THE JOURNAL OF AGRICULTURAL SCIENCE

EDITED FOR THE PLANT BREEDING AND ANIMAL NUTRITION RESEARCH INSTITUTES AT CAMBRIDGE, AND THE ROTHAMSTED RESEARCH INSTITUTES BY

PROFESSOR SIR R. H. BIFFEN, M.A., F.R.S., School of Agriculture, Cambridge SIR A. D. HALL, K.C.B., M.A., LL.D., F.R.S., John Innes Horticultural Institution, Merton Park, Surrey

B. A. KEEN, D.Sc., F.INST.P., Rothamsted Experimental Station, Harpenden F. H. A. MARSHALL, Sc.D., F.R.S., School of Agriculture, Cambridge SIR E. J. RUSSELL, D.Sc., F.R.S., Rothamsted Experimental Station, Harpenden

IN CONSULTATION WITH

B. C. ASTON, Department of Agriculture, Wellington, New Zealand

DR C. A. BARBER, C.I.E., School of Agriculture, Cambridge

PROFESSOR B. T. P. BARKER, M.A., Agricultural and Horticultural Research Station, Long Ashton, Bristol

I. B. POLE EVANS, Department of Agriculture, Pretoria, South Africa

PROFESSOR J. HENDRICK, B.Sc., Marischal College, Aberdeen

SIR T. H. MIDDLETON, K.B.E., C.B., M.A., The Development Commission, London

DR A. E. V. RICHARDSON, Waite Agricultural Research Institute, Glen Osmond, South Australia

DR FRANK T. SHUTT, F.I.C., Experimental Farms, Ottawa, Canada

SIR WILLIAM SOMERVILLE, M.A., D.Sc., Oxford

SIR FRANCIS WATTS, K.C.M.G., St Augustine, Trinidad, British West Indies

DR H. J. WHEELER, American Agricultural Chemical Co., Agricultural Service Bureau, 419 Fourth Avenue, New York, U.S.A.

VOLUME XXI 1931

CAMBRIDGE AT THE UNIVERSITY PRESS

1931

PRINTED IN GREAT BRITAIN

	PAGE
SEN, H. D. A study on the extraction of papain, the active digestive principle from Papaya	209
GREENHILL, A. W. and PAGE, H. J. Investigations into the intensive system of grassland management by the Agri- cultural Research Staff of Imperial Chemical Industries, Limited. II. The mineral content of intensively treated pasture and a relationship between the nitrogen and phos- phorus contents. (With five text-figures)	220
FERGUSON, W. S. Investigations into the intensive system of grassland management by the Agricultural Research Staff of Imperial Chemical Industries, Limited. III. The seasonal variation in the mineral content of pasture with particular reference to drought. (With one text-figure)	233
IRWIN, J. O. On the influence of soil temperature on the germina- tion interval of crops	241
MCLEAN, W. Effect of hydrogen peroxide on soil organic matter	251
NICHOLSON, H. H. The effects of varied dressings of ground lime- stone in the field. (With three text-figures)	262
WOODMAN, H. E., NORMAN, D. B. and FRENCH, M. H. Nutritive value of pasture. VII. The influence of the intensity of grazing on the yield, composition and nutritive value of pasture herbage (Part III)	267
MARCHAND, B. DE C. The sticky point water of soils. Part II. (With three text-figures)	324
BEST, R. J. A comparison of methods for determining the hydrogen ion concentration of soils. (With six text-figures).	337
CLAPHAM, A. R. Studies in sampling technique: cereal experi- ments. I. Field technique. (With one text-figure)	366
SIMPSON, T. WAKE. Studies in sampling technique: cereal ex- periments. II. A small-scale threshing and winnowing machine. (With Plate II and two text-figures)	372
CLAPHAM, A. R. Studies in sampling technique: cereal experi- ments. III. Results and discussion. (With one text-figure).	376

PART 3 (JULY 1931)

Forster, H.								
cereals. V	ictoria.	I. Cens	us studi	es 1927-	-29. (Wi	th tw	o tex	t-
figures)	•	• •	•		•	•	•	. 391
Watson, S. J.	The d	igestibili	ty and	feeding	value of	dreg	\mathbf{meal}	. 410

Contents

	PAGE
WATSON, S. J. Investigations into the intensive system of grass- land management by the Agricultural Research Staff of Imperial Chemical Industries, Limited. IV. The digestibility and feeding value of artificially dried grass. (With one text- figure)	414
WATSON, S. J. Investigations into the intensive system of grass- land management by the Agricultural Research Staff of Imperial Chemical Industries, Limited. V. The digestibility and feeding value of grass silage made in a tower, and the digestibility and comparative yield of artificially dried grass obtained from the same source. (With two text-figures)	425
OWEN, O. The analysis of tomato plants. Part II. The effect of manurial treatment on the composition of tomato foliage. (With four text-figures)	442
WATSON, S. J. Investigations into the intensive system of grass- land management by the Agricultural Research Staff of Imperial Chemical Industries, Limited. VI. The digestibility and feeding value of grass silage made in a stack	452
MIRCHANDANI, T. J. The effects of summer green manures on the ammonia and nitrate contents of soils cropped for winter wheat. An examination of the Woburn green manure plots. (With three text-figures)	458
WATSON, S. J. Investigations into the intensive system of grass- land management by the Agricultural Research Staff of Imperial Chemical Industries, Limited. VII. The digestibility and feeding value of grass silage made in a pit	469
TROELL, ERIK. The use of sodium hypobromite for the oxidation of organic matter in the mechanical analysis of soils	476
BASU, J. K. Studies on soil reaction. VII. An electrodialysis apparatus for the determination of replaceable bases in soils. (With two text-figures)	484
CROWTHER, E. M. and MIRCHANDANI, T. J. Winter leaching and the manurial value of green manures and crop residues for winter wheat. (With seven text-figures)	493
WOODMAN, H. E., KITCHIN, A. W. MENZIES and EVANS, R. E. The value of tapioca flour and sago pith meal in the nutrition of swine	526
EDEN, T. Studies in the yield of tea. I. The experimental errors of field experiments with tea. (With one text-figure)	547
FISHER, E. A. and Jones, C. R. The influence of manurial treat- ment on the baking quality of English wheat. I. A quality study of the Rothamsted Broadbalk wheats. (With Plates III	·
and IV)	574