THE AUSTRALIAN NATIONAL UNIVERSITY

School of General Studies

DEPARTMENT OF GEOLOGY

ANNUAL REPORT - 1962

Staff

Professor	D.A. Brown, M.Sc., Ph.D., D.I.C.
Senior Lecturers	K.S.W. Campbell, M.Sc., Ph.D. A.J.R. White, B.Sc., Ph.D.
Lecturers	K.A.W. Crook, M.Sc., Ph.D. K.L. Williams, M.Sc. B.W. Chappell, M.Sc.
Senior Demonstrator	J.J.A. Taylor, B.Sc.

Location

The Department continued in temporary accommodation in the Physics Building. Insofar as staff and research students are concerned, this accommodation is now overcrowded and quite inadequate.

Dr. K.S.W. Campbell and Mr. J.J.A. Taylor both joined the staff in January 1962, the former from the University of New England, the latter from the University of Melbourne.

Enrolments and Examinations

Course	Enrolments	Sat for Examination	Pass
Geology I	20 (4 Part-Time)	14	11(1D,3C)
Geology II	6	4	3 (1C)
Geology III	2	2	2 (2C)
	M.Sc.(Qual.) Exam		
M.Sc.	8 (3 new enrolments)	2	1
Ph.D.	6 (4 " ")		

Mr. D.J. Belford, a Ph.D. candidate, was the first recipient of the Ampol Scholarship for post-graduate study in micropalaeontology.

Miss Annette Capp was awarded the Geological Society of Australia Prize and the Professional Officers' Association Prize for first-year students.

Teaching Programme

In addition to the full three-year course in Geology leading to the Degree of Bachelor of Science, supervision was provided for six Ph.D. candidates and eight M.Sc. candidates. This large number of research students more than compensated for the rather small number of students who enrolled for the first year of the undergraduate course.

Special thanks are extended to the members of staff of the Department of Geophysics, Institute of Advanced Studies, and the Bureau of Mineral Resources, who provided special lectures and demonstrations for advanced undergraduates and graduate students.

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Research

During 1962, the following research topics have been undertaken in the Department.

1. Work was continued on the polyzoan faunas of the Mount Gambier Limestone, South Australia. A detailed investigation is also being undertaken of a small but important goniatite locality in the Lower Carboniferous rocks of New England, discovered in August 1962. (Brown)

2. Papers have been prepared on (a) the Lower Carboniferous invertebrate fauna of the Tulcumba Sandstone (with B.A. Engel), and (b) the Permian terebratuloids of Australia. The former is to appear in the Journal of the Geological Society of Australia and the latter as a Bulletin of the Bureau of Mineral Resources (no.68).

   A joint study, with B.C. McKelvey of the University of New England, is being made of the stratigraphy and structure of the Barrington District, N.S.W.

   A chapter on the Carboniferous rocks of New South Wales has been compiled for the Geological Society of Australia's forthcoming volume on the "Geology of New South Wales". (Campbell)

3. Work on the granitic rocks around Palmer in South Australia is continuing with particular emphasis on the geochemistry of migmatites. Trace element determinations on both total rocks and minerals is being done in co-operation with Dr. S.R. Taylor of the Department of Geophysics.

   A joint project with Dr. J.F. Lovering of Department of Geophysics on eclogites and Scapolite-bearing granulites from Eastern Australia is virtually complete and papers on these are now in preparation.

4. Two papers have been completed on the burial metamorphic rocks from western Viti Levu, Fiji. One of these is awaiting publication and the other is an unpublished Miscellaneous Report of the Fiji Geological Survey.

   Work is now almost finished on the secondary minerals from the sedimentary rocks of the Tamworth-Nundle District.

   A complete revision and expansion of the Australian Code of Stratigraphic Nomenclature has been undertaken and collection of data on the nomenclatural problems surrounding the term "graywacke" has commenced. (Crook)

5. Investigation of the Inverell-Torrington ores has continued and fluorescent spectrographic equipment has now been set up to make a detailed study of the sphalerite group of minerals. (Williams)

6. Laboratory studies are being continued on rock specimens collected from the granites comprising the southern end of the New England Batholith in the Tamworth-Bendemeer district, N.S.W. Particular emphasis is being placed on the chemical variations between the various granite

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intrusions and during 1963 the variations in major and trace elements will be fully documented. Chemical analyses are being undertaken on the various minerals present in the granites. The purpose of this study is to determine the mechanism causing variation in composition between various granite masses. (Chappell)

Other Activities

Professor Brown completed his term as Chairman of the Commonwealth Territories Division of the Geological Society of Australia in April. He was elected Vice-President of the National Parks Association of the A.C.T. in September.

Dr. White attended the International Volcanological Conference in Tokyo in May and took part in the seminar discussions.

Dr. Campbell, Dr. Crook and Mr. Chappell attended Section C of the ANZAAS Meeting held in Sydney.

In March, a joint conference on Structural Geology was organized by the Department in association with the Department of Geophysics in the Institute of Advanced Studies. Delegates attended from Australian Universities and State Geological Surveys, from the University of Otago and the New Zealand Geological Survey. Professor Lionel Weiss of the University of California at Berkeley played a leading part in the discussions.

In the second term and part of the August vacation, a course of lectures and practical demonstrations was provided for the Secondary School Science Teachers' Association of the A.C.T. to assist in the teaching of geology following the implementation of the Wyndham Report by the N.S.W. Department of Education. About 35 teachers attended the course which also included field excursions. Further assistance was provided to Secondary Schools in the A.C.T. and Southern N.S.W. in the form of teaching specimens of typical rock materials.

Large collections of valuable research and teaching materials were presented by and purchased from the Kyancutta Museum in South Australia. Collections were also made in the Central Flinders Ranges from the Cambrian and Precambrian rocks.

A combined field excursion with the University of New England was held in the Yass-Taemas and Cooma areas during the May vacation and was attended by staff and students from both universities.

Visitors to the Department included Professor Paul Ramdohr of the University of Heidelberg and Professor David Williams of the Royal School of Mines, London.

New Developments

Construction of a building for the Geology Department began at the end of May on the Science site in University Avenue. It is likely that the building will be ready for occupation in the second half of 1963.

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Publications

Brown, D.A. "Geological Structure of the U.S.S.R. Vol. I Stratigraphy: VSEGEI, Moscow, 1958, 588 pp. (Translation of pp. 1-372 only - Precambrian to Permian Systems) Amer.Geol.Inst. 1962.

in Speden, I.G. "Fossiliferous Quaternary Marine Deposits in the McMurdo Sound Region, Antarctica" (appendix of Polyzoa) N.Z. Journ.Geol. & Geophys. 5, 775-777, 1962.

Crook, K.A.W. "A Note on Stratigraphical Nomenclature -- Biostratigraphic Zones and Time-Rock Stages." Jounr.Proc.Roy.Soc. N.S.W. 96, 15-16, 1962.

"Alkali-Feldspars from the Crowsnest Volcancics, Alberta" Canadian Mineralogist 7 (2), 253-263, 1962.

White, A.J.R. "Aegirine-Riebeckite Schists from South Westland, New Zealand". Journ.Petrology 3, 38-48, 1962.

& Whittle, A.W.G.* "Occurrence of Pentlandite in New Zealand". N.Z.Journ. Geol. & Geophys. 4, 446-448, 1961.

Williams, K.L. "The preparation of small pwder samples from thin and polished sections". Amer. Mineralogist 47, 974-977, 1962.

* Not a member of this Department.

D.A. Brown.

30th January, 1963.