THE AUSTRALIAN NATIONAL UNIVERSITY
THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH
DEPARTMENT OF HUMAN BIOLOGY
ANNUAL REPORT 1973

STAFF

Professorial Fellows:

S.V. Boyden, Ph.D. (Cantab.), M.R.C.V.S., F.A.A.

Senior Research Fellow:


Postdoctoral Fellow:

N. Saha. B.Sc. (Cal.), M.B., B.S. (Cal.), M.D. (Punjab),
Ph.D. (Cal.) (until October).

Research Assistants:

Beverley O'Neill, B.Ec. (Syd); Elizabeth Barta;
P. Clark, A.B. (Harvard); Rosemary Brissendon, B.A. (Melb.).

Head Technician:

N.M. Blake, B.Sc. (A.N.U.), F.A.I.M.L.T.

RESEARCH WORK

Introduction

No appointment of a permanent Head of Department
was made during the year and Dr R.L. Kirk was made acting
head from May. Research continued during the year along
the two main lines carried out previously, namely the study
of biological consequences of civilization and of human
population genetics.

Urban Biology
(Boyden, O'Neill, Barta, Clark, Brissendon, Millar and Newcombe)

Attention was focussed again on the gathering of
information from different disciplines which can be used for
a proper description of the biology of Homo sapiens in modern
society and for the preparation of articles relating to the
biology of man in his changing environment and on the interaction between biological and cultural processes.

The investigation of the human ecology of Hong Kong which started last year was continued and Miss S. Millar and Mr K. Newcombe moved to Hong Kong at the end of September to start intensive studies of the relationship between environmental variables and indices of well-being and of the energy flow in various compartments of the city. The work in Hong Kong is being carried out in conjunction with the University of Hong Kong and the research team is based in the Centre for Asian Studies. Dr Boyden visited Hong Kong for a period of four weeks to assist in establishing the project.

**Population genetic studies in India**
(Kirk, McDermid, Saha and Blake)

Collaborative studies with investigators at the Indian Statistical Institute in Calcutta and at the Cancer Memorial Institute and the Blood Group Reference Centre in Bombay continued during the year. Dr Saha visited South India for one period of field work and completed the survey of some of the castes and tribal populations in Kerala and the Nilgiri Hills. Particular attention was focussed on one of the pre-Dravidian hunter-gatherer groups, the Kadar, and a number of unusual serological and biochemical traits in this population will be discussed in a forthcoming paper.

**Population genetic studies in New Guinea**
(Kirk, McDermid and Blake)

Three types of investigation have continued during the year. The first has involved population surveys ranging from Karkar Island, off the north coast of Papua New Guinea, to populations on the Papuan plateau and along the Gulf of Papua. The data collected is adding to the understanding of population movements and microevolution in Papua New Guinea. The second concerns disease oriented studies being carried out by members of the Institute for Human Biology in various parts of the country, and these studies are being continued. The third investigation is in collaboration with the Department of Clinical Medicine at the University of Papua New Guinea and involves an intensive genetic investigation of an entire community in Port Moresby. Field work is now complete and the analysis of the results is proceeding rapidly.

**Disease association studies**
(Kirk, McDermid and Blake)

Two forms of cancer with unusual geographic or ethnic distributions are under intensive epidemiological study by teams from the International Agency for Research on Cancer. The first study is of oesophageal cancer, which has an unusually high frequency around the Caspian Sea in Iran, whilst the second is of nasopharyngeal cancer amongst Chinese. Samples collected by the epidemiological teams in both these studies are being tested in Canberra for a full
range of serum protein and enzyme markers in the hope of obtaining associations between susceptibility to the enoplastic changes and specific genetic traits.

A number of investigations of families referred for special studies were carried out during the year, including APRTase deficiency and caeruloplasmin deficiency.

Genetic control of growth patterns
(Kirk and Van Wierst)

A new project was started during the year to investigate the patterns of growth and development among Aboriginal children and the genetic contribution to the variability in growth. Mrs. Van Wierst visited a number of centres to obtain information and spent a period of four weeks in Cape York collecting genealogies and other data. The study is proceeding.

Serum proteins and enzyme polymorphisms
in other species
(McDermid)

Work has continued on the investigation of polymorphisms in other species. Samples from two species of seal have been received from the Seals Research Laboratory, Lowestoft U.K. and contact has been established with the Australian National Antarctic Research Expeditions to obtain additional material. The work is aimed at revealing similarities and differences in the proteins and enzymes of the blood of a variety of species to contribute data which can be used to estimate the rate and extent of evolutionary divergence between them.

TEACHING AND OTHER ACTIVITIES

Two new students, Bronya Van Wierst and Ken Newcombe commenced studies towards a Ph.D. and Sheelagh Millar entered the second year of her Ph.D. course. Peta Dawson withdrew from her studentship.

Dr Boyden was appointed to the UNESCO (MAB programme) Expert Panel on 'Ecological aspects of energy utilisation in urban and industrial systems', and was Chairman of a meeting of the Panel held near Frankfurt from 16-19 October. He also presented papers on aspects of human ecology at various conferences in Australia.

Members of the Urban Biology Group have assisted with various aspects of the human ecology course as part of the Human Sciences Programme in the School of General Studies.

Early in February Dr Kirk was appointed as an advisor to the Minister and the Department of Aboriginal Affairs and during the year has devoted a considerable
amount of time to assisting with the development of programmes for the improvement of the health of Aboriginals. He has participated in a number of conferences on this topic and in November organized a Workshop on Aboriginal Health Research which was held in the John Curtin School of Medical Research. In December Dr Kirk spent three weeks visiting centres in India where collaborative research projects are in progress.

Dr Saha resigned his Postdoctoral Fellowship in October to take the post of Professor of Physiology in the University of Khartoum.
Publications

Bashir, H., 1 Case, J., 2 Blake, N.M., Kirk, R.L. and McDermid, E.M.
'The distribution of blood, serum protein and enzyme groups in a series of Lebanese in Australia'.

Blake, N.M., Kirk, R.L., Barnes, E.R. 3 and Thompson, J.M. 3

Blake, N.M., McDermid, E.M., Kirk, R.L., Ong, Y.W. 4 and Simons, M.J. 5

Blake, N.M., Omoto, K., 6 Kirk, R.L. and Gajdusek, D.C. 7
'Variations in red cell enzyme groups among populations of the Western Caroline Islands, Micronesia'.

Boyden, S.V.

Kirk, R.L.

1. Not a member of this University. Based on work done while a member of The Australian Red Cross Blood Transfusion Laboratories, Sydney.
2. Not a member of this University. Member of the Commonwealth Serum Laboratories, Melbourne.
3. Not a member of this University. Member of the Clinical Staff, Canberra Hospital.
4. Not a member of this University. Member of the Singapore Blood Transfusion Service, Singapore.
5. Not a member of this University. Member of WHO Immunology Research and Training Centre, Singapore.
6. Based on work done while a visiting research worker.
7. Not a member of this University. Member of the National Institute of Neurological Diseases and Stroke, National Institutes of Health, Bethesda, United States of America.
Kirk, R.L.

'The distribution of red cell enzyme and serum protein groups in a population of Dani (Pit River, West Irian)'. Humangenetik 17, 345-350 (1973).

McDermid, E.M., Blake, N.M., Kirk, R.L., Kosasih, E.N. and Simons, M.J.
'The distribution of serum protein and enzyme groups among the Batak of Samosir Island (Sumatra, Indonesia)'. Humangenetik 17, 351-356 (1973).

McDermid, E.M., Vos, G.H. and Downing H.J.

Newcombe, K. and Millar, S.E.
'Living it up (Crowding in Hong Kong)'. Hemisphere 17, 35-39 (1973).

Saha, N.

Saha, N. and Bannerjee, D.

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8. Not a member of this University. Member of the Pit River Mission, West Irian.

9. Not a member of this University. Member of the Department of Clinical Pathology, University of North Sumatra, Indonesia.

10. Not a member of this University. Member of the Natal Institute of Immunology, Durban, South Africa.

11. Not a member of this University. Member of the Department of Physiology, Faculty of Medicine, University of Singapore, Singapore.
Saha, N. and Kirk, R.L.
'A simple technique for collecting blood for population studies of enzyme polymorphisms and haemoglobins'.

'Additional data on the population distribution of human serum albumin genes; three new variants'.

Wierst, Bronya Van., Blake, N.M., Kirk, R.L., Jacobs, D.S. 21 and Johnson, D.G. 22
'Genetic variation at the third locus of phosphoglucomutase in placentas from Australia and Papua New Guinea'.

12. Not a member of this University. Member of the University of Rochester School of Medicine and Dentistry, New York United States of America.

13. Not a member of this University. Member of the University of Michigan Medical School, Ann Arbor Michigan United States of America.

14. Not a member of this University. Member of the Centre National de Transfusion Sanguine, Paris.

15. Not a member of this University. Member of the Ospedale S.C., Borromeo, Milan, Italy.

16. Not a member of this University. Member of the Civil Major Hospital, Verona, Italy.

17. Not a member of this University. Member of the Istituto Superiore Sanita, Rome Italy.

18. Not a member of this University. Member of the Ospedale Civile, Sondrio, Italy.

19. Not a member of this University. Member of the Centre for Disease Control, Kansas United States of America.

20. Not a member of this University. Member of the Mary Imogene Bassett Hospital, New York United States of America.

21. Not a member of this University. Member of the Commonwealth Department of Health, Northern Territory.

22. Not a member of this University. Member of the Department of Obstetrics and Gynaecology, University of Papua New Guinea.