

46/1967

THE AUSTRALIAN NATIONAL UNIVERSITYFACULTY OF ARTS, S.G.S.DEPARTMENT OF APPLIED MATHEMATICSANNUAL REPORT - 1966.Staff

Prof. A. Brown

Mr. J.E. Drummond (Senior Lecturer, Jan.- Oct.
Reader, Nov.- Dec.)

Dr. J.C. Burns (Senior Lecturer)

Mr. S.M.A. Meggitt (Senior Lecturer; on study leave,
Aug.- Dec.)

Mr. A.L. Andrew (Temporary Lecturer)

Mr. A.W. Hope (Tutor; Jan.- Feb.)

Mr. J.F.G. Auchmuty (Temporary Tutor, Jan.- Aug.)

Mr. R.L. Agacy (Temporary Senior Tutor, March - Dec.)

Mrs. B. Hawkins (Secretary).

In addition to the full-time staff listed above, Mr. D.R. McNeil acted as a part-time tutor in Applied Mathematics II and in third term Mr. D.M. Bedford acted as a part-time tutor in Applied Mathematics I.

The delay in appointing a Reader caused a number of staffing difficulties. As a stop-gap measure, temporary appointments were made and it was possible to maintain all our courses, although at the cost of some efficiency.

The appointment of Mr. Drummond to the Readership was a well-merited recognition of his ability and of his unselfish work for the department and for the university. Unfortunately, this appointment came too late to allow us to retain the services of Mr. Andrew who had already accepted a Lecturership at another university and resigned at the end of the year.

Courses, Enrolments and Examination Results.

Contrary to expectation, our first-year enrolments were appreciably lower than in 1965. The enrolments in second year, third year and fourth year remained almost unchanged. Details of the enrolments and examination results are given below.

Unit	Enrolments	Examination Results			
		Number of candidates	Passed	Failed	Excluded
App.Maths I	57	52 (15)	36	13	3
App.Maths II	37	34 (8)	27	7	-
App.Maths III	20	20 (7)	19	1	-
App.Maths IV	1	1 (1)	1	-	-

The number of candidates who took the honours course and sat the honours examination in each unit is given in brackets after the total number of candidates. The third year honours class was a particularly good one and responded well to the challenge offered by the new honours course. Four of the students gained a High Distinction and the level of discussion in the class was encouragingly high.

Development of Department.

Our main concern remains, as it has been in the past, to provide a sound undergraduate course in Applied Mathematics. It appears at the moment that we may have difficulty in fulfilling our teaching programme in 1967, for Mr. Meggitt will be on study leave during the first two terms and, although we have advertised for a Lecturer to fill the vacant post left by Mr. Drummond's appointment to the Readership, it seems unlikely that we shall be able to fill this Lecturership before second term. Indeed, with the current shortage of applied

mathematicians, it may be optimistic to think of filling the post this year. (There is a gap here in the post-graduate training provided by the Institute of Advanced Studies, which has Ph.D. scholars in Statistics and Pure Mathematics but none in Applied Mathematics, although the need for Applied Mathematics staff in Australian universities and research establishments is just as great.)

Research activity continued along the lines indicated in the 1965 report. Mr. Andrew completed his M.Sc. with a thesis entitled "Use of Variational Principles in the Theory of Stellar Oscillations" which was highly commended by his examiners. Dr. Burns completed a series of substantial papers on Potential Theory for Generalized Axially Symmetric Systems and he and his research student, Mr. Parkes, are working on an application of Dr. Burns's work in physiology.

List of Publications.

Van der Borcht, R. *

"General Relativistic Fluid Spheres with Variable Polytropic Index", J.Aust.Math.Soc. 6, 139-147, 1966.

Burns, J.C.

"Stokes Flow in Pipes and Channels of Varying Cross-Section", Proc. 2nd. Australasian Conference on Hydraulics and Fluid Mechanics. C57-82, 1965.

"Grad ϕ and Curl χ ", Amer. J. Phys. 34, 268-269, 1966.

"Non-central Forces", Amer.J. Phys. 34, 164, 1966.

"Particular Integrals for Linear Differential Equations", Amer.Math.Monthly, 73, Slaughter Paper No.11, 98-103, 1966.

"General Solution of a Class of Iterated Ordinary Linear Differential Equations", Amer.Math.Monthly, 73, 594-597, 1966.

"Simple Harmonic Motion", Aust.Maths.Teacher, 22, 15-17, 1966.

Drummond J.E.

"Propulsion by Oscillating Sheets and Tubes in a Viscous Fluid", J.Fluid Mechanics, 25, 787-793, 1966.

Meggitt, S.H.A.

"The Taylor Series for the Convective Core in a Stellar Model", Aust.J.Phys. 19, 607-614, 1966.

* Based on work done while a member of the department.