

THE AUSTRALIAN NATIONAL UNIVERSITY

43/1966

FACULTY OF ARTS, S.G.S.DEPARTMENT OF APPLIED MATHEMATICSANNUAL REPORT - 1965Staff

Prof. A. Brown	(on study leave, Jan. - Aug.)
Assoc. Prof. R.F.E. Van der Borgh	(until end of August)
Dr. J. C. Burns	(Senior Lecturer)
Mr. J. E. Drummond	(Senior Lecturer)
Mr. S.M.A. Meggitt	(Lecturer, Jan. - June; Senior Lecturer, July - Dec.)
Mr. A. L. Andrew	(Senior Tutor)
Mr. A.W. Hope	(Tutor)
Mr. J.F.G. Auchmuty	(Student assistant, Jan.-Feb.)
Mrs. G.B. Hardham	(Secretary, Jan.-Dec.)
Mrs. B. Hawkins	(Secretary, December)

In addition to the full-time staff listed above, Mr. C.K. Cheong, Mr. D.R. McNeil and Mr. C.E.H. Pearce acted as part-time tutors in Applied Mathematics I and Applied Mathematics II.

During the year, Mr. Hope continued to help the teaching programme in Pure Mathematics. Mr. Meggitt was given a well deserved promotion to Senior Lecturer and Dr. Van der Borgh and Mrs. Hardham resigned to take up other posts.

Courses, Enrolments and Examination Results

As a continuation of the more challenging first-year course which was introduced in 1964 to cater for our brighter students, a similar second-year course (Applied Mathematics II, Honours Course) was introduced during 1965. Of the ten students who completed this course, three obtained High Distinctions and another three obtained Distinctions. At the same time, it was possible to adjust the standard course (Applied Mathematics II, Pass Course) to suit the remainder of the students and the results in this course were also encouraging.

However, the results in the Pass Course in Applied Mathematics I were not as good as in 1964. A number of students obtained very low marks and it looked as if they had practically given up the course before the end of second term without cancelling their enrolment.

The table below summarises the results.

Unit	Enrolments	Examination Results			
		Number of Candidates	Passed	Failed	Absent
App.Maths I (Pass)	74	69	39	23	7
App.Maths I (Hons)	14	9	9	-	-
App.Maths II (Pass)	23	21	18	3	-
App.Maths II (Hons)	12	10	10	-	-
App.Maths III	16	14	11	2	1
App.Maths IV	1	1	1	-	-

Development of Department.

The main concern of the department remains, as it has been in the past, to develop a sound undergraduate course in Applied Mathematics. With this in mind, we plan to introduce a third-year course for honours students in 1966, to complete the programme started in 1964. This will allow us to keep the pass course at a more uniform level; previously, in trying to cater for both pass and honours students in the same course, the usual result was a compromise which was not entirely satisfactory for either group. We shall still be devoting the major part of our teaching resources to the pass course and this is probably as it should be, in view of the rapid increase in jobs available to graduates with a major in one or more subjects from the mathematics group (Applied Mathematics, Pure Mathematics, Statistics).

There is scope for developing a more flexible teaching structure which would permit students a choice of topics in the later years of their course but we are restricted here by the size of the department. In this connection, the choice of a Reader to fill the vacancy left by Professor Van der Borgh't's resignation is of considerable importance and it would be rather speculative to develop any detailed plans until this vacancy has been filled. On the other hand, the world-wide and increasingly -severe shortage of applied mathematicians has already caused one postponement of an appointment and could easily cause further postponements.

Research Activities.

Research activity within the department is mainly in fluid dynamics (slow viscous flow, hydraulic conductivity of soils, diffusion problems, structure of massive stars, radial and non-radial oscillations of stars). A list of publications is appended.

With the increasing importance of numerical analysis, we are very conscious of the need for a Research Assistant who has a knowledge of programming, for most of our research problems require numerical work at some stage. At the moment, our research activities are considerably hampered by the absence of ancillary staff within the department. In this respect also, our staffing compares unfavourably with that of the Science departments.

Prof. A. Brown.

List of Publications.Brown, A.

"On the real roots of an equation. Solution and discussion", Mathematical Gazette, 1965, 49, 77-78.

"Diffusion of heat from a sphere to a surrounding medium", Aust. Journ. Physics, 1965, 18, 483-489.

Drummond, J.E. Rose, C.W.[†] and Stern, W.R.[†]

"Determination of hydraulic conductivity as a function of depth and water content for soil in situ", Aust. Journ. of Soil Research, 1965, 3, 1-9.

Drummond, J.E.

"On establishing a standard for teaching a group of students", Vestes, 1965, 8, 166-171.

Meggitt, S.M.A.

"Models of massive stars in homologous gravitational contraction", Aust. Journ. Physics, 1965, 18, 297-302.

Van der Borcht, R. and Murphy, J.O.

"The anharmonic pulsations of an early main-sequence star", Monthly Notices Royal Ast. Soc., 1965, 131, (page numbers not available).

Van der Borcht, R. and Wan, F.S.

"Non-radial adiabatic oscillations of very massive stars", Bull. de l'acad. Roy. Belgique, (October, 1965, page numbers not available).

[†] Not a member of this University.