
THE JOURNAL OF DAIRY RESEARCH

EDITED BY

C. C. THIEL
B.Sc., Ph.D.

The National Institute for Research in Dairying,
Shinfield, Reading

and

J. A. B. SMITH

C.B.E., Ph.D., D.Sc., F.R.I.C.
The Hannah Dairy Research Institute,
Kirkhill, Ayr

ASSISTED BY

PROF. L. F. L. CLEGG (Canada)

DR D. P. CUTHBERTSON, C.B.E., F.R.S.E. (Aberdeen)

DR F. H. DODD (Reading)

DR H. P. DONALD, F.R.S.E. (Edinburgh)

PROF. P. J. J. FOURIE (South Africa)

DR T. GIBSON (Edinburgh)

SIR JOHN HAMMOND, C.B.E., F.R.S. (Cambridge)

MR G. LOFTUS HILLS (Australia)

DR J. O. IRWIN (London)

DR S. J. ROWLAND (Reading)

DR K. C. SEN (India)

DR R. WAITE (Ayr)

DR J. C. D. WHITE (Ayr)

DR H. R. WHITEHEAD, F.R.S.N.Z.
(New Zealand)

CAMBRIDGE UNIVERSITY PRESS

Bentley House, 200 Euston Road, London, N.W. 1

American Branch: 32 East 57th Street, New York 22, N.Y.

*Price:—*TWENTY-FIVE SHILLINGS *Net*

(U.S.A. \$4.25)

Consultative Committee

PROF. R. G. BASKETT, O.B.E.

PROF. E. L. CROSSLEY

PROF. R. C. GARRY, F.R.S.E.

PROF. J. W. HOWIE

SIR ROBERT RAE, C.B.

DR J. A. B. SMITH, C.B.E.

DR C. C. THIEL

Secretary MR J. C. F. COLES

Editorial Assistant MR M. HARVEY, A.C.I.S.

The Journal of Dairy Research

was established in 1929 as a medium for the publication of the results of original research in dairy science and cognate subjects. It is published by the Cambridge University Press.

The subscription to the *Journal* is 60s. per volume, for orders placed in advance of publication, and covers three issues. Single copies may be purchased at 25s. each. Postage extra. 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 \$10.00. Enquiries should be sent to the Cambridge University Press, American Branch, 32 East 57th Street, New York 22, U.S.A.

Back numbers of the *Journal* may be obtained from the publishers. Volumes 1 to 4, each part 25s. net. Volumes 5 to 28, each single part 25s., double parts 50s. net. Postage extra. (With the exception of Volume 6, No. 2, Volume 9, No. 1, Volume 10, Volume 11, No. 1 and Volumes 13 and 14 complete, which are out of print.)

THE JOURNAL OF DAIRY RESEARCH

EDITED BY

C. C. THIEL
B.Sc., Ph.D.
The National Institute for Research in Dairying,
Shinfield, Reading

and

J. A. B. SMITH,
C.B.E., Ph.D., D.Sc., F.R.I.C.
The Hannah Dairy Research Institute,
Kirkhill, Ayr

ASSISTED BY

PROF. L. F. L. CLEGG (Canada)	MR G. LOFTUS HILLS (Australia)
DR D. P. CUTHBERTSON , C.B.E., F.R.S.E. (Aberdeen)	DR J. O. IRWIN (London)
DR F. H. DODD (Reading)	DR S. J. ROWLAND (Reading)
DR H. P. DONALD , F.R.S.E. (Edinburgh)	DR K. C. SEN (India)
PROF. P. J. J. FOURIE (South Africa)	DR R. WAITE (Ayr)
DR T. GIBSON (Edinburgh)	DR J. C. D. WHITE (Ayr)
SIR JOHN HAMMOND , C.B.E., F.R.S. (Cambridge)	DR H. R. WHITEHEAD , F.R.S.N.Z. (New Zealand)

VOLUME 29

CAMBRIDGE
THE UNIVERSITY PRESS

1962

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.

Secretary

J. C. F. COLES

Editorial Assistant

M. HARVEY, A.C.I.S.

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

Contents

ORIGINAL ARTICLES:	No. 1 (February 1962)	PAGE
Some effects of ionizing radiations on the alkaline phosphatase in cow's milk. G. GLEW		1
Application of the hydrometric method of analysis to the estimation of solids-not-fat production. G. M. WALLACE		11
The reactivation of milk alkaline phosphatase after heat treatment. R. L. J. LYSTER and R. ASCHAFFENBURG		21
Viscometric measurements of the activities of commercial rennets using sodium caseinate as substrate. G. W. SCOTT BLAIR and J. C. OOSTHUIZEN		37
A simple spectroturbidimetric method for the determination of the fat content of homogenized ice-cream mixes. J. D. S. GOULDEN and P. SHERMAN		47
The effect of antioxidants on the keeping quality of whole milk powder. I. Flavones, gallates, butylhydroxyanisole and nordihydroguaiaretic acid. J. ABBOT and R. WAITE		55
Nutritional studies on cheese starters. I. Vitamin and amino acid requirements of single strain starters. B. REITER and J. D. ORAM		63
The relationship between the number of mastitis pathogens placed on the teats of dry cows, their survival, and the amount of intramammary infection caused. F. K. NEAVE and J. OLIVER		79
The prevention of infection of the dry udder. J. OLIVER, F. K. NEAVE and M. ELISABETH SHARPE		95
REVIEWS OF THE PROGRESS OF DAIRY SCIENCE. Section C. Dairy Chemistry. Some aspects of the physical chemistry of the salts of milk. G. T. PYNE		101

ORIGINAL ARTICLES:	No. 2 (June 1962)	
The conductivity of milk—the effect of the volume and degree of dispersion of the fat. J. H. PRENTICE		131
A modified method for the determination of glyceride glycerol. J. H. MOORE		141
Histochemical detection of alkaline phosphatase in cheese. V. BOLCATO		149
A modified form of lactoperoxidase isolated from milk cultures of <i>Streptococcus cremoris</i> or <i>Streptococcus lactis</i> . A. PICKERING, J. D. ORAM and B. REITER		151
A method of preparation of κ -casein and some observations on its nature. G. C. CHEESEMAN		163
A compound responsible for metallic flavour in dairy products. I. Isolation and identification. W. STARK and D. A. FORSS		173
Quelques facteurs de variation de la teneur en calcium des laits de vaches. P. AURIOL and G. MOCQUOT		181

	PAGE
Ecarts observés entre les taux de protéines du lait obtenus par la méthode Kjeldahl et la méthode au noir amido, en fonction de la saison et du stade de lactation. G. RICORDEAU, P. AURIOL, G. MOCQUOT, E. BLANC-PATIN and R. JEUNET	191
A comparison between ryegrass and cocksfoot hay for milk production. M. E. CASTLE, A. D. DRYSDALE and J. N. WATSON	199
A note on an indirect measure of machine milking rate. T. K. GRIFFIN and F. H. DODD	207
REVIEWS OF THE PROGRESS OF DAIRY SCIENCE. Section D. Nutritive value of milk and milk products. Part 1. Nutritive value of milk for man, and fat-soluble vitamins in milk. W. A. MCGILLIVRAY. Part 2. Water-soluble vitamins in milk and milk products. MARGARET E. GREGORY	211
No. 3 (October 1962)	
OBITUARY:	
A. T. R. MATTICK, C.B.E., B.Sc., Ph.D. (Lond.). H. D. KAY	iii
ORIGINAL ARTICLES:	
Etude de la nisinase produite par <i>Streptococcus thermophilus</i> . R. ALIFAX and R. CHEVALIER	233
The feed intake and performance of dairy cows fed on cut grass. R. J. HALLEY and B. M. DOUGALL	241
The age-thickening of sweetened condensed milk. I. Rheological properties. RUTH SAMEL and M. M. MUERS	249
The age-thickening of sweetened condensed milk. II. Effects of temperature and of storage. RUTH SAMEL and M. M. MUERS	259
The age-thickening of sweetened condensed milk. III. The effect of ions. RUTH SAMEL and M. M. MUERS	269
Measurement of the partition of some milk constituents between the dissolved and colloidal phases. J. M. DEMAN	279
The determination of calcium and magnesium in milk and milk diffusate. D. T. DAVIES and J. C. D. WHITE	285
The kinetics of the rennin-casein reaction in abnormal cow's milk and milks of some other species and of the action of rennet substitutes on normal cow's milk. J. C. OOSTHUIZEN	297
Studies on the properties of New Zealand butterfats. V. The effect of stage of lactation. F. H. MCDOWALL	307
The estimation of carbon dioxide in Cheddar cheese. P. S. ROBERTSON	321
The composition of the milk of the reindeer. R. ASCHAFFENBURG, MARGARET E. GREGORY, S. K. KON, S. J. ROWLAND and S. Y. THOMPSON	325
REVIEWS OF THE PROGRESS OF DAIRY SCIENCE. Section E. Diseases of dairy cattle. Mastitis. P. S. BLACKBURN	329

Index of Subjects

- Age**, thickening, sweetened condensed milk, 249, 259, 269
- Alkaline phosphatase**, cheese, histochemical detection, 149
cow's milk, ionizing radiations, 1
reactivation, heat treatment, 21
- Amido Black method**, *vs.* Kjeldahl, milk protein determination, season and stage of lactation, 191
- Amino acids**, requirements, cheese starters, 63
- Antioxidants**, keeping quality, dried milk, 55
- Butterfat**, content, ice cream mixes, spectroturbidimetric determination, 47
N.Z., properties, stage of lactation, 307
- Butylhydroxyanisole**, keeping quality, dried milk, 55
- Calcium**, content, milk, variation, 181
determination, milk and milk diffusate, 285
- Carbon dioxide**, determination, Cheddar cheese, 321
- Casein**, rennin action, kinetics, various species, 297
- κ -Casein**, nature and preparation, 163
- Cheddar cheese**, CO₂ determination, 321
- Cheese**, alkaline phosphatase, histochemical detection, 149
- Cheese starters**, vitamin and amino acid requirements, 63
- Cocksfoot**, *vs.* ryegrass hay, milk yield, 199
- Condensed milk**, sweetened, age-thickening, 249, 259, 269
- Conductivity**, milk, volume and dispersion of fat, 131
- Dairy chemistry**, review of the progress of dairy science, 101
- Dairy products**, flavour, metallic, 173
nutritive value, humans (review), 211
- Dairy science**, diseases of dairy cattle, mastitis (review), 329
nutritive value of milk (review), 211
physical chemistry, salts in milk (review), 101
- Diseases**, correlation number of pathogens, 79
dairy cattle, mastitis (review), 329
prevention in dry udder, 95
- Dried milk**, keeping quality, antioxidants, 55
- Enzymes**, lactoperoxidase, modified form isolated, *Str. cremoris* or *Str. lactis* cultures, 151
nisinase production, *Str. thermophilus*, 233
- Feeding**, cut grass, milk yield, cows, 241
ryegrass *vs.* cocksfoot hay, milk yield, cows, 199
- Flavones**, keeping quality, dried milk, 55
- Flavour**, metallic, dairy products, 173
- Gallate**, keeping quality, dried milk, 55
- Glyceride**, determination, glycerol, 141
- Glycerol**, determination of glyceride, 141
- Grass**, cut, fed dairy cows, milk yield, 241
- Hay**, ryegrass *vs.* cocksfoot, fed, milk yield, 199
- Heat treatment**, alkaline phosphatase reactivation, 21
- Humans**, nutritive value of milk (review), 211
- Hydrometric method**, SNF determination, milk, 11
- Ice cream**, butterfat content, spectroturbidimetric determination, 47
- Ionizing radiations**, alkaline phosphatase, cow's milk, 1
- Ions**, age-thickening, sweetened condensed milk, 269
- Keeping quality**, dried milk, antioxidants, 55
- Kjeldahl method**, *vs.* amido black, milk protein determination, season and stage of lactation, 191
- Lactation**, stage, butterfat properties, N.Z., 307
milk protein determination, Kjeldahl *vs.* amido black method, 191
- Lactoperoxidase**, modified form isolated, *Str. cremoris* or *Str. lactis* cultures, 151
- Magnesium**, determination, milk and milk diffusate, 285
- Mammary gland**, degree of infection, number of pathogens, 79
- Mastitis**, number of pathogens, degree, mammary infection, 79
prevention, dry udder, 95
review of the progress of dairy science, 329
- Milk**, alkaline phosphatase, cow's ionizing radiations, 1
Ca content, variation, 181
conductivity, volume and diffusion of fat, 131
nutritive value, humans (review), 211
salts, physical chemistry (review), 101
- Milk composition**, dissolved and colloidal phases, 279
reindeer, 325
- Milk fat**, dispersion and volume, milk conductivity, 131
- Milk protein**, determination, Kjeldahl *vs.* amido black, season and stage of lactation, 191
- Milk yield**, feeding, cut grass, 241
ryegrass and cocksfoot hay, 199
- Milking machines**, milking rate, indirect measurement, 207
- New Zealand**, butterfat, properties, stage of lactation, 307
- Nisinase**, production, *Str. thermophilus*, 233
- Nordihydroguaiaretic acid**, keeping quality, dried milk, 55
- Nutritive value**, milk and dairy products (review of the progress of dairy science), 211

- Reindeer**, milk composition, 325
- Rennet**, kinetics of action on casein, 297
 substitutes, action on cow's milk, 297
 viscosity, measure of activity, Na caseinate substrates, 37
- Rheology**, properties, age-thickened sweetened condensed milk, 249
- Ryegrass**, hay *vs.* cocksfoot, milk yield, 199
- Salts**, milk, physical chemistry (review of the progress of dairy science), 101
- Season**, milk protein determination, Kjeldahl *vs.* amido black method, 191
- Sodium**, caseinate, substrate viscosity, measure of commercial rennet activity, 37
- Solids-not-fat**, determination, milk, hydrometric method, 11
- Storage**, age-thickening, sweetened condensed milk, 259
- Streptococcus, cremoris***, cultures, modified lactoperoxidase isolated, 151
lactis, cultures, modified lactoperoxidase isolated, 151
thermophilus, nisinase production, 233
- Temperature**, age-thickening, sweetened condensed milk, 259
- Udder**, prevention of infection, 95
- Viscosity**, measure of activity, commercial rennets, Na caseinate substrate, 37
- Vitamins**, nutritive value, milk, humans (review of the progress of dairy science), 211
 requirements, cheese starters, 63

Index of Authors

- ABBOT, J., 55
 ALIFAX, R., 233
 ASCHAFFENBURG, R., 21, 325
 AURIOL, P., 181, 191

 BLACKBURN, P. S., 329
 BLANC-PATIN, E., 191
 BOLCATO, V., 149

 CASTLE, M. E., 199
 CHEESEMAN, G. C., 163
 CHEVALIER, R., 233

 DAVIES, D. T., 285
 DE MAN, J. M., 279
 DODD, F. H., 207
 DOUGALL, B. M., 241
 DRYSDALE, A. D., 199

 FORSS, D. A., 173

 GLEW, G., 1
 GOULDEN, J. D. S., 47
 GREGORY, MARGARET E., 211, 325
 GRIFFIN, T. K., 207

 HALLEY, R. J., 241

 JEUNET, R., 191

 KON, S. K., 325

 LYSTER, R. L. J., 21

 MCDOWALL, F. H., 307
 MCGILLIVRAY, W. A., 211
 MOCQUOT, G., 181, 191
 MOORE, J. H., 141
 MUERS, M. M., 249, 259, 269

 NEAVE, F. K., 79, 95

 OLIVER, J., 79, 95
 OOSTHUIZEN, J. C., 37, 297
 ORAM, J. D., 63, 151

 PICKERING, A., 151
 PRENTICE, J. H., 131
 PYNE, G. T., 101

 REITER, B., 63, 151
 RICORDEAU, G., 191
 ROBERTSON, P. S., 321
 ROWLAND, S. J., 325

 SAMEL, RUTH, 249, 259, 269
 SCOTT BLAIR, G. W., 37
 SHARPE, M. ELISABETH, 95
 SHERMAN, P., 47
 STARK, W., 173

 THOMPSON, S. Y., 325

 WAITE, R., 55
 WALLACE, G. M., 11
 WATSON, J. N., 199
 WHITE, J. C. D., 285

THE JOURNAL OF THE SOCIETY OF DAIRY TECHNOLOGY

17 DEVONSHIRE STREET, LONDON, W.1. Tel. Langham 5059

The Journal is issued in quarterly parts, four parts constituting a volume. The parts are usually issued in January, April, July and October each year.

The Subscription rate to non-members of the Society, payable in advance, is £2. 2s. 0d. net per volume (post free): single numbers, 13s. 0d. net. Subscriptions and all business enquiries should be sent to the Secretary, Society of Dairy Technology, 17 Devonshire Street, London, W. 1.

Each member of the Society receives one free copy of each number. One further copy of each number may (if available) be bought by members for 8s. 0d.

CONTENTS OF THE APRIL ISSUE

General Meeting

Subject: Mechanization in the Dairy

1. Milk Intake, by G. B. WRIGHT
2. Processing, by T. R. ASHTON
3. Bottle Handling, by W. W. RITCHIE

British Standard (Revised)

Some Aspects of the Cleaning and Disinfection of Milking Equipment, by C. C. THIEL

Problems of Compositional Quality Control, by A. L. PROVAN

Obituary

Dairying in other Countries: What Can We Learn? by C. H. BRISSENDEN

Joint Committee's Programme for Education and Training in the Dairy Industry

Welsh Dairy Farming: Developments in the last Thirty Years, by E. C. PHILLIPS

Post-war Developments in Milk Quality in N. Ireland, by W. G. MALCOLM

Section Notes

Notes from the Colleges

National Institute for Research in Dairying: 50th Anniversary

The Journal publishes not only papers read at meetings of the Society, but also papers on dairy technology by members and non-members

Advertising Offices: 9 GOUGH SQUARE · LONDON · E.C. 4

Indian Journal of Dairy Science

Established in 1948 as a medium for the advancement and dissemination of knowledge in regard to dairy science. Published quarterly in March, June, September and December. Subscription £1 sterling or \$4.00 in dollar areas. For further particulars apply to the Hon. Joint Secretaries, Indian Dairy Science Association, Hosur Road, Bangalore 1 (India).

Editor: Dr NOSHIR N. DASTUR, M.Sc., Ph.D., A.I.I.S.C.

(CONTENTS OF VOL. XIV No. 2, JUNE 1961)

Some Factors Affecting the Birth Weight in Sahiwal Cattle. SUKH BIR SINGH and MAHESH DUTT.

Blood Oestrogens during Oestrous Cycle and Pregnancy in Buffaloes—Bos (Bubalus) bubalis L. HAMED NASR and MOHAMMED SAMI ABDO.

A Comparative Study of Various Dilutors for the Preservation of Buffalo Semen at 5° to 7° C. I. Egg Yolk-Sodium Citrate Containing Dilutors. N. S. TOMAR and R. N. DESAI.

A Comparative Study of Various Dilutors for the Preservation of Buffalo Semen at 5° to 7° C. II. Skim-milk Containing Dilutors. N. S. TOMAR and R. N. DESAI.

Studies on the Nutritive Value of Soya Bean Cake. M. L. MATHUR, P. T. VARANDANI and N. D. KEHAR.

Studies in Physico-Chemical Properties of Milk. Part X. Determination of Freezing Point of Milk by Beckmann Technique and the Calculation of Added Water. BALWANT RAI PURI and SAT PARKASH.

COMMONWEALTH BUREAU OF DAIRY SCIENCE & TECHNOLOGY
SHINFIELD · READING · ENGLAND

The Bureau is the world's information centre on all matters concerned with dairy husbandry, science and technology. It prepares abstracts, review articles, Technical Communications in book form, and undertakes to answer technical enquiries from authentic dairy scientists.

PUBLICATIONS INCLUDE

DAIRY SCIENCE ABSTRACTS

COMPILED MONTHLY FROM WORLD LITERATURE

Annual Subscription 100s. Od.

Technical Communications Nos. 2 and 3 have recently been prepared, entitled—

THE MILK FAT GLOBULE MEMBRANE by N. KING

Cloth bound 99 pp. Price 15s. Od.

MILK AND BUTTERFAT RECORDING by E. D. ASHTON

Cloth bound 205 pp. Illustrated Price 30s. Od.

Orders and subscriptions should be sent to

COMMONWEALTH AGRICULTURAL BUREAUX · CENTRAL SALES BRANCH
FARNHAM ROYAL · ENGLAND

The Journal of General Microbiology

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

Vol. 29, No. 2

Contents

October 1962

- L. O. BUTLER. A haematin-independent mutant of *Haemophilus influenzae*.
- M. F. MICHEL and H. GOODER. Amino acids, amino sugars and sugars present in the cell wall of some strains of *Streptococcus pyogenes*.
- J. B. BATEMAN, C. L. STEVENS, W. B. MERCER and E. L. CARSTENSEN. Relative humidity and the killing of bacteria: the variation of cellular water content with external relative humidity or osmolality.
- A. E. KRISS, I. E. MISHUSTINA and E. V. ZEMTSOVA. Biochemical activity of micro-organisms isolated from various regions of the world ocean.
- J. R. POSTGATE and J. R. HUNTER. The survival of starved bacteria.
- P. N. HOBSON, S. O. MANN and W. SMITH. Serological tests of a relationship between rumen selenomonads *in vitro* and *in vivo*.
- G. M. GOODBURN and B. P. MARMION. A study of the properties of Eaton's primary atypical pneumonia organism.
- H. C. DE KLERK and J. N. COETZEE. Secondary colony formation by *Lactobacillus casei*.
- J. P. CHANG and J. G. MORRIS. Studies on the utilization of nitrate by *Micrococcus denitrificans*.
- D. WOOLLEY, G. L. JONES and F. C. HAPFOLD. Some metabolic differences between *Thiobacillus thioparus*, *T. denitrificans* and *T. thiooxydans*.
- G. F. GAUSE and G. V. KOCHETKOVA. Vulnerability of nucleic acids in mutant staphylococci with impaired respiration.
- P. G. FOTHERGILL and D. HIDE. Comparative nutritional studies of *Pythium* spp.
- G. T. BARRY, V. ABBOTT and T. TSAI. Relationship of colominic acid (poly *N*-acetylneuraminic acid) to bacteria which contain neuraminic acid.
- S. WIJESUNDERA and D. D. WOODS. The catabolism of cystathionine by *Escherichia coli*.
- G. W. DOUGLAS and P. R. EDWARDS. Complex flagellar phases in *Salmonella*.

The subscription rate is 80s. net per volume of 3 parts. Single parts 35s. each, plus postage.

Three volumes will be issued each year. Orders should be sent to

Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1

ANIMAL PRODUCTION

JOURNAL OF THE BRITISH SOCIETY OF ANIMAL PRODUCTION

Contents of Volume 4, Part 3, October 1962

- ASH, R. W. Gastro-intestinal re-entrant cannulae for studies of digestion in sheep.
- BARBER, R. S., BRAUDE R. and MITCHELL K. G. Effect of soaking the meal ration of growing pigs in water or skim milk.
- BLAXTER, K. L. and WILSON, R. S. The voluntary intake of roughages by steers.
- BOWMAN, J. C. and POWELL, J. C. The effect of different levels of management on the assessment of differences between varieties of chickens. 1. Eight-week body weight.
- DONALD, H. P. Effect on production records of sex of lamb, twinning, and dam's age in a grassland flock.
- GALUKANDE, E. B., MAHADEVAN, P. and BLACK, J. G. Milk production in East African Zebu cattle.
- MAGADEVAN, P., GALUKANDE, E. B. and BLACK, J. G. A genetic study of the Sahiwal grading-up scheme in Kenya.
- MORGAN, D. E., CLEGG, A., BROOKSBANK, N. H. and MCCREA, C. T. The effect of copper clycine injections on the live-weight gains of suckling beef calves.
- MUNRO, J. The use of natural shelter by hill sheep.
- OSINSKA, Z. Estimation of protein, chemical fat and energy content in pigs.
- RENDEL, J., BOUW, J. and SCHMID, D. O. The frequency of cows served twice which remain pregnant to first service: a study of results from parentage tests.
- YOUNG, G. B. and PURSER, A. F. Breed structure and genetic analysis of Border Leicester sheep.

ANNUAL SUBSCRIPTION
SINGLE PART

45s. (U.S.A. \$7.50)
17s. 6d. (U.S.A. \$2.75)

OLIVER AND BOYD LTD.,
Tweeddale Court, 14 High Street, Edinburgh, 1

JOURNAL OF APPLIED BACTERIOLOGY

(Formerly *Proceedings of the Society for Applied Bacteriology*)

Editors: S. E. JACOBS, D.Sc. AND D. J. JAYNE-WILLIAMS, Ph.D.

Contents of Vol. 25, No. 3, 1961

The lecithinase and lipase activities of members of the genus *Pseudomonas*.—A selective medium for the isolation and enumeration of coagulase positive staphylococci from foods.—The effect of water hardness on the growth of *Pseudomonas aeruginosa* in metal cutting fluids.—A multiple inoculation device for use with fluids.—An epidemic among infants caused by *Salmonella muenchen*.—The sterilization of goat skin with ethylene oxide and some bacteriological studies of the process.—The microflora of the rumen of the young calf. II. Source, nature and development.—A study of the bacteria on the root surface and in the rhizosphere soil of crop plants.—The effect of modifications in the counting medium on the viability

and growth of bacteria damaged by phenols.—On the relationship between the viability of bacteria damaged by antiseptics and their responsiveness to modifications of the counting medium.—Two types of xylan fermenting bacteria from the sheep rumen.—A stage-mounted immersion oil dispenser.—Characteristics of English isolates of *Erwinia amylovora* (Burrill) Winstow *et al.*—Investigations on the use of the roll tube method for counting *Escherichia coli* I in water.—A new test for the detection of bactericidal activity using agar 'replicates'.—The effect of feeding colicinogenic *Escherichia coli* on the intestinal *E. coli* of early weaned pigs.—The bacteriology of ice cream stored in domestic refrigerators.

One volume usually of three numbers published annually

Price to non-members: 35/- per number

Publications Manager: A. H. WALTERS, Diversey Deosan Research Lab.
42 Weymouth Street, London, W. 1

BRADLEY & SON, LTD., THE CROWN PRESS, READING, ENGLAND



A. T. R. MATTICK, C.B.E., B.Sc., Ph.D. (Lond.)