Vol. 57. Part 2 October 1961

THE JOURNAL OF AGRICULTURAL SCIENCE

EDITED BY

G. D. H. BELL, B.SC., PH.D., Plant Breeding Institute, Cambridge

R. E. EVANS, M.SC., PH.D., School of Agriculture, Cambridge

SIR JOHN HAMMOND, C.B.E., M.A., D.SC., F.R.S., School of Agriculture, Cambridge

SIR BERNARD KEEN, D.SC., F.R.S., 72 Eaton Square, London, S.W. 1

SIR E. JOHN RUSSELL, D.SC., F.R.S. Campsfield Wood, Woodstock, Oxon.

E. W. RUSSELL, C.M.G., M.A., PH.D., F.INST.P., East African Agriculture and Forestry Research Organisation, P.O. Box 21, Kikuyu, Kenya

F. YATES, sc.D., F.R.S., Rothamsted Experimental Station, Harpenden



CAMBRIDGE UNIVERSITY PRESS

BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W. I
AMERICAN BRANCH: 32 EAST 57TH STREET, NEW YORK 22, N.Y.

Price 25s. net (U.S.A. \$4.25)

OVER 3000 available

MICHROME STAINS

and Reagents for Biology

Adenosine Aquamount Brilliant Cresyl Blue Bromelain Laktoseal Lipid Crimson Pyronin

Sudan Black Matamount Urease, etc.

TRIFALGIC ACID for electrophoresis, etc. (Ref. Bodman, J. (1960), Ivor Smith's Chromat. and Electrophor. Tech., vol. 2 (Heinemann).)

104-page catalogue on request

Now ready:

ENCYCLOPARDIA OF MICROSCOPIC STAINS by Edward Gurr, 500 pages Royal 8vo, price 95/-

EDWARD GURR, LTD.

42 UPPER RICHMOND RD. WEST, LONDON. S.W. 14

Telephone: Prospect 8051 & 7606
Uniform High Quality, Reliability.
IMMEDIATE DELIVERY.

AGRONOMY JOURNAL

This official organ of the American Society of Agronomy is now a bimonthly publication of up-to-date reports of general agronomic research. (It alternates with Crop Science, which carries reports of a more technical nature in crop breeding, genetics, and physiology.) Workers in the fields of forages and pastures, crop improvement, cultural practices, soil fertility, and allied areas of investigation will find articles of lasting interest in Agronomy Journal. Publication is open to members of the American Society of Agronomy.

\$12.00 per year in U.S. and Canada. \$13.00 per year elsewhere

American Society of Agronomy 2702 Monroe Street Madison 5, Wisconsin

Other Cambridge Journals

ANNALS OF APPLIED BIOLOGY

Includes original papers and book reviews on the application of biology to agriculture, forestry, horticulture, and other subjects. Published quarterly. Annual subscription £5 per volume. Single parts 30s.

BRITISH JOURNAL OF NUTRITION

PROCEEDINGS OF THE NUTRITION SOCIETY

The Journal contains accounts of original work in all branches of nutrition, including medical and agricultural. The Proceedings reports discussions on several topics of interest to nutrition scientists. Combined subscription rate is £7 for 4 parts of the Journal, and two parts of the Proceedings. Single parts of either 35s.

JOURNAL OF DAIRY RESEARCH

Publishes the results of original research in dairy science and cognate subjects. The Journal is issued three times a year. Annual subscription 60s. Single parts 25s.

Copies of these and other Cambridge Journals may be ordered through your Bookseller or direct from the Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1.

JOURNAL OF REPRODUCTION AND FERTILITY

The Journal publishes original papers, abstracts of Proceedings, and occasionally reviews and bibliographies dealing with the morphology, physiology, biochemistry, endocrinology, pharmacology and pathology of reproduction in man and animals, and with the biological, medical and veterinary problems of fertility and lactation. Starting in 1962, enlarged numbers will be issued bimonthly to give two volumes a year, each of three numbers. Volume 3, No. 1, February 1962, will be dedicated in honour of Sir John Hammond.

Some recent and forthcoming papers:

- I. C. A. Martin and C. W. Emmens. The effects of time of equilibration and addition of fructose on the survival and fertility of bull spermatozoa deep-frozen to -79° C.
- A. M. Phadke and G. M. Phadke. Occurrence of macrophage cells in the semen and in the epididymis in cases of male infertility.
- A. M. Phadke, K. Tilak and K. Padukone. Preliminary observations on the chemical method for the detection of ovulation.
- P. H. SAMMELWITZ, J. P. ALDRED and A. V. NALBANDOV. Mechanisms of maintenance of corpora lutea in pigs and rats.
- J. E. STRANGROOM and R. DE G. WEEVERS. Anticoagulant activity of equine follicular fluid.
- G. C. Ashtron and G. R. Fallon. β-globulin type, fertility and embryonic mortality in cattle
- R. G. Wales and I. G. White. The effects of some antibacterials on dog spermatozoa.
- J. D. BIGGERS, C. FINN and A. McLaren. The long-term reproductive performance of female mice.
 - I. The effect of removing one ovary.
 - II. Variation of litter-size with parity.

The present subscription rate is 70s. per volume of 4 numbers. U.S.A. and Canada \$12.00. For 1962 the subscription rate will be 70s. per volume for each of two volumes.

Dr P. M. F. Bishop is Chairman and Dr A. S. Parkes, C.B.E., F.R.S., Secretary of the Council of Management. The Editorial Board includes Professor E. C. Amoroso, F.R.S., Dr R. A. Beatty, Dr J. L. Hancock, Professor J. A. Laing, Dr T. Mann, F.R.S., and Mr L. E. Rowson, O.B.E.

Editorial correspondence should be sent to the Editor Dr C. R. Austin, Physiological Laboratory, Downing Street, Cambridge, and business correspondence to the publishers.

BLACKWELL SCIENTIFIC PUBLICATIONS OXFORD



by CASELLA LONDON

Continuous samples of airborne spores can be taken in the open in almost every type of weather with the Hirst Spore Trap. Developed by Dr J. M. Hirst of the Plant Pathology Department, Rothamsted, the instrument will catch spores over a wide range of sizes, and provide data on rapid changes in the composition of air-spora. It is of particular interest to agricultural research workers for investigating plant diseases spread by airborne spores and to Allergists for tracing spores and pollen in the atmosphere.

Write for Leaflet 802/JAS

C. F. CASELLA & CO. LIMITED Dept. J.A.S., Regent House, Britannia Walk, London, N.1 Clerkenwell 858 (6 lines)

ANIMAL PRODUCTION

JOURNAL OF THE BRITISH SOCIETY OF ANIMAL PRODUCTION

Contents of Volume 3, Part 3, October 1961

ALBA, J., CORTA, E. V. and ULLOA, G. Influence of natural service on length of oestrus in the cow.

ARMSTRONG, R. W. and CAMERON, A. E. Hexoestrol implantation of Blackface wether lambs.

BELLIS, D. B. Requirements of bacon and heavy pigs for certain essential amino acids.

BRUMBY, P. J. Relationship of genetic merit to herd differences in milk production.

DICKINSON, A. G. Modification of gestation length in cattle by environment.

DODSWORTH, T. L. and BALL, C. Treatment of beef cattle with tranquillisers and antibiotics.

DUCKWORTH, J. E., COOPER, M. McG., DUNKIN, A. G., TAYLOR, J. M. and HOLMES, W. Progeny testing of bacon pigs at Wye College.

HOLMES, W., JONES, J. G. W. and DRAKE-BRACKMAN, R. M. Feed intake of grazing cattle. II. The influence of size of animal.

KERR, J. A. M., BROWN, W. O. and MORRISON, J. Nutritive value of silage self-fed to fattening cattle.

LODGE, G. A., McDONALD, I. and MACPHERSON, R. M. Relative influence of birth-weight and creep-feed consumption on weights of sucking pigs.

LODGE, G. A., McDONALD, I. and MACPHERSON, R. M. Weight changes in sows during pregnancy and lactation.

PRESTON, T. R., GREENHALGH, I., BOYNE, A. W., CRICHTON, J. A., ROLFE, E. J., BROWN, A. and DODSWORTH, T. L. The effect of hexoestrol on eating quality of beef and lamb.

RENDEL, JAN, and GAHNE, BO. Parentage tests in cattle using erythrocyte and serum transferrins.

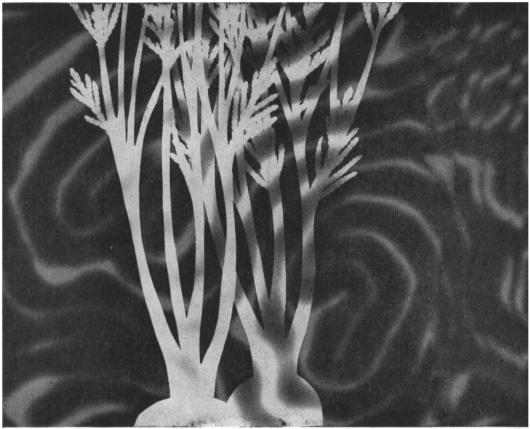
WALKER, E. A. and TAYLOR, J. H. Effect of parenterally administered iron upon the growth of piglets.

Annual Subscription 45s. (U.S.A. and Canada \$7.50) Single Part 17s. 6d. (U.S.A. and Canada \$2.75)

OLIVER AND BOYD LTD.

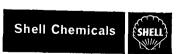
Tweeddale Court, 14 High Street, Edinburgh, I.

Carrot (kar'ut): F. carotte: L. carota: perhaps adapted from Greek for 'head'. Genus Daucus. 1. An umbelliferous plant with a large tapering red-coloured root that is edible. Cultivated in most parts of the world. 2. Crop yields are often seriously reduced by nematode infestation of the roots. 3. For protection, ground should be thoroughly treated by injection of D-D Soil Fumigant, before planting. Such treatment leads to better plants, higher yields and bigger profits. 4. Shell pesticides (ref: aldrin, dieldrin, endrin, Phosdrin, D-D and Nemagon) offer complete protection against all vegetable pests.



For further information consult your Shell Company.

In agriculture and industry

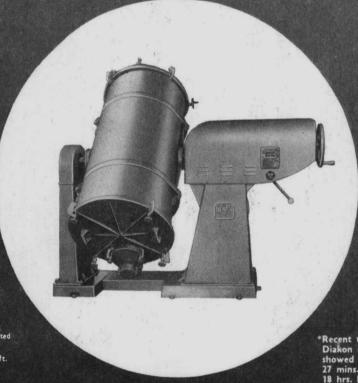


BLENDING

CHEAPER · BETTER · QUICKER

POWDERS OF ANY TYPE CHEMICALS · FLAKES CRYSTALS · AGGREGATES FOOD PRODUCTS WORKING CAPACITIES FROM 1/5 TO 80 cub. ft. CUTS MIXING TIMES BY UP TO 971 1/2 **

NO INTERNAL MOVING PARTS - ABSOLUTE CONSTANT BLENDING



The Model illustrated has a capacity of 6 cubic feet at 40-45 lbs per cu. ft.

*Recent tests in a Diakon mixing showed a time of 27 mins. against 18 hrs. by conventional methods

TP

CHEMICAL ENGINEERING CO. LTD.
5 THORNHILL ROAD CROYDON SURREY

Telephone THO, 1708