

THE JOURNAL OF AGRICULTURAL SCIENCE

EDITED BY

G. D. H. BELL, C.B.E., PH.D., F.R.S., Plant Breeding Institute, Cambridge

K. L. BLAXTER, PH.D., N.D.A. (HONS.), D.SC., F.R.S.E.,
The Hannah Dairy Research Institute, Ayr, Scotland

G. W. COOKE, PH.D., F.R.I.C., Rothamsted Experimental Station, Harpenden

R. E. EVANS, M.SC., PH.D., Glyndwr, Dolau, Llandre, Cardigan

JOHN HAMMOND, Jr., M.A., School of Agriculture, Cambridge

PROF. SIR J. B. HUTCHINSON, C.M.G., SC.D., F.R.S., School of Agriculture,
Cambridge

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

H. L. PENMAN, O.B.E., PH.D., F.R.S., Rothamsted Experimental Station, Harpenden

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

PROF. E. W. RUSSELL, C.M.G., PH.D., F.INST.P., Department of Soil Science,
University of Reading

F. YATES, C.B.E., SC.D., F.R.S., Rothamsted Experimental Station, Harpenden



CAMBRIDGE UNIVERSITY PRESS

BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W. 1

AMERICAN BRANCH: 32 EAST 57TH STREET, NEW YORK, N.Y. 10022

Price 32s. 6d. net

(U.S.A. \$5.50)

MICHROME STAINS

and Reagents for Biology

OVER 3000 available including:

| | |
|-----------------------|----------------------|
| Magneson II | Lipid Crimson |
| Aquamount | Thiofluorescein |
| Brilliant Cresyl Blue | Sudan Black |
| Bromelain | Matamount |
| Chromosome red | Rhodanile Blue |
| Laktoseal | Trifalgal acid, etc. |

1965 Catalogue on request

New books by Edward Gurr

RATIONAL USE OF DYES IN BIOLOGY & GENERAL STAINING METHODS

422 pages, Roy. 8vo, 105/-

STAINING ANIMAL TISSUES, 637 pages, 84/-

ENCYCLOPAEDIA OF MICROSCOPIC STAINS, 500 pages, 95/-

EDWARD GURR LTD.

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

Telegrams: Micromlabs, London, S.W. 14
Telephones: PROspect 8228 and 8229

AGRONOMY JOURNAL

This official organ of the American Society of Agronomy is a bimonthly publication of up-to-date reports of general agronomic research. 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.

\$14.00 per year in U.S. and Canada.

\$15.00 per year elsewhere

American Society of Agronomy

677S. Segoe Rd.

Madison, Wisconsin, U.S.A., 53711

ANIMAL PRODUCTION

JOURNAL OF THE BRITISH SOCIETY OF ANIMAL PRODUCTION

Contents of Volume 7, Part 2, June 1965

- CUNNINGHAM, E. P. The evaluation of sires from progeny test data.
- JONES, J. G. W., DRAKE-BROCKMAN, R. M. and HOLMES, W. The feed intake of grazing cattle. III. The influence of level of milk yield.
- DUCKWORTH, J. E. The influence of pre-weaning nutrition on subsequent growth and development of bacon pigs.
- JORDAN, R. M. and HANKE, H. E. Effects of hay pellets, pelleted ear corn or complete pelleted rations on the feedlot performance of lambs.
- TROELSEN, J. E. Sustained release of chromic oxide in the rumen of sheep from a CR 203-paper pellet.
- TIMON, V. M. and BICHARD, M. Quantitative estimates of lamb carcass composition, 1, 2 and 3.
- GRIFFITHS, T. W. A comparison of two methods for allocating concentrates to dairy cows according to yield.
- RICKABY, C. D. Feeding of dairy cows; a survey of the concentrate usage of high yielding cows during the winter.
- TAYLOR, ST C. S. A relation between mature weight and time taken to mature in mammals.
- HORROCKS, D., BURT, A. W. A., THOMAS, D. C. and LANCASTER, M. C. Effects of groundnut meal containing aflatoxin in cattle diets.
- SMITH, C. Results of pig progeny testing in Great Britain.
- BARBER, R. S., BRAUDE, R., HOSKING, ZENA D. and MITCHELL, K. G. The effects of different amounts of liquid skim-milk on pork pigs with particular reference to carcass quality.
- HOLME, D. W. and ROBINSON, K. L. A study of water allowances for the bacon pig.
- ROBERTSON, ALAN. The interpretation of genotypic ratios in domestic animal populations.

This Journal is published three times a year in February, June and October

The annual subscription rate is 65s. (U.S.A. \$11.00). Single copy 25s. (U.S.A. \$4.00). Orders and subscriptions may be sent to any bookseller or direct to:

OLIVER AND BOYD LTD.

Tweeddale Court, 14 High Street, Edinburgh, 1

announcing **EXPERIMENTAL AGRICULTURE**

Experimental Agriculture is a journal concerned with the whole range of agricultural problems in developing countries. It aims to provide a link between academic research and agricultural practice. It will publish:

- authoritative and up-to-date reviews of new developments in scientific agriculture;
- accounts of new experimental techniques, especially those concerned with methods of studying the agricultural environment, the relative merits of new crops, varieties and cultural operations and the application of biometry to field experimentation;
- contributions from developing countries on the specific problems of increasing agricultural production, especially where this is at present based on peasant subsistence agriculture;
- papers on the more technical and economic aspects of farming systems, especially where these bear on the problems of changing an existing system;
- descriptions of successful experiments in extension methods, cooperation, community projects and related topics concerned with the sociological aspects of agricultural improvements.

Experimental Agriculture is a quarterly journal published by Cambridge University Press. It is the successor to *The Empire Journal of Experimental Agriculture*.

The subscription price is £3. 15s. (U.S.A. \$13.50) including postage; single parts are available at £1. 5s. each (U.S.A. \$4.50). Orders may be sent to any bookseller or subscription agent, or direct to Cambridge University Press.

CAMBRIDGE UNIVERSITY PRESS
Bentley House, 200 Euston Road, London, N.W. 1

American Branch: 32 East 57th Street, New York, N.Y. 10022, U.S.A.

COLUMBIA



COLUMBIA

FOREST INFLUENCES

An assessment of forest and land-use policies, this study presents much material previously unavailable in a single volume. It is intended for both general readers and professionally trained workers. \$3.00

Forests and Forest Products Study No. 15

PRODUCTION YEARBOOK, 1963

VOLUME XVII

This book contains annual data on all important aspects of food and agriculture, including population, index numbers of agricultural production, food supplies, prices, wages, and freight rates. Official figures are supplied by governments and if these are unavailable, reliable unofficial sources are used. \$8.00

ANIMAL HEALTH YEARBOOK, 1963

Data on some of the economic losses caused by livestock diseases are included in this edition of the Yearbook. *Paperbound* \$5.00

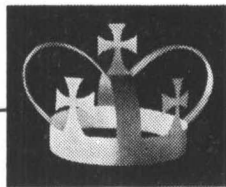
MANUAL OF FUMIGATION FOR INSECT CONTROL

Now entering its second English printing, this handbook stresses simpler, more adaptable fumigation techniques for the control of aboveground insects. It is written for fumigators and officials supervising or conducting quarantine treatment. \$3.00

Agricultural Study No. 56

COLUMBIA UNIVERSITY PRESS

2960 Broadway
New York, N.Y. 10027



COLUMBIA

COLUMBIA

JOURNAL OF REPRODUCTION AND FERTILITY

The Journal publishes original papers, abstracts of Proceedings, and occasionally reviews and bibliographies, dealing with the morphology, physiology, biochemistry and pathology of reproduction in man and animals, and with the biological, medical and veterinary problems of fertility and lactation. Numbers are issued bimonthly to give two volumes a year.

Papers to appear in 1965 include:

- R. J. KOMAREK, B. W. PICKETT, E. W. GIBSON and R. G. JENSEN. Lipids of porcine spermatozoa, seminal plasma and gel.
- H. ADLERCREUTZ and T. LUUKKAINEN. Isolation and identification of 17 α -oestradiol in the bile of a pregnant cow.
- B. P. SETCHELL, G. M. H. WAITES and H. R. LINDNER. Effect of undernutrition on testicular blood flow and metabolism and the output of testosterone in the ram.
- S. IVERSEN. Volume of untreated and ultrasonically treated bull, boar and human spermatozoa electronically determined.
- R. G. WALES and J. C. WALLACE. Effects of washing on the metabolism of bull spermatozoa.
- C. V. HULET, W. C. FOOTE and R. L. BLACKWELL. Relationship of semen quality and fertility in the ram to fecundity in the ewe.
- M. HAMMOND, M. A. BOONE, B. D. BARNETT and D. E. TURK. Studies of the composition of the deoxyribonucleic acid of the fowl spermatozoa.
- C. POLGE and P. DZIUK. Recovery of immature eggs penetrated by spermatozoa following induced ovulation in the pig.
- F. HRUDKA. Cytochemical demonstration of catabolic activity in spermatozoa by the Formazan test.
- M. HAMMOND, M. A. BOONE and B. D. BARNETT. Study of the glucose, electrolytes, enzymes and nitrogen components of fowl seminal plasma.
- K. K. MITTAL, G. W. SALISBURY, C. N. GRAVES and B. RASMUSSEN. Antigens of bovine semen and the influence of specific rabbit anti-bull semen serum on metabolic activity of bull spermatozoa.
- M. H. EL JACK and A. H. SYKES. Effect of a dithiobiurea derivative on semen characteristics and fertility in the fowl.

Editorial correspondence should be sent to Professor A. S. Parkes, Journal of Reproduction and Fertility, 8 Jesus Lane, Cambridge, England, and business correspondence to the publishers.

*The subscription rate is £6 per volume or £12 per year (two volumes).
U.S.A. and Canada \$20.00 per volume or \$40.00 per year*

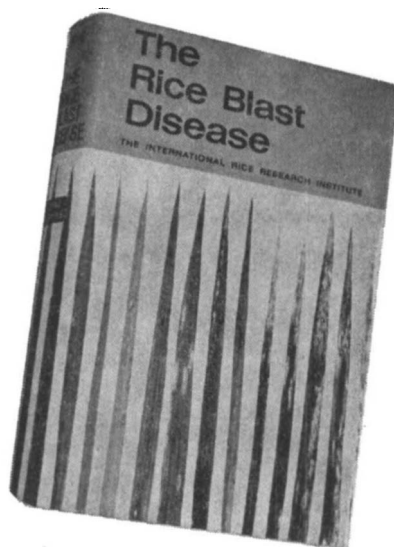
**BLACKWELL SCIENTIFIC PUBLICATIONS
OXFORD**

Two important books from
THE INTERNATIONAL RICE RESEARCH INSTITUTE

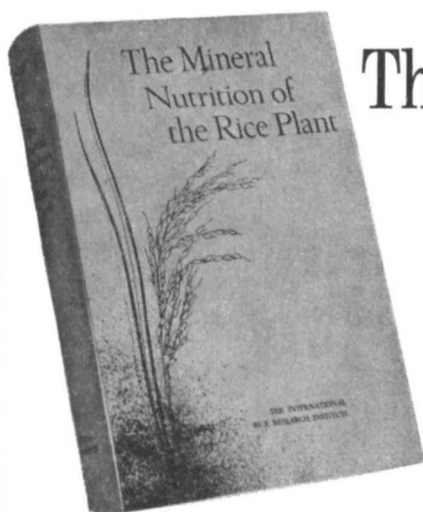
The Rice Blast Disease

Proceedings of a Symposium at the International
Rice Research Institute

Rice blast is one of the most destructive factors curtailing the growth and production of rice. This study is concerned with all aspects of the disease — from the nutrition and metabolism of the fungus which causes it to the methods which are being used to control it. The effect of temperature and climate on the growth of the fungus is discussed. Control methods analyzed here include fungicides, antibiotics, cultivation practices, and the breeding of blast-resistant rice.



517 pages, 95 charts, 112 pages of tables, 8 pages of color plates \$15.00



The Mineral Nutrition of the Rice Plant

Proceedings of a Symposium at the International
Rice Research Institute

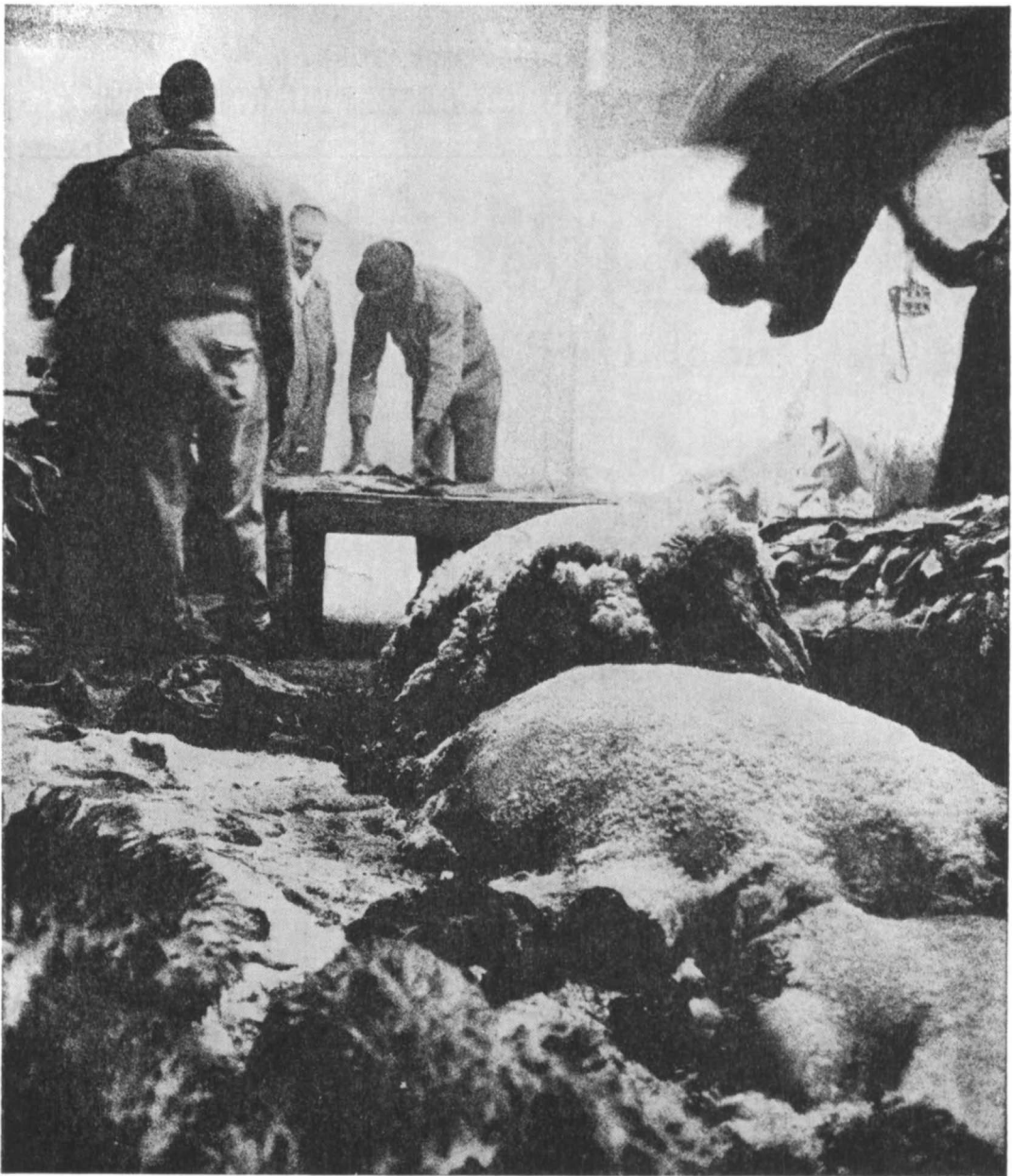
These papers analyze what nutrients are needed by the rice plant and the role that each nutrient plays in the growth of rice. Environmental conditions which affect nutrient availability are studied, including soil characteristics, the dynamics of flooded soil, and the use of nitrogenous and phosphate fertilizer. The plant's photosynthesis and respiration are examined, as is the breeding of rice for nitrogen responsiveness.

512 pages, 170 charts, 6 halftone illustrations \$12.50

THE JOHNS HOPKINS PRESS



Baltimore, Md. 21218



STORING HIDES WITHOUT STORING INSECTS IS EASY WITH VAPONA

Vapona, Shell's latest insecticide, vaporises—whether you spray, fog or sprinkle it. The vapour spreads effectively up to 100 feet from its point of release, probing into cracks and crevices to search out and kill all types of insects (even resistant strains). Yet Vapona, which is DDVP based, breaks down rapidly into harmless substances on surfaces and in the presence of moisture. And the minute dosage required to destroy insects causes no harm or discomfort to humans or animals. Vapona is highly suitable for use in warehouses, such as those used for hide storage (it easily controls all moths and hide and skin beetles), as well as in restaurants, cinemas, abattoirs, food processing plants and garbage dumps. Vapona is just one of Shell's comprehensive group of pesticides, which includes aldrin, dieldrin, endrin, Phosdrin, D-D, and Nemagon.

VAPONA

Shell Chemicals



For further information and details of Shell's technical services, please consult your Shell Company.