

**AUSTRALIAN JOURNAL
OF
SCIENTIFIC RESEARCH**

**SERIES B
BIOLOGICAL SCIENCES**

VOLUME 2

**MELBOURNE
1949**

AUSTRALIAN JOURNAL OF SCIENTIFIC RESEARCH

Published by the Commonwealth Scientific and Industrial Research Organization and the Australian National Research Council

Issued in two series:

Series A — Physical Sciences

(Four issues each year, appearing March, June, September, December)

Series B — Biological Sciences

(Four issues each year, appearing February, May, August, November)

Price: Each series 30/- per annum, separate issues 7/6 each

EDITORIAL BOARD

Chairman and Editor: N. S. Noble

Members: Professor F. M. Burnet

Professor W. J. Dakin

Professor E. J. Hartung

Professor L. H. Martin

Professor J. G. Wood

All enquiries and manuscripts should be forwarded to:

The Editor,

Australian Journal of Scientific Research,

Commonwealth Scientific and Industrial Research Organization,
314 Albert Street, East Melbourne, C.2, Victoria.

Printed by The Advertiser Printing Office, Adelaide

CONTENTS

NUMBER 1, FEBRUARY 1949

	PAGE
The Estimation of Latent Infection in Oranges. By D. B. Adam, Jean McNeil, B. M. Hanson-Merz, D. F. McCarthy, and Joan Stokes ..	1
The Distribution of Ascorbic Acid in the Tissues of Insects. By M. F. Day	19
The Distribution of Alkaline Phosphatase in Insects. By M. F. Day ..	31
Studies of Comparative Fleece Growth in Sheep. I. The Quantitative Nature of Inherent Differences in Wool-Growth Rate. By K. A. Ferguson, H. B. Carter, and Margaret H. Hardy	42

NUMBER 2, MAY 1949

Yield Trends in the Wheat Belt of South Australia 1896-1941. By E. A. Cornish	83
The Metabolism of the Apple During Storage. By J. F. Turner ..	138
On the Mechanism of Action of 2, 4-Dichlorophenoxyacetic Acid. By P. L. Goldacre	154
On the Relative Importance of Aerobic Metabolism in Small Nematode Parasites of the Alimentary Tract. I. Oxygen Tensions in the Normal Environment of the Parasites. By W. P. Rogers	157
On the Relative Importance of Aerobic Metabolism in Small Nematode Parasites of the Alimentary Tract. II. The Utilization of Oxygen at Low Partial Pressures by Small Nematode Parasites of the Alimentary Tract. By W. P. Rogers	166
A Study of the Processes of Digestion in Certain Insects. By M. F. Day and R. F. Powning	175
The Action of Ninhydrin on the Enzymatic and Actin-combining Properties of Myosin. By D. Gilmour and J. H. Calaby	216

NUMBER 3, AUGUST 1949

	PAGE
The Development of Tyloses and Secretion of Gum in Heartwood Formation. By M. Margaret Chattaway	227
Microsporogenesis, Macrosporogenesis, and Development of the Macro-gametophyte and Seeds of <i>Duboisia Leichhardtii</i> (F.v.M.) and <i>D. myoporoides</i> (R.Br.). By C. Barnard	241
The Significance of the Necrotic Phloem Reaction in the Potato to the Leaf-Roll Virus. By E. M. Hutton	249
Electron Microscopic Studies of Spermatozoa. I. The Morphology of the Spermatozoon of the Common Domestic Fowl (<i>Gallus domesticus</i>). By G. W. Grigg and A. J. Hodge	271
The Biological Significance of Haemoglobin in Nematode Parasites. I. The Characteristics of the Purified Pigments. By W. P. Rogers	287
Ruminal Flora Studies in the Sheep. I. The Nutritive Value of Rumen Bacterial Protein. By F. M. Reed, R. J. Moir, and E. J. Underwood	304

NUMBER 4, NOVEMBER 1949

Improving the Accuracy of Growth Indices by the Use of Ratings. By G. A. McIntyre and R. F. Williams	319
Investigations on the Stability and Determination of Dehydroascorbic Acid. By F. E. Huelin	346
Seasonal Variations in the Vitamin A Content of Victorian Butterfat. By K. T. H. Farrer, W. M. Balding, H. S. Warren, and R. G. Miller ..	355
Electron Microscopic Studies of Spermatozoa. II. The Morphology of the Human Spermatozoon. By A. J. Hodge	368
On the Vegetative Forms and Life History of <i>Chloromyxum thyrsites</i> Gilchrist and its Doubtful Systematic Position. By A. G. Willis ..	379
The Biological Significance of Haemoglobin in Nematode Parasites. II. The Properties of the Haemoglobins as Studied in Living Parasites. By W. P. Rogers	399
The Biochemical Characterization of a Serologically Active Lipid Fraction of the Nematode <i>Haemonchus contortus</i> . By A. C. Jennings	408
The Occurrence of Mucoid Substances in Insects. By M. F. Day	421
The Hydrogen Ion Concentration in the Alimentary Canal of Larval and Adult Lepidoptera. By D. F. Waterhouse	428
The Effect of Sympathectomy on Wool Growth. By K. A. Ferguson	438
Index to Volume 2	445