



**DEHYDRATED CULTURE
MEDIA**

**GRANULES—EASY TO HANDLE,
LESS HYGROSCOPIC**

**TABLETS—FOR SIMPLE PREPARATION OF
SMALL VOLUMES**

Details upon request

Obtainable from Laboratory suppliers or direct from
OXO LIMITED (Medical Dept) THAMES HOUSE, LONDON, E.C.4.
CENtral 9781

The Journal of General Microbiology

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

Contents of Volume 14, No. 2. April 1956

- James, L. V., Rubbo, S. D. and Gardner, J. F. Isolation of high acid-yielding mutants of *Aspergillus niger* by a paper culture selection technique.
- Gardner, J. F., James, L. V. and Rubbo, S. D. Production of citric acid by mutants of *Aspergillus niger*.
- Fisher, T., Fisher, E. and Appleman, M. D. Nitrite production by heterotrophic bacteria.
- Pillai, N. C. and Srinivasan, K. S. The amino acid metabolism of *Aspergillus flavus*.
- Snog-Kjaer, A., Prange, I. and Dam, H. Conversion of cholesterol into coprosterol by bacteria *in vitro*.
- Garber, E. D., Shaeffer, S. G. and Goldman, M. The virulence of biochemical mutants of *Erwinia aroideae* for varieties of radish and turnip.
- Moreira-Jacob, M. The streptococci of Lancefield's group E; biochemical and serological identification of the haemolytic strains.
- Loebeck, M. E. and Klein, H. P. Substrates for *Myxococcus virescens* with special reference to eubacterial fractions.
- Bradish, C. J., Brooksby, J. B. and Dillon, J. F., Jun. Biophysical studies of the virus system of vesicular stomatitis.
- Artman, M. The production of hydrogen sulphide from thiosulphate by *Escherichia coli*.
- Reiter, B. Inhibition of coli bacteriophage T₂ by apple pectin.
- Johnstone, D. B. and Fishbein, J. R. Identification of *Azotobacter* species by fluorescence and cell analysis.
- Nimmo-Smith, R. H. and Appleyard, G. Studies with a pseudomonad able to grow with creatine as main source of carbon and nitrogen.
- Appleyard, G. and Woods, D. D. The pathway of creatine catabolism by *Pseudomonas ovalis*.
- Matthews, R. E. F. and Proctor, C. H. Influence of aliphatic organic acids and metal ions on numbers of local lesions produced by a tobacco necrosis virus.
- Pijper, A., Nesor, M. L. and Abraham, G. The wavelengths of helical bacterial flagella.
- Skinner, F. A. Inhibition of the growth of fungi by *Streptomyces* spp. in relation to nutrient conditions.
- Skinner, F. A. The effect of adding clays to mixed cultures of *Streptomyces albidoflavus* and *Fusarium culmorum*.
- Meadow, P. The action of isonicotinic acid hydrazide on the metabolism of *Mycobacterium smegmatis*.
- Meadow, P. and Knox, R. The effect of isonicotinic acid hydrazide on the oxidative metabolism of *Mycobacterium tuberculosis* var. *bovis* B.C.G.
- Davies, A. Some factors affecting lactase formation and activity in *Saccharomyces fragilis*.
- Stevenson, I. L. Antibiotic activity of actinomycetes in soil and their controlling effects on root-rot of wheat.
- Kleczkowski, J. and Kleczkowski, A. Effects of clupein and of its degradation products on a Rhizobium bacteriophage, on its host bacterium and on the interaction between the two.
- Bawden, F. C. and Pirie, N. W. Observations on the anomalous proteins occurring in extracts from plants infected with strains of tobacco mosaic virus.
- Lister, A. J. The kinetics of urease activity in *Corynebacterium renale*.
- van der Walt, J. P. and Tscheuschner, I. T. *Saccharomyces pretoriensis* spec.—from South African soil.

The subscription rate is 90s. net per volume of 3 parts, Single parts 35s. each, plus postage. Two volumes will be issued each year. Orders should be sent to

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



**DEHYDRATED CULTURE
MEDIA**

**THE MODERN TECHNIQUE
IN MEDIA MAKING**

Details upon request

Obtainable from Laboratory suppliers or direct from
OXO LIMITED (Medical Dept) THAMES HOUSE, LONDON, E.C.4.
CENtral 9781

The Journal of General Microbiology

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

Contents of Volume 15, No. 1. August 1956

- Winder, F. G. and Denny, J. M. Phosphorus metabolism of mycobacteria: determination of phosphorus compounds in some mycobacteria.
- Lindgren, C. C. and Lindgren, G. Eight genes controlling the presence or absence of carbohydrate fermentation in *Saccharomyces*.
- Shepherd, C. J. Pathways of cysteine synthesis in *Aspergillus nidulans*.
- Simonsen, D. H. and Wagtenonk, W. J. van. The succinoxidase system of killer and sensitive stocks of *Paramecium aurelia*, variety 4.
- Ledinko, N. An analysis of the process of adaptation of influenza virus B of recent human origin to the mouse lung.
- Brown, G. D. and Rainbow, C. Nutritional patterns in acetic acid bacteria.
- Sneath, P. H. A. Cultural and biochemical characteristics of the genus *Chromobacterium* spp.
- Sneath, P. H. A. Change from polar to peritrichous flagellation in *Chromobacterium*.
- Fairhurst, A. S., King, H. K. and Sewell, C. E. Studies in amino acid biogenesis: the synthesis of alanine from pyruvate and ammonia.
- Maccacaro, G. A. and Comolli, R. Surface properties correlated with sex compatibility in *Escherichia coli*.
- Buxton, E. W. Heterokaryosis and parasexual recombination in pathogenic strains of *Fusarium oxysporum*.
- Furness, G. and Rowley, D. Transduction of virulence within the species *Salmonella typhimurium*.
- Houwink, A. L. Flagella, gas vacuoles and cell wall structure in *Halobacterium halobium*: an electron microscope study.
- Uden, N. van, Matos Faia, M. de and Assis-Lopes, L. Isolation of *Candida albicans* from vegetable sources.
- Pollock, M. R. The cell-bound penicillinase of *Bacillus cereus*.
- Lewin, R. A. Control of sexual activity in *Chlamydomonas* by light.
- Postgate, J. R. Iron and the synthesis of cytochrome c_3 .
- Buston, H. W. and Rickard, B. The effect of a physical barrier on sporulation of *Chaetomium globosum*.
- Jameson, J. E. and Emberley, N. W. A substitute for bile salts in culture media.
- Williams, M. A. and Rittenberg, S. C. Microcyst formation and germination in *Spirillum lunatum*.
- Harrison, B. D. The infectivity of extracts made from leaves at intervals after inoculation with viruses.
- Holloway, B. W. Self-fertility in *Pseudomonas aeruginosa*.
- Anderson, E. S. and Fraser, A. The statistical distribution of phenotypically modifiable particles and host-range mutants in populations of Vi-phage II.

The subscription rate is 90s. net per volume of 3 parts, Single parts 35s. each, plus postage. Two volumes will be issued each year. Orders should be sent to

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



**DEHYDRATED CULTURE
MEDIA**

**QUICKLY PROVIDE SELDOM USED MEDIA
SAVE STORAGE SPACE**

Details upon request

Obtainable from Laboratory suppliers or direct from
OXO LIMITED (Medical Dept) THAMES HOUSE, LONDON, E.C.4.
CENTral 9781

The Journal of General Microbiology

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

Contents of Volume 15, No. 2. October 1956

- Sreenivasan, A. and Venkataraman, R. Marine denitrifying bacteria from South India.
- Coleman, G. S. The dissimilation of amino acids by *Rhodospirillum rubrum*.
- Fairman, M. Nuclear morphology of *Bacillus cereus* grown on partially defined media.
- Zwartouw, H. T. and Smith, H. Non-identity of the phospholipase of *Bacillus anthracis* with the anthrax toxin.
- Rountree, P. M. Variations in a related series of staphylococcal bacteriophages.
- Miller, C. A. and Wagtendonk, W. J. van. The essential metabolites of a strain of *Paramecium aurelia* (stock 47.8) and a comparison of the growth rate of different strains of *Paramecium aurelia* in axenic culture.
- Gledhill, A. W. Quantitative aspects of the enhancing action of eperythrozoa on the pathogenicity of mouse hepatitis virus.
- Liston, J. Quantitative variations in the bacterial flora of flatfish.
- Hugo, W. B. The action of phenol and 2-phenoxyethanol on the oxidation of various substances by *Escherichia coli* and by a disrupted cell preparation of the organism.
- Lowbury, E. J. L. and Hurst, L. Loss of group and type reactions by tetracycline-resistant *Streptococcus pyogenes*.
- Starkey, R. L., Jones, G. E. and Frederick, L. R. Effects of medium agitation and wetting agents on oxidation of sulphur by *Thiobacillus thiooxidans*.
- Dalby, A. and Holdsworth, E. Growth factors for *Corynebacterium diphtheriae* strain Dundee.
- Cowan, S. T. Taxonomic rank of Enterobacteriaceae 'groups'.
- Knox, R., Swait, E. and Woodroffe, R. The growth of *Mycobacterium tuberculosis* in semi-solid agar media.
- Stevenson, I. L. Antibiotic activity of actinomycetes in soil as demonstrated by direct observation techniques.
- Fetner, R. H. and Ingols, R. S. A comparison of the bactericidal activity of ozone and chlorine against *Escherichia coli* at 1°.
- Kindler, S. H., Mager, J. and Grossowicz, N. Toxin production by *Clostridium parbotulinum* type A.
- Kindler, S. H., Mager, J. and Grossowicz, N. Nutritional studies with the *Clostridium botulinum* group.
- Lascelles, J. An assay of iron protoporphyrin based on the reduction of nitrate by a variant strain of *Staphylococcus aureus*; synthesis of iron protoporphyrin by suspensions of *Rhodospseudomonas spheroides*.
- Bhaskaran, K. and Rowley, D. Nutritional studies on *Vibrio cholerae*.

The subscription rate is 90s. net per volume of 3 parts, Single parts 35s. each, plus postage. Two volumes will be issued each year. Orders should be sent to

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



‘Striking the Happy Medium’

Although this may be taken in more ways than one, there is *no doubt* that the answer to many problems in the Laboratory lies in the use of

OXOID
CULTURE MEDIA

Further detailed particulars of the Complete OXOID Range may be obtained from:

OXO LIMITED · MEDICAL DEPARTMENT
16 SOUTHWARK BRIDGE ROAD · LONDON · SE1 · Telephone: Waterloo 4515

The Journal of General Microbiology

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

Vol. 16, No. 1

Contents

February 1957

- NORRIS, J. R. A bacteriolytic principle associated with cultures of *Bacillus cereus*.
- HAYWARD, A. C. Detection of gas production from glucose by heterofermentative lactic acid bacteria.
- WILLIAMS, G. R. Haemolytic material from aerobic sporing bacilli.
- ROGERS, H. J. The preferential suppression of hyaluronidase formation in cultures of *Staphylococcus aureus*.
- MEYNELL, G. G. and STOCKER, B. A. D. Some hypotheses on the aetiology of fatal infections in partially resistant hosts and their application to mice challenged with *Salmonella paratyphi-B* or *Salmonella typhimurium* by intraperitoneal injection.
- PIRT, S. J. The oxygen requirement of growing cultures of a *Bacterium* species determined by means of the continuous culture technique.
- LOEBECK, M. E. and ORDAL, E. J. The nuclear cycle of *Myxococcus fulvus*.
- SHERRIS, J. C., PRESTON, N. W. and SHOESMITH, J. G. The influence of oxygen and arginine on the motility of a strain of *Pseudomonas* sp.
- HAYES, W. The kinetics of the mating process in *Escherichia coli*.
- FISHER, K. W. The role of the Krebs cycle in conjugation in *Escherichia coli* K-12.
- FISHER, K. W. The nature of the endergonic processes in conjugation in *Escherichia coli* K-12.
- STEENSON, T. I. and WALKER, N. The pathway of breakdown of 2:4-dichloro- and 4-chloro-2-methylphenoxyacetic acid by bacteria.
- DOETSCH, R. N., HOWARD, B. H., MANN, S. O. and OXFORD, A. E. Physiological factors in the production of an iodophilic polysaccharide from pentose by a sheep rumen bacterium.
- STRITTMATTER, C. F. Adaptive variation in the level of oxidative activity in *Saccharomyces cerevisiae*.
- MITCHELL, P. and MOYLE, J. Autolytic release and osmotic properties of 'protoplasts' from *Staphylococcus aureus*.
- VALENTINE, R. C. and ISAACS, A. The structure of influenza virus filaments and spheres.
- LISTON, J. The occurrence and distribution of bacterial types on flatfish.
- BOYD, J. S. K. and BIDWELL, D. E. The type A phages of *Salmonella typhimurium*: identification by a standardised cross-immunity test.
- SELKON, J. B. and MITCHELSON, D. A. Viable counting of *Mycobacterium tuberculosis* in a silica gel medium.
- STRANGE, R. E. and DARK, F. A. A cell wall lytic enzyme associated with spores of *Bacillus* species.
- PERRET, C. J. An apparatus for the continuous culture of bacteria at constant population density.

The subscription rate is 90s. net per volume of 3 parts. Single parts 35s. each, plus postage. Two volumes will be issued each year. Orders should be sent to

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

The Quarterly Journal of Medicine

Edited by D. H. BRINTON, W. D. W. BROOKS, A. M. COOKE,
D. M. DUNLOP, H. L. MARRIOTT, ROBERT PLATT

CONTENTS

NEW SERIES. VOL. XXV. No. 99. JULY 1956

- Clinical Aspects of Renal Vein Thrombosis.** By C. [V. HARRISON, M. D. MILNE and R. E. STEINER. With Plates 21 to 25.
- Malabsorption and Bone Disease in Prolonged Obstructive Jaundice.** By M. ATKINSON, B. E. C. NORDIN and SHEILA SHERLOCK. With Plates 26 to 30.
- A Clinical and Pathological Study of Sixteen Cases of Rheumatoid Arthritis with Extensive Visceral Involvement ('Rheumatoid Disease').** By R. J. G. SINCLAIR and B. CRUICKSHANK. With Plates 31 and 32.
- Tropical Sprue.** By J. M. FRENCH, R. GADDIE and NADYA M. SMITH.
- The Nephrotic Syndrome.** By MARGARET H. ROSCOE.
- The Rash of Rheumatoid Arthritis and Still's Disease.** By I. C. ISDALE and E. G. L. BYWATERS. With Plates 33 to 35.
- The Renal Circulation in Chronic Pulmonary Disease and Pulmonary Heart Failure.** By C. H. STUART-HARRIS, J. MACKINNON, J. D. S. HAMMOND and W. D. SMITH.
- Congestive Heart Failure in the Elderly.** By P. D. BEDFORD and F. I. CAIRD.

Single Numbers 16s. net each Subscription 50s. per annum

OXFORD UNIVERSITY PRESS, LONDON E.C. 4

The Quarterly Journal of Medicine

Edited by D. H. BRINTON, W. D. W. BROOKS, A. M. COOKE,
D. M. DUNLOP, H. L. MARRIOTT, ROBERT PLATT

CONTENTS

NEW SERIES. VOL. XXV. No. 98. APRIL 1956

- Tuberculous Polyserositis.** By ROY M. ACHESON. With Plates 12 to 14.
- Some Effects of Severe Chronic Anaemia on the Circulatory System.** By WILLIAM WHITAKER.
- Renal Tubular Acidosis.** By G. L. FOSS, C. B. PERRY and F. J. Y. WOOD. With Plates 15 and 16.
- Haematogenous Brain Abscess in Cyanotic Congenital Heart Disease.** By E. J. NEWTON. With Plates 17 and 18.
- A Five-year Assessment of Patients in a Controlled Trial of Streptomycin, Para-Aminosalicylic Acid, and Streptomycin plus Para-Aminosalicylic Acid, in Pulmonary Tuberculosis.** By WALLACE FOX and IAN SUTHERLAND.
- The Neuropsychiatric Syndrome associated with Hepatic Cirrhosis and an Extensive Portal Collateral Circulation.** By W. H. J. SUMMERSKILL, ESTHER A. DAVIDSON, SHEILA SHERLOCK and R. E. STEINER. With Plates 19 and 20.
- Neuropathy in Peripheral Vascular Disease.** By E. C. HUTCHINSON and L. A. LIVERSEDGE.
- An Investigation of Prolonged Insulin Resistance in a Case of Diabetes Mellitus.** By J. R. PRESLAND and the late C. M. TODD.

Single Numbers 16s. net each Subscription 50s. per annum

OXFORD UNIVERSITY PRESS, LONDON E.C.4

FULL PARTICULARS OF THE

JOURNALS

PUBLISHED BY THE

CAMBRIDGE UNIVERSITY PRESS

MAY BE HAD FROM

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

CONTENTS

(All rights reserved)

	PAGE
FULTHORPE, A. J. Adsorption of tetanus toxin by brain tissue. (With 1 Figure in the Text)	315
BROOKSBY, J. B. AND ERICHSEN, S. A non-specific complement-fixing system in foot-and-mouth disease and experiments on the absorption of heterologous antibody from serum	328
JOYNER, L. P. AND BENNETT, G. H. Observations on the viability of <i>Trichomonas foetus</i> during the process of freezing to -79° C. and thawing in the presence of glycerol	335
JAMES, DINAH M. AND MARKS, J. On the mechanism of silica toxicity	342
BUDDLE, M. B. Studies on <i>Brucella ovis</i> (n.sp.), a cause of genital disease of sheep in New Zealand and Australia. (With Plates 7 and 8)	351
RANDALL, J. S. The sanitary significance of coliform bacilli in soil	365
MARPLES, MARY J. The ecology of <i>Microsporium canis</i> Bodin in New Zealand	378
GORDON, THE LATE J. AND TURNER, G. C. The protective effect of some carbohydrates against the inactivation of complement by heat, together with a note on the effect of glycolamide (an isomer of glycine) on heat-inactivation	388
FLEWETT, T. H. Intracellular growth of some viruses of the pox group. An electron microscopic study of infected chick chorionic cells. (With Plates 9-13)	393
ARMITAGE, P. AND SPICER, C. C. The detection of variation in host susceptibility in dilution counting experiments. (With 2 Figures in the Text)	401
KERR, W. R. AND ROBERTSON, MURIEL. Partial immunological paralysis to <i>Trichomonas foetus</i> antigen in calves. (With 4 Figures in the Text)	415
SMITH, H. WILLIAMS. The use of live vaccines in experimental <i>Salmonella gallinarum</i> infection in chickens with observations on their interference effect	419
SMITH, H. WILLIAMS. The immunity to <i>Salmonella gallinarum</i> infection in chickens produced by live cultures of members of the <i>Salmonella</i> genus	433

The Journal of Hygiene is issued in four parts to a volume.

Quotations can be given for back volumes on application.

Papers for publication should be sent to Lt.-Col. H. J. BENSTED, c/o Lister Institute of Preventive Medicine, Chelsea Bridge Road, London, S.W. 1. Other communications should be addressed to the University Press, Cambridge.

Papers forwarded to the Editor for publication are understood to be offered to *The Journal of Hygiene* alone, unless the contrary is stated.

Contributors receive fifty copies of their paper free. Additional copies may be had at cost price: these should be ordered when the final proof is returned.

The subscription price is £4. 10s. per volume (post-free), payable in advance; single numbers 25s. net. Subscriptions may be sent to any Bookseller, or to The Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1.

The subscription price in the U.S.A., is \$15.00. Single parts \$4.25. Enquiries should be addressed to the American Branch of the Press at 32 East 57th Street, New York, 22.