 444 |
| ANDERSON, S. G. Murray Valley encephalitis and Australian X disease. (With Plates 14 and 15, and 2 Figures in the Text) | 447 |
| EPOUX, R. and MUSSETT, MARJORIE V. Attempts to potentiate immunity to influenza in mice | 469 |
| NGAR, J., MUGGLETON, P. W. and STEVENS, W. K. The type specificity of <i>Haemophilus pertussis</i> . (With 1 Figure in the Text) | 475 |
| OULD, J. C. and MCKILLOP, ELIZABETH J. <i>Staphylococcus pyogenes</i> : the antibiotic sensitivity of strains isolated from human carriers | 486 |
| ANDERSON, K., JAMES, DINAH M. and MARKS, J. The action of staphylococcal toxins on isolated rabbit intestine. (With 7 Figures in the Text) | 492 |
| ELSEY, J. C. and HOBBS, BETTY C. Studies on the effect of staphylococcal culture filtrates on isolated rabbit gut. (With 6 Figures in the Text) | 502 |
| ORDON, J., HALL, R. A. and STICKLAND, L. H. The lysis of <i>Bacterium coli</i> by amino-acids. (With 2 Figures in the Text) | 510 |
| LOYD, THOMAS M. and HOOGSTRAAL, HARRY. The susceptibility of some desert rodents to experimental infections with <i>Shigella</i> and <i>Brucella</i> organisms. (With 1 Figure in the Text) | 516 |
| LARENBEEK, A. and VAN TONGEREN, H. A. E. Viricidal action of ethylene oxide gas | 525 |
| LARENBEEK, A. An investigation into the viricidal action of Teepol, sodium hydroxide, propylene glycol and Dettol | 529 |
| DOMBS, ANNE M. The conglutination phenomenon. X. Conglutinin and immunoconglutinin in guinea-pigs, pigs, donkeys, rats and mice. (With 8 Figures in the Text) | 534 |
| CENTEGART, M. G. The maintenance of stock strains of trichomonads by freezing | 545 |
| RENCH, E. L. and REEVES, W. C. A group of viruses isolated from naturally infected mosquitoes collected in the Murray Valley area of Victoria and New South Wales. (With Plates 16 and 17) | 551 |