Index of Subjects

Amino acids, blood plasma, effect of atropine, 23 Atropine, effect on plasma amino acids, with milk secretion, 23 Bacteria, see also individual bacteria and types raw milk, stored, pyruvate test, 45 Blood, amino acids, effect of atropine, 23 goat, calcium, phosphorus, concentrations, 509 Blue cheese, ripening, Penicillium roqueforti proteinases, role, 479 Buffalo, milk, y-caseins, 311 progesterone, diurnal variations, 503 Buttermilk, used in pickled soft cheese-making, 327 Casein(s), composition, milk, infected quarters, 437 electrofocusing, two-dimensional electrophoresis, 303 in vivo digestion, rat stomach, 319 micelles, coagulation, rennet, 57, 189 curd structure, 65 β-Casein, Ca²⁺, binding to, 71 Y-Casein(s), buffalo milk, 311 x-Casein, like fractions, isolation, human casein, 429 Cell count, milk, free fatty acids, milk enzymes, levels, relationship, mastitis, 253 technique, 239 Cheddar cheese, headspace, carbonyl sulphide, 473 making, use of ultrafiltered milk, 333 structure, texture, 343 Cheesemaking, see also Cheddar cheese Gruyère-type, 50:50 rennet/swine pepsin, 513 phage-host interactions, lactic streptococci, temperature effects, 465 pickled soft cheese, 327 Chymosin, see Rennin Citrate metabolism, enzymes, Leuconostoc lactis, other lactic acid bacteria, 497 Streptococcus lactis subsp. diacetylactis, 489 Coagulation, milk proteins, cationic polyelectrolytes, use of, 267 ethanol induced, 273, 285, 405 heated, assay temperature, pH, agitation, interrelationship, 123 cyanate ions, urea, role of, 163 Disease, see Mastitis Enzymes, see also individual names milk, free fatty acids, levels, relationship, mastitis, 253

Escherichia coli, penetration, teat duct, between milkings, 379

- Flavour, cheddar cheese, carbonyl sulphide, headspace, 473
- Food(s), intake, effect of dietary protein concentration, 201

Free fatty acids, milk enzymes, levels, relationship, mastitis, 253

Glucose, concentration, milk, 51

- Goat(s), lactation, milk citrate concentration, changes, 357
 - mastitis, 393

milk, acid-soluble nucleotides, 35

- yoghurt making, 457
- Red Sokoto, milk, blood serum, calcium, phosphorus, concentrations, 509
- Gruyère-cheese, manufacture, 50:50 rennet/swine pepsin, 513
- Heat stability, see Coagulation, milk proteins, heated
- Heat treatment, see Sterilization
- Human, artificial milks, infant feeding (review), 519

Infant feeding, human, artificial milks (review), 519

- Lactation, see also Milk secretion
- dietary protein levels, effect on food intake, milk yield, liveweight change, nitrogen balance, 201
- goat, milk citrate concentration, changes, 357 stage, acid-soluble nucleotides, 35
- Lactic acid bacteria, genetics (review), 363
- heterofermentative, enzymes, citrate metabolism, 497
- Lactobacilli, stimulation, Streptococcus thermophilus acid production, milk, 139
- β-Lactoglobulin, thermal behaviour, 40–160 °C, 293 Leucocyte, ovine milk, 225
- Leuconostoc lactis, enzymes, citrate metabolism, 497
- Lipolysis, milk, inhibition, proteose peptone, 247
- Live weight, effect of dietary protein concentration, 201
- Mammary gland, infection, casein composition, milk, 437
- goat, coagulase-negative staphylococci, 393 Mastitis, goat, 393
 - milk compositional changes (review), 167 free fatty acids, milk enzymes, levels, relationship, 253

trypsin-inhibitor, 213

subclinical, citric acid concentration, milk, 387

- Milk, cell count, technique, 239 coagulation, see Coagulation
 - concentration, curd structure, renneting, 65
 - deposits, UHT treatment, effect of iodate, 99
 - goat, yoghurt preparation, 457
 - human, artificial, infant feeding (review), 519
 - lipolysis, inhibition, proteose peptone, 247

Milk, mastitic, free fatty acids, enzymes, levels, relationship, 253 trypsin-inhibitor, 213 raw, storage, bacterial content, pyruvate test, 45 Milk composition, acid-soluble nucleotides, during lactation. 35 calcium, phosphorus, concentrations, goat, 509 changes, mastitis (review), 167 citrate, concentration, changes, lactation, goat, 357 citric acid concentration, subclinical mastitis, 387 glucose, 51 mineral balance, 91, 417 progesterone, diurnal variations, buffalo, 503 salt equilibria, model, 77, 85 Milk fat, breakdown, see Lipolysis triglyceride structure, softening point, relationship, 131 Milk proteins, breakdown, see Proteolysis colloidal, soluble, equilibria, 417 heat stability, see Coagulation, milk proteins, heated Milk quality, bacteriological, pyruvate test, 45 Milk secretion, see also Lactation atropine, effect of, 23 Milk yield, effect of dietary protein concentration, 201 Milking biological responses, teat, 7 Morel mushroom, growth, cheese whey, 149 Nitrogen balance, effect of dietary protein concentration, 201 Peaker, M. Prof., new appointment, 377 Penicillium roqueforti, proteinases, blue cheese ripening, 479 Pepsin, A, concentration, bovine rennets 447 swine, cheesemaking, 513 Pickled soft cheese, making, 327

Progesterone, milk, buffalo, 503 Proteins, see also Milk proteins

content, diet, effect on food intake, milk yield, live weight change, nitrogen balance, 201 Proteolysis, UHT-sterilized milk, effect of iodate, 115 Proteose peptone, inhibition, lipolysis, milk, 247

Rat(s), stomach, caseins, digestion, 319 Rennet(s), casein micelle coagulation, 57, 189 curd structure, effect of milk concentration, 65 enzymes, chymosin, pepsin A, 447 /swine pepsin, 50:50, cheesemaking, 513 Rennin, concentration, bovine rennets, 447 Rook, J. A. F. Prof., new appointment, 377 Sheep, milk, acid-soluble nucleotides, 35 leucocytes, 225 Skim-milk, heat stability, role of cyanate ions, urea, 163 mineral balance, 91 Staphylococci, coagulase-negative, intramammary infection, goat, 393 Staphylococcus aureus, infection, teat, 1 Sterilization, UHT, effects of adding potassium iodate before, 99, 115 Storage, raw milk, bacterial content, pyruvate test, 45 Streptococci, lactic, bacteriophages, interaction, temperature effects, 465 Streptococcus lactis subsp. diacetylactis, enzymes, citrate metabolism, 489 S. thermophilus, acid production, milk, stimulation, thermophilic lactobacilli, 139 Teat, biological responses to milking, 7 disinfection, post-milking, 1 duct, Escherichia coli penetration, between milkings, 379 iodine disinfectant dips, 1 Trypsin-inhibitor, mastitic milk, 213 Urea, cyanate ions, heat stability, milk, 163

Whey, substrate, morel mushroom, 149 Whey proteins, see β -Lactoglobulin

Yoghurt, from goat's milk, 457

Index of Authors

ABD EL-SALAM, M. H., 327 ABRAHAMSEN, R. K., 457 ADDEO, F., 311, 429 AKINSOYINU, A. O., 509 AL-KHAMY, A., 327 ANDERSON, M., 247 ANIFANTAKIS, E. M., 513 ASTON, J. W., 473 AUCLAIR, J. E., 139 BARRY, J. G., 437 BATRA, S. K., 503 BLATCHFORD, D. R., 357 BRAMLEY, A. J., 379 BROWN, M. R., 7 BRULE, G., 91, 417 CARRICK, D. T., 51 CHAIYABUTE, N., 51 CHOBERT, J.-M., 429 COGAN, T. M., 489, 497 Collin, J.-C., 447 COUSINS, C. M., 45 COWAN, R. T., 201 DALGLEISH, D. G., 65, 71 DALY, C., 465 DARLING, D. F., 189 DAVIES, F. L., 363 DEETH, H. C., 253 DE WIT, J. N., 293 DI GREGORIO, F., 267 DONNELLY, W. J., 437 DOUGLAS, K., 473 EL-HEIBA, A. A., 327 EL-SHIBINY, S., 327 ELVIN, R., 77 FAULKNER, A., 51, 357 FAUQUANT, J., 91 FITZ-GERALD, C. H., 253 Fox, P. F., 123, 465 FULFORD, R. J., 45 FUSE, H., 387 GARNOT, P., 447 GASSON, M. J., 363 GIL, A., 35 GLOVER, F. A., 333 GODINHO, K. S., 379 GREEN, M. L., 57, 333, 343 GREENHALGH, J. F. D., 201 GRINDAL, R. J., 379 GRIPON, J.-C., 303, 479 GURR, M. I., 519

HATFIELD, D. S., 333

Hemme, D. H., 139 Hoare, R. J. T., 1, 393 Hobbs, D. G., 343 Holmen, T. B., 457 Honkanen-Buzalski, T., 213 Horne, D. S., 273, 285, 405 Hyslop, D. B., 123

KANDARAKIS, J. G., 513 KITCHEN, B. J., 167, 253 KLARENBEEK, G., 293 KOSARIC, N., 149 KUHN, N. J., 51

LE BARS, D., 479 LEE, C.-S., 225 Lyster, R. L. J., 85

MARSHALL, R. J., 333 MARTIN, P., 447 MEIN, G. A., 7 MELLERICK, D., 497 MIRANDA, G., 319 MIYATA, N., 149 MOCQUOT, G., 447 MONEIB, A., 327 MORANT, S. V., 57 MUIR, D. D., 163 MULLAN, W. M. A., 465

Oshima, M., 387 Outteridge, P. M., 225

PAHWA, G. S., 503 PANDEY, R. S., 503 PARKER, T. G., 71, 273, 285, 405 PARODI, P. W., 131 PAVEY, J. A., 99 PEAKER, M., 51, 357 PEETERS, G., 23 PELISSIER, J.-P., 319 PERKIN, A. G., 99 PETTIPHER, G. L., 239 PIERRE, A., 417

REID, D. S., 77 REID, G. W., 201 RIBADEAU DUMAS, B., 429, 447 RODRIGUES, U. M., 45, 239 ROETS, E., 23

SANCHEZ-MEDINA, F., 35 SANDHOLM, M., 213 SCHMAL, V., 139 SCURLOCK, E. M. W., 333 SHELDRAKE, R. F., 1, 393 SISTO, R., 267 SKUDDER, P. J., 99, 115 SURI, A. K., 503 Sweetsur, A. W. M., 163

Таіт, С. А. G., 201 Тномаs, Е. L., 99 Ткіец-Сцот, Р., 303, 311 Тикуеу, А., 343 VAN HOOYDONK, A. C. M., 189 Veinoglou, B. C., 513

Williams, D. M., 7 Wood, G. B., 77 Woodhouse, V. E., 393

JOURNAL OF DAIRY RESEARCH

EDITED BY

M. ELISABETH SHARPE, PH.D., D.Sc., F.I.BIOL. National Institute for Research in Dairying, Shinfield, Reading, Berkshire, RG2 9AT

W. MANSON, PH.D. The Hannah Research Institute, Ayr, Scotland KA6 5HL

Assistant Editors

A. T. ANDREWS, M.A., D.Phil.
B. F. BONE, B.A., A.L.A., A.I.Inf.Sc.
L. W. PHIPPS, B.Sc., Ph.D.

Editorial Assistant

MRS DOROTHY SKIDMORE

Secretary

L. C. FITZGERALD

VOLUME, 48, 1981

CAMBRIDGE UNIVERSITY PRESS

PUBLISHED BY THE SYNDICS OF THE CAMBRIDGE UNIVERSITY PRESS

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

© Proprietors of The Journal of Dairy Research 1981

Printed in Great Britain at the University Press, Cambridge

Contents

No. 1 (February 1981)

PAGE

Effect of teat skin disinfection on the rate of infection and interval to infection in cows exposed to high levels of <i>Staphylococcus aureus</i> . R. F. SHELDRAKE and R. J. T. HOARE.	1
Biological responses of the bovine teat to milking: information from measure- ments of milk flow-rate within single pulsation cycles. D. M. WILLIAMS, G. A. MEIN and M. R. BROWN.	7
Effect of atropine on plasma amino acid levels and milk secretion of cows. E. ROETS and G. PEETERS	23
The acid-soluble nucleotides of cow's, goat's and sheep's milks, at different stages of lactation. A. GIL and F. SANCHEZ-MEDINA	35
The pyruvate test for monitoring the bacteriological quality of raw silo tank milk. C. M. COUSINS, U. M. RODRIGUES and R. J. FULFORD	45
Metabolic significance of milk glucose. A. FAULKNER, N. CHAIYABUTR, M. PEAKER, D. T. CARRICK and N. J. KUHN	51
Mechanism of aggregation of casein micelles in rennet-treated milk. M. L. GREEN and S. V. MORANT	57
Effect of milk concentration on the nature of curd formed during renneting- a theoretical discussion. D. G. DALGLEISH	65
Binding of calcium ions to bovine β -casein. T. G. PARKER and D. G. DALGLEISH	71
Calculation by computer of individual concentrations in a simulated milk salt solution. I. G. B. WOOD, D. S. REID and R. ELVIN .	77
Calculation by computer of individual concentrations in a simulated milk salt solution. 11. An extension to the previous model. R. L. J. LYSTER.	85
Mineral balance in skim-milk and milk retentate: effect of physicochemical characteristics of the aqueous phase. G. BRULE and J. FAUQUANT	91
Effects of adding potassium iodate to milk before UHT treatment. I. Reduction in the amount of deposit on the heated surfaces. P. J. SKUDDER, E. L. THOMAS, J. A. PAVEY and A. G. PERKIN	99
Effects of adding potassium iodate to milk before UHT treatment. II. Iodate-induced proteolysis during subsequent aseptic storage. P. J. SKUDDER.	115
Heat stability of milk: interrelationship between assay temperature, pH and agitation. D. B. Hyslop and P. F. Fox	123
Relationship between triglyceride structure and softening point of milk fat. P. W. PARODI	131

v Contents	
Effect of the addition of extracts of thermophilic lactobacilli on acid production by <i>Streptococcus thermophilus</i> in milk. D. H. HEMME, V. SCHMAL and J. E. AUCLAIR	
Growth of morel mushroom mycelium in cheese whey. N. KOSARIC and N. MIYATA	149
Role of cyanate ions in the urea-induced stabilization of the caseinate complex in skim-milk. A. W. M. Sweetsur and D. D. Muir.	
Review of the progress of Dairy Science: Bovine mastitis: milk compositional changes and related diagnostic tests. B. J. KITCHEN	

No. 2 (June 1981)

Derivation of a mathematical model for the mechanism of casein micelle coagulation by rennet. D. F. DARLING and A. C. M. VAN HOOYDONK	189
Effects of feeding level in late pregnancy and dietary protein concentration during early lactation on food intake, milk yield, liveweight change and nitrogen balance of cows. R. T. COWAN, G. W. REID, J. F. D. GREENHALGH and C. A. G. TAIT	201
Trypsin-inhibitors in mastitic milk and colostrum : correlation between trypsin- inhibitor capacity, bovine serum albumin and somatic cell contents. T. HONKANEN-BUZALSKI and M. SANDHOLM	213
Leucocytes of sheep colostrum, milk and involution secretion, with particular reference to ultrastructure and lymphocyte sub-populations. CS. LEE and P. M. OUTTERIDGE	225
Rapid membrane filtration epifluorescent microscopic technique for the direct enumeration of somatic cells in fresh and formalin-preserved milk. G. L. PETTIPHER and U. M. RODRIGUES	239
Inhibition of lipolysis in bovine milk by proteose peptone. M. ANDERSON .	247
The relationship between the levels of free fatty acids, lipoprotein lipase, carboxylesterase, N -acetyl- β -D-glucosaminidase, somatic cell count and other mastitis indices in bovine milk. C. H. FITZ-GERALD, H. C. DEETH and B. J. KITCHEN.	253
Milk coagulation by cationic polyelectrolytes. F. DI GREGORIO and R. SISTO	267
Factors affecting the ethanol stability of bovine milk. I. Effect of serum phase components. D. S. HORNE and T. G. PARKER	273
Factors affecting the ethanol stability of bovine milk. II. The origin of pH transition. D. S. HORNE and T. G. PARKER	285
A differential scanning calorimetric study of the thermal behaviour of bovine β -lactoglobulin at temperatures up to 160 °C. J. N. DE WIT and G. KLARENBEEK	293
Electrofocusing and two-dimensional electrophoresis of bovine caseins. P. TRIEU-CUOT and JC. GRIPON	303

Contents	v
Occurrence of γ -caseins in buffalo milk. P. TRIEU-CUOT and F. ADDEO.	311
In vivo studies on the digestion of bovine caseins in the rat stomach. G. MIRANDA and JP. PELISSIER	319
Pickled soft cheese-making from recombined milk with added dried buttermilk. H. ABD EL-SALAM, S. EL-SHIBINY, A. MONEIB, A. ABO EL-HEIBA and A. AL-KHAMY	327
Effect of use of milk concentrated by ultrafiltration on the manufacture and ripening of Cheddar cheese. M. L. GREEN, F. A. GLOVER, E. M. W. SCURLOCK, R. J. MARSHALL and D. S. HATFIELD	333
Development of structure and texture in Cheddar cheese. M. L. GREEN, A. TURVEY and D. G. HOBBS	343
Changes in milk citrate concentration during lactation in the goat. M. PEAKER, A. FAULKNER and D. R. BLATCHFORD	357
Review of the progress of Dairy Science: Genetics of lactic acid bacteria. F. L. DAVIES and M. J. GASSON	363
No. 3 (October 1981)	
PROFESSOR M. PEAKER	377
Professor J. A. F. Rook	377
Evidence of penetration of the bovine teat duct by <i>Escherichia coli</i> in the interval between milkings. A. J. BRAMLEY, K. S. GODINHO and R. J. GRINDAL.	379
Citric acid concentrations in subclinical mastitic milk. M. OSHIMA and H. FUSE	387
Relationship of somatic cell count and cell volume analysis of goat's milk to intramammary infection with coagulase-negative staphylococci. R. F. SHELDRAKE, R. J. T. HOARE and V. E. WOODHOUSE	393
Factors affecting the ethanol stability of bovine milk. IV. Effect of forewarming. D. S. HORNE and T. G. PARKER	405
Mineral and protein equilibria between the colloidal and soluble phases of milk at low temperature. A. PIERRE and G. BRULE.	417
Isolation of κ -casein-like fractions from human whole casein by chromato- graphy on thiol-Sepharose, hydroxyapatite and DEAE-cellulose. JM. CHOBERT, F. ADDEO and B. RIBADEAU DUMAS	429
Casein compositional studies. II. The effect of secretory disturbance on casein composition in freshly drawn and aged bovine milks. J. G. BARRY and W. J. DONNELLY	437
Evaluation of bovine rennets in terms of absolute concentrations of chymosin and pepsin. A. P. MARTIN, JC. COLLIN, P. GARNOT, B. RIBADEAU DUMAS and G. MOCQUOT	447

GENERAL

Two copies of manuscripts should be sent to Dr M. E. Sharpe (*The Journal of Dairy Research*), National Institute for Research in Dairying, Shinfield, Reading, RG2 9AT, England. Submission of a paper will be held to imply that it reports unpublished original work, that it is not under consideration for publication elsewhere, and that if accepted for the *Journal* it will not be published elsewhere in any language, without the consent of the Editors.

FORM OF PAPERS

The author should follow these directions carefully, and consult a current issue of the *Journal* for guidance on details of typographical and other conventions.

Every paper should be headed with its title, the names and initials of the authors (each author supplying one given name) and the name and address of the laboratory where the work was done.

Papers should be in English, using the spelling of the *Shorter Oxford English Dictionary*. They should be typed with double spacing, on one side only of the sheets, and with ample margins for editorial annotations.

Papers should in general be divided into the following parts in the order indicated: (a) Summary, brief and self-contained; (b) Introductory paragraphs, briefly explaining the object of the work but without giving an extensive account of the literature; (c) Experimental or Methods; (d) Results; (e) Discussion and Conclusions; (f) Acknowledgements without a heading; (g) References. With some types of material headings other than (c), (d) and (e) may be preferable.

The use of footnotes should be avoided if possible. Underlining should be used only to indicate italics. Proper nouns, including trade names, should be given a capital initial letter. Wherever possible numerals should be used unless this leads to ambiguity. The typescript should carry the name and address of the person to whom the proofs are to be sent, and give a shortened version of the paper's title, not exceeding 45 letters and spaces, suitable for a running title in the *Journal*.

TABLES

Tables should be numbered and should carry headings describing their content. They should be comprehensible without reference to the text. They should be typed on separate sheets and their approximate positions in the text indicated. To minimize the cost of printing, the number and size of tables should be kept to an absolute minimum.

ILLUSTRATIONS

Line drawings and photographs, which must be originals, should be numbered as Figures in Arabic numerals. Drawings should be in Indian ink, on Bristol board or cartridge paper. However, a technique which may be more convenient to authors is to use a doublesized piece of tracing paper, or translucent graph paper faintly lined in *blue* or *grey*, folded down the centre with the drawing on one half and the other half acting as a flyleaf.

Attached to every figure and plate there should be a translucent flyleaf cover on the outside of which should be written legibly: (a) title of paper and name of author; (b) figure or plate number; (c) the figures and lettering,

which are intended to appear on the finished block, in the correct positions relative to the drawing underneath. Each paper should have a separate typed sheet listing figure and plate numbers with their legends, and the approximate positions of illustrations should be indicated in the text.

The photographs and diagrams should be about twice the size of the finished block and not larger overall than the sheets on which the paper itself is typed. For a figure measuring 250 mm × 150 mm all lines, axes and curves should be 0.4 mm thick, thus ______. Graph symbols in order of preference are $\bigcirc \bigcirc, \triangle \land$, $\square \blacksquare, \times +$, and for a 250 mm × 150 mm graph the circles should be 3 mm in diam. The triangles should be equilateral of 3 mm side, and the squares also of 3 mm side. The crosses should have lines 3 mm long at right angles. Scale marks on the axes should be on the inner side of each axis and should be 3 mm long.

SHORT COMMUNICATIONS

Short communications or notes of not more than 2500 words or the equivalent space in print and without a summary will also be published.

REFERENCES

In the text, references should be quoted by whichever of the following ways is appropriate: Arnold & Barnard (1900); Arnold & Barnard (1900*a*); Arnold & Barnard (1900*a*, *b*); (Arnold & Barnard, 1900). Give both names for 2 authors. For 3 or more authors give the first name *et al.* on all occasions, adding *a*, *b*, etc., to the date if there is any ambiguity.

References should be listed alphabetically at the end of the paper. Titles of journals should be given in full, authors' initials should be included, and each reference should be punctuated in the typescript thus: Arnold, T. B., Barnard, R. N. & Compound, P. J. (1900). Journal of Dairy Research 18, 158–165. References to books should include names of authors, year of publication, title, names of editors, town of publication and name of publisher in that order, thus: Arnold, T. B. (1900). Dairying. London: Brown and Chester. References should include titles of papers to which they refer.

It is the duty of the author to check all references.

UNITS, SYMBOLS AND ABBREVIATIONS

SI units must be used, as explained in British Standards Institution publication PD 5686:1972. The use of SI units. Until SI units are widely understood, it is permissible to give the equivalent value in other units in parenthesis. Symbols and abbreviations used are those of British Standard 1991: Part 1: 1967. Letter Symbols, Signs and Abbreviations.

DESCRIPTIONS OF SOLUTIONS

Normality and molarity should be indicated thus: N-HCl, 0.1 M-NaH₂PO₄. The term '%' means g/100 g solution. For ml/100 ml solution the term '% (v/v)' should be used and for g/100 ml solution the correct abbreviation is '% (w/v)'.

OFFPRINTS

Order forms giving quotations for offprints are sent to authors with their proofs.

Journal of Dairy Research

Volume 48, Number 3, October 1981

CONTENTS

PROFESSOR M. PEAKER	page 377
PROFESSOR J. A. F. ROOK Original articles	377
Evidence of penetration of the bovine teat duct by <i>Escherichia coli</i> in the interval between milkings	
A. J. BRAMLEY, K. S. GODINHO and R. J. GRINDAL	379-386
Citric acid concentration in subclinical mastitic milk M. OSHIMA and H. FUSE	387-392
Relationship of somatic cell count and cell volume analysis of goat's milk to intramammary infection with coagulase-negative staphylococci R. F. SHELDRAKE, R. J. T. HOARE and V. E. WOODHOUSE	393-403
Factors affecting the ethanol stability of bovine milk. IV. Effect of forewarming D. S. HORNE and T. G. PARKER	405-415
Mineral and protein equilibria between the colloidal and soluble phases of milk at low temperature	405-415
A. PIERRE and G. BRULE	417-428
Isolation of κ -case in-like fractions from human whole case in by chromato- graphy on thiol – Sepharose, hydroxyapatite and DEAE – cellulose	
JM. CHOBERT, F. ADDEO and B. RIBADEAU DUMAS	429-436
Casein compositional studies. II. The effect of secretory disturbance on casein composition in freshly drawn and aged bovine milks J. G. BARRY and W. J. DONNELLY	437-446
Evaluation of bovine rennets in terms of absolute concentrations of chymosin and pepsin A	
P. MARTIN, JC. COLLIN, P. GARNOT, B. RIBADEAU DUMAS and G. MOCQUOT	447-456
Goat's milk yoghurt made from non-homogenized and homogenized milks, concentrated by different methods R. K. ABRAHAMSEN and T. B. HOLMEN	457-463
Effect of cheese-making temperatures on the interactions of lactic	437-403
streptococci and their phages W. M. A. MULLAN, C. DALY and P. F. FOX	465-471
Detection of carbonyl sulphide in Cheddar cheese headspace J. W. ASTON and K. DOUGLAS	473-478
Role of <i>Penicillium roqueforti</i> proteinases during blue cheese ripening D. LE BARS and JC. GRIPON	479-487
Constitutive nature of the enzymes of citrate metabolism in <i>Streptococcus lactis</i> subsp. <i>diacetylactis</i>	
T. M. COGAN	489-495
Induction of some enzymes of citrate metabolism in <i>Leuconostoc lactis</i> and other heterofermentative lactic acid bacteria D. MELLERICK and T. M. COGAN	497-502
SHORT COMMUNICATIONS	477-302
Diurnal variations of progesterone in the milk of pregnant and non- pregnant buffaloes (<i>Bubalus bubalis</i>)	
A. K. SURI, S. K. BATRA, G. S. PAHWA and R. S. PANDEY Calcium and phosphorus in milk and blood serum of the lactating Red	503-507
Sokoto goat A. O. AKINSOYINU	509-511
Manufacture of Gruyère-type cheese with 50:50 rennet/swine pepsin E. M. ANIFANTAKIS, B. C. VEINOGLOU and J. G. KANDARAKIS	513-518
REVIEW	
Review of the progress of Dairy Science: Human and artificial milks for, , infant feeding	
infant feeding M. I. GURR	519-554
© Proprietors of The Journal of Dairy Research 1981	

Printed in Great Britain at the University Press, Cambridge