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Professional Experience Programme, 1978.

ITINERARY REPORT

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INTRODUCTION.

The major part of my Professional Experience Programme away from the College during 1978, involved working with professional management and research staff of the Western Australian Forests Department. The Department is actively engaged in multi-disciplinary research, management and monitoring of resource use in W.A. State forests. I was based for seven months (June - December) at the Dwellingup Divisional Office, situated approximately 100 km south-east of Perth.

Dwellingup Division is the major centre for ecological research and management in the Northern Jarrah Forest. There are three active programmes:

- (1) Salination of streams and catchment management.
- (2) Control of jarrah dieback disease caused by the root-rot fungus Phytophthora cinnamomi.
- (3) Land rehabilitation following bauxite mining.

Owing to the significance of land rehabilitation in the new Graduate Diploma course of the Natural Resources Division, I concentrated my studies on rehabilitation research, management, and monitoring relating to the third programme.

Professor S.V. Boyden, who has international standing for his research in Human Ecology, invited me to spend the first part of my Programme (February-May) as a Visiting Fellow with the Centre for Resource and Environmental Studies (CRES) at the Australian National University. This Centre is multidisciplinary and non-departmental in structure giving emphasis to research on Australia's natural resources and the problems of urban environments. An M.Sc. degree programme was commenced in 1977.

The research programme in which I was invited to participate was a comparative human ecological study of the cities of Adelaide, South Australia, and Lae in Papua New Guinea (PNG). The primary aim of this programme was to improve scientific understanding of those social and biological aspects of human settlements and their surrounding environments that significantly influence human health and social needs. A whole system approach to ecological research was used which involves the integration of both social and biological factors in solving problems of international importance. The United Nations Educational Scientific and Cultural Organisation (UNESCO) and the United Nations Environment Programme (UNEP) funded the PNG part of the programme as part of the Man and the Biosphere Project II "Integrated Ecological Studies on Human Settlements".

At the time of taking up my appointment as a Visiting Fellow with CRES funds were not available for the South Australian part of the comparative study. I participated in the PNG research - called the Papua New Guinea Human Ecology Programme (PNGHEP) - as a consultant ecologist.

The PNGHEP, focussing on Lae and its interland, was comprised of four main projects each covering problems of development from an ecological viewpoint. These projects were:

- (a) energy use patterns
- (b) food habits and beliefs
- (c) social relationships
- (d) consumer behaviour

of people living in the city compared with those living in villages within the Morobe Province.

The specific objectives of my whole Professional Experience Programme were:

- (i) To gain practical experience of multidisciplinary research in applied ecology.
- (ii) To broaden my knowledge of the application of ecological research to the management of natural resources by government agencies.
- (iii) To ascertain recent developments in the scientific understanding of peoples interaction with the natural environment with special reference to human health and social needs.
- (iv) To obtain professional contacts and learn of current problems and vocational needs for students of natural resources.

These objectives were achieved by carrying out a consultant project in Papua New Guinea; working with professional staff of the Western Australian Forests Department and CRES on current management oriented research programmes; studying the activities and roles of local institutions and government agencies in Western Australia and Papua New Guinea; and by participating in professional meetings and field excursions to management research sites in Western Australia.

LAND MANAGEMENT CONSULTANCY IN PAPUA NEW GUINEA : "THE ATZERA PROJECT" 1 February to 20 June.

My consultancy project undertaken while a Visiting Fellow at CRES, was to prepare a management plan for the Atzera Range adjoining the city of Lae, Papua New Guinea.

Uncontrolled collecting of firewood for cooking and clearing of rain-forest for gardening by the increasing numbers of people coming to live in Lae has caused deforestation and soil erosion in large areas of this Range. I prepared a landuse management plan for approximately

600 ha. of this range of hills that is zoned within the Lae city boundary to be used permanently as a productive resource system allowing for (1) continuous cropping of firewood; (2) short rotation food gardening; (3) rehabilitation of eroded areas and creek banks; and (4) conservation of areas of natural forest, including fruit and nut tree planting (see Technical Report).

The preparation of this plan involved intensive field work in PNG from 1 to 17 May. I carried out ecological survey work and interviewed people gardening in the Atzera hills. I visited a number of government agencies in Port Moresby and Lae who are responsible for the management of natural resources in PNG, in order to gain support for managing this land and to gather specialist information. The major centres visited and persons consulted are shown in the Appendix.

In order to put my proposed plan into practice, I helped to prepare a written submission to the PNG National Planning Office. An executive summary of the proposal was prepared for government ministers, together with a brief description and budget details. (See Technical Report). The management plan is currently being implemented by government agencies with funds made available through the PNG Government's National Public Expenditure Programme (NPEP).

While at CRES, I also participated regularly in seminars for staff and M.Sc. students. I lectured on the contribution of wilderness areas to human health and on aspects of their management to the M.Sc. students enrolled at CRES, and to undergraduate students enrolled in the Human Sciences Programme at ANU.

On receiving an invitation from Professor Donald Walker, I participated as a Discussant at the seminar "Biological Problems in the Reconstruction of Quaternary Terrestrial Environments", held at the Academy of Science from 21-22 February. I also presented a paper on recent developments in the teaching of biology at the CCAE during the annual conference of the Science Teachers Association of the ACT, held at Hawker College over the weekend of 1-2 April. The overall theme of this conference was "Social Responsibility in Science Teaching".

MANAGEMENT, RESEARCH AND MONITORING OF NATURAL RESOURCE USE IN THE NORTHERN JARRAH FOREST, WESTERN AUSTRALIA : 26 JUNE TO 23 DECEMBER.

While based at the Dwellingup Divisional Office of the W.A. Forests Department, I broadened my professional development by undertaking the following major activities:

- (1) A detailed case study of land rehabilitation after bauxite mining in the Northern Jarrah Forest (see Technical Report).
- (2) Examination of rehabilitation sites at:
 - . Tin mine, Greenbushes
 - . Coal mine, Collie
 - . Mineral sands mine, Capel
 - . Manjimup woodchipping area
 - . Saltland at CSIRO "Yalanbee" experimental station, Bakers Hill, and on five farms situated at Kellerberrin, Brookton and Collie.

- (3) Visits to a number of institutes and government agencies outside Dwellingup. (See Appendix).
- (4) Attendance at the symposium on "Rehabilitation of Mined Lands in Western Australia", held at WAIT on 11 October.
- (5) Participation in the annual meeting of senior staff of the W.A. Forests Department at Bunbury on 7 July, and a number of field excursions with professional staff to examine management research sites relating to the three major works programmes centred at Dwellingup.

I have written the Technical Report on land rehabilitation after bauxite mining in the Northern Jarrah Forest as an example of how a government agency carries out a major programme of research, management and environmental monitoring. The significance of a coordinated relationship between research knowledge, management practice and environmental monitoring is discussed. A high degree of cooperation between a variety of government agencies and institutes in this work is a current feature of the resource management field in W.A.

Throughout my work, I concentrated on further developing my professional experience with respect to the management of natural resources by government agencies - from day-to-day management through to long term regional land use planning. This entailed consideration of current problems and vocational needs for students of natural resources.

PUBLICATIONS AND TECHNICAL REPORTS

"The Atzera Project" - Ecological Management of the Atzera Range Adjoining Lae, Papua New Guinea : an initial proposal. Technical Paper No. 4 of the Papua New Guinea Human Ecology Project. CRES.

Proposal for the Ecological Management of the Atzera Range Adjoining Lae, Papua New Guinea. Submission to the National Planning Office, PNG.

Land Rehabilitation after Bauxite Mining in the Northern Jarrah Forest, Western Australia.

Contribution of the Wilderness to Health and Wellbeing. Published paper in the "Proceedings of the First National Wilderness Conference". Australian Conservation Foundation.

ACKNOWLEDGEMENTS.

I would like to express my thanks to the Council of the Canberra College of Advanced Education for granting permission to undertake my Professional Experience Programme and for providing a travel grant. I thank Mr. C.E. Wallington and Dr. P. Rudman for their helpful discussion while planning the Programme.

I am grateful to the Australian National University for granting me a Visiting Fellowship in the Centre for Resource and Environmental Studies and for providing portion of my air fares to Papua New Guinea. I am particularly indebted to Professor F.J. Fenner, Professor S.V. Boyden and Dr. K. Newcombe for enabling me to carry out research in Papua New Guinea.

My work with the Western Australia Forests Department would not have been possible without the support of Mr. B.J. Beggs, Conservator of Forests, who kindly granted me permission to work at the Dwellingup Divisional Office. I am also grateful for the guidance of Mr. J.J. Havel, Mr. F.E. Batini and Mr. F.H. McKinnell of the Forests Department. While working at Dwellingup, the help and cooperation of all management and research forestry staff is sincerely acknowledged. I am especially indebted to Dr. S.R. Shea, Mr. J.R. Bartle, Mr. P. Ritsen and Mr. E.F. Herbert for allowing me to work with them on their research projects and for supplying valuable research data. Mr. J. Skillen and his divisional management staff, especially Mr. A. Holland, also provided basic information and the opportunity to join in field management practices.

APPENDIX : MAJOR CENTRES VISITED OUTSIDE THE CENTRE FOR
RESOURCE AND ENVIRONMENTAL STUDIES, ANU,
AND THE DWELLINGUP DIVISIONAL OFFICE OF THE
W.A. FORESTS DEPARTMENT.

A. While in Papua New Guinea, 1-17 May.

Office of Forests, Port Moresby, PNG.

A. Yauieb, D. Num, G. Bell and J. Luton

Office of Forests, Morobe Province, Lae, PNG.

E. Henty, J. Croft, B.V. Cuyno

Agricultural Branch, Port Moresby

P. Alland and B. Shaw

Bubia Agricultural Research Station, Morobe Province

J. Sumbuk and G. Young

Morobe Province Research Centre, Lae

H. Holzknecht

University of Technology, Lae

J. Davidson (Forestry Department), A. Quartermaine, K. Wilson and

D.K. Das (Agricultural Department), H. Templeton (Civil Engineering).

Lae City Council

D. Ietera, R. Malcom, L. Clark and V. Dube.

Other Persons Consulted:

J. Simpson, Forestry Research Station, Bulolo, PNG

D. Liem, Department of Natural Resources, PNG

W. Gagne, Wau Ecology Institute, PNG

H. Niall, retired Administrator of Morobe Province, PNG

F. B. Essig*, University of South Florida, USA

B. While based at Dwellingup from 26 June - 23 December.

Department of Conservation and Environment, Perth.

C.P. Porter, M.J. Mulcahy and J. Watson (Two visits).

CSIRO Division of Land Resources Management, Perth

R. Perry, E. Greenwood and A.J. Peck

CSIRO Yalanbee Experimental Station, Bakers Hill

E. Bettenay

Department of Fisheries and Fauna, Perth

J. Goodsell+

National Parks Authority, Perth

R.F. May+

Metropolitan Regional Planning Authority, Perth

S. Chape+

Western Australian Institute of Technology, Perth
University of Western Australia, Perth
D.T. Bell (Botany Department)
R.H. Sedgley (Agriculture Department)

Como Regional Office, Forests Department, Perth
F.E. Batini and E. Mattiske (Three visits)

Head Office, Forests Department, Perth
J.J. Havel

Manjimup Divisional Office, Forests Department
P.E.S. Christensen and C. Schuster

ALCOA Bauxite Refinery, Pinjarrah
J. Sibley.

Other Persons Consulted:

C.V. Malcolm and R. George, Department of Agriculture, Perth
W.H. Tacey, ALCOA of Australia Ltd.
Z. Naveh*, Faculty of Agricultural Engineering, Technion,
Israel Institute of Technology.
F.H. McKinnell, Superintendent of Research, Forests Department
E. Hopkins, Chief of Management, Forests Department
S. Bennison, Greenbushes Tin N.L.
A. McLellan and S. McClelland, Farmers, Kellerberrin
H. Whittaker and L.J. Messenger, Farmers, Brookton.

* Overseas Visitors

+ Graduate of the CCAE who were interviewed at their
office of employment and while on field work.