



Australian Quaternary Newsletter

No.4 October 1974

GENERAL NEWS

The first issue of a *Dendrochronology Newsletter* for Australia and New Zealand appeared in August 1974. Dendrochronology is the determination of age of trees or timber; dating by comparative study of tree rings; science of tree-ring analysis and its implications. Copies of the newsletter can be obtained from the editors: J.G. Banks and J. Ogden, c/- Forestry Department, Australian National University, P.O. Box 4, Canberra, ACT, 2600. They would welcome contributions, comments and suggestions.

INQUA Commission on the Palaeoecology of Early Man.

There is a possibility of forming an Australian working group under the aegis of the INQUA Commission on the Palaeoecology of Early Man. The membership and scope of this group is still at a preliminary stage, but interested persons are invited to contact Dr Rhys Jones, Department Prehistory, Research School Pacific Studies, A.N.U.

AMQUA Newsletter, Vol.5, No.1, appeared earlier this year and contains much of interest to Australian Quaternary specialists. If you wish to obtain copies of this Newsletter or submit information for publication contact:-

C. Irwin-Williams,
Eastern New Mexico University
Portales, New Mexico.

The AMQUA Newsletter has initiated a "placement service" listing positions open and positions wanted.

CONFERENCES

An *Australasian Conference on Climate and Climatic Change*, convened by the Australian Branch of the Royal Meteorological Society, will be held at Monash University, Clayton, Victoria, 8-11 December 1975.

Aim: To bring together people in the Australasian region interested in questions of climate and climatic change so that they may familiarise themselves with the broad scope of the field, its relevance to their particular needs, interests and disciplines, and interest others in the contribution they can make to the broader field. Overseas visitors will, of course, be most welcome.

Format: There will be invited review papers in some of the following broad fields:

- General Atmospheric Circulation
- Southern Hemisphere Physical Oceanography
- Mathematical Modelling of Climate
- Quaternary Change
- Recent climatic variations
- Theories of Climatic Change
- Climatic Extremes (Droughts, Floods, etc.)
- Effect of Man on Climate
- Interaction between General Circulation and Local Climates
- Applied Climatology

These will be followed by short contributed papers under the same general headings, with adequate time for informal discussions. In line with the stated aim of the conference, all speakers will be asked to address their papers to the following questions:

- i) What does my field or particular research involve?
- ii) What problems does it seek to solve?
- iii) What does it involve/use climatology?
- iv) What does it contribute to climatology generally, or (of a climatological nature) to specific other disciplines?
- v) What are the relevant results in relation to (ii) and (iv) above?

Publication: It is intended to distribute abstracts of all invited and contributed papers before the conference, and to print a volume after the conference containing the full text of all invited papers, plus, if appropriate, some edited discussion and comment.

Accommodation: Sessions will be held in Monash University. Accommodation will be available in the University Halls of Residence. All meals will be available in the Halls, where non-residents will be able to obtain casual meals also.

Cost: Conference registration fee will not exceed \$35.00 per person, not including meals and accommodation, but including social programme and copy of published proceedings.

Full accommodation will be at the rate of about \$7.00 per person per day (bed and breakfast).

Meals will be available at about \$2.20 lunch
\$2.80 dinner

These rates for meals and accommodation are subject to possible small variations.

Further information including a preliminary questionnaire can be obtained from Dr A.B. Pittock, Climatology Conference, c/- CSIRO Division of Atmospheric Physics, P.O. Box 77, MORDIALLOC, Victoria, 3195.

WMO/IAMAP Symposium on Long-term Climatic
Fluctuations and the Future of our Climate

* A symposium on climatic fluctuations will be held at the University of East Anglia, 17-23 August, 1975, jointly sponsored by WMO and the International Association of Meteorology and Atmospheric Physics. Professor H.H. Lamb (Director, Climatic Research Unit, School of Environmental Sciences, University of East Anglia) is chairman of the Programme Committee. The intention of the meeting is to bring together on the one hand leading theoreticians in the field of meteorology, global atmospheric circulation and climatic modelling, and on the other hand scientists who have contributed to recent advances in knowledge of the past record of climate. General topics for discussion include:-

1. Quaternary climatic history : ocean record and land record
2. Climate in the last 100,000 years
3. Climate in postglacial times
4. Climate in historical times
5. Potential of stable isotope studies
6. Geographical pattern of climatic anomalies
7. Antarctic ice cap and global climate
8. Statistical properties of climatic change
9. Dynamical theory of climate including factors governing the state of planetary climate, long-term atmosphere - ocean interaction, etc.
10. Numerical modelling of climatic change
11. Climate predictability and the future including impact of men on future climate.
12. Discussion of future work need in research on climatic fluctuation.

The symposium will include sessions at which formal papers are delivered and round-table discussions on a variety of subjects.

Anyone interested in attending this symposium should contact Professor Lamb.

ANZAAS 1975, Canberra, January 20-24th

The 46th ANZAAS Congress will be held in Canberra at A.N.U.

The General Congress Circular has recently been distributed and it contains information on enrolment, programmes, travel, accommodation and excursions. Enquiries should be addressed to

Congress Executive Officer
46th ANZAAS Congress
Australian National University
P.O. Box 4
CANBERRA CITY 2601

Items which may interest Quaternary specialists include:

Section 3 and 21 (Geology, Geography) Meeting of the Quaternary Shorelines Committee on Tuesday 21st at 2 pm (D. Hopley, Secretary). A symposium will be held on recent development in Quaternary sea level change. Two papers will be presented : E. Gill,

"Macro-tidal and micro-tidal coasts and their significance for eustasy"; and D. Hopley, "Variation in evidence for Holocene sea levels from the Bowen - Whitsunday area, Qld". There will also be a discussion of Australia's contribution to the I.G.C.P./UNESCO Program on sea level movements in the last 15,000 years.

Section 3 (Geology) on Wednesday 22nd, am, there will be a session on the geology of Australasian continental shelves and adjacent seas (H. Jones, B.M.R., Convener). Several papers on Quaternary sedimentation are included in this session.

Section 12 (Botany) on Thursday 23rd, am, there will be a session on episodic events and their influence on biota.

Section 21 (Geography) A general session on coastal environments will be held on Wednesday 22nd, am. Two excursions may be of interest:

Wednesday 23rd, pm, Geomorphology and vegetation in the Canberra area.

Friday 24th, (all day) Geomorphology of the South Coast of N.S.W.

Section 25A (Archaeology) An extensive programme has been arranged including:

1. Monday, 20th : "Pleistocene case studies" (Keilor, Wyrie Swamp, Mungo)
2. Tuesday, 21st : "Hunter-gatherers and horticulturalists in the prehistoric perspective", including reports on Shellgatherers in Arnhem Land, and stone axes of the Waghi Valley.

3. Wednesday, 22nd : "Science, Archaeometry and Archaeology", including obsidian hydration dating, thermoluminescent dating, distribution of greenstone axes in southeast Australia, dynamics of stone tool grinding, etc.
4. Thursday, 23rd : "Historical and marine archaeology".
5. Friday, 24th : Presidential address in "Recent developments in Paleo - Indian studies in the Americas.

For further information contact Section secretary:

Mr P.S. Bellwood
Dept. of Prehistory and Anthropology
A.N.U. CANBERRA A.C.T. 2601

Union Internationale des Sciences Préhistoriques et Protohistoriques, IX Congrès, to be held in Nice, France, 13-18 September, 1976, has distributed its first circular. Those interested in this congress should contact the Secretary General:

Professor Henry de Lumley
Secretariat IX Congress Y.T.S.P.P.
Laboratoire de Paléontologie Humaine
et de Préhistoire
Université de Provence - Centre Saint-Charles
13331 Marseille Cedex 3
FRANCE

Symposium of Natural Hazards in Australia

A Symposium on Natural Hazards in Australia will be held at the Academy of Science, Canberra, Australian Capital Territory, from 26th to 29th May, 1976, under the sponsorship of the Australian Academy of Science, The Institute of Australian Geographers and the Australian Academy of Social Sciences.

Programme The Symposium will provide a national review of our knowledge of the measurement, occurrence and impact of natural hazards in Australia and the nature, scope and extent of the success of our adjustments to them at all levels, from that of the individual citizen to that of the State and Federal Governments. It is hoped that the sharing of this knowledge will enable our understanding of these natural hazards to be increased, our adjustments to them to be made more effective, and their disastrous impacts to be reduced.

For the purposes of this Symposium the natural hazards are defined as those extreme geophysical events greatly exceeding normal human expectations in terms of their magnitude of frequency, and causing major human hardship with significant material damage to man and his works and possible loss of life.

As such they occur as an interaction between systems of human resource management and systems of geophysical events. In the Australian context such hazards might include: bush fires, coastal erosion, droughts, dust storms, earthquakes, floods, heatwaves, landslides, temperate latitude storms, and tropical cyclones.

Contributions In the light of the above, contributions (which may take the form of papers, films or exhibits) are invited for the following themes:

- A. Assessments of the impact of natural hazards.
Problems of identifying, measuring and costing these impacts. This will include an evaluation of the magnitude and frequency of "hazardous events" in the Late Quaternary.
- B. Community and individual responses to natural hazards,
Activities before, during and after the event;
the sociological and psychological problems.
- C. The role of public authorities in connection with natural hazards.
Problems of hazard warning and monitoring, disaster relief and rehabilitation.
- D. Specific case studies of actual hazards.
Documentation of the complex realities of actual disasters.
- E. Regional natural hazard problems in Australia.
The identification of "hazardous places" around Australia.

Potential contributors and anyone who is interested in attending the symposium should contact the Organizing Secretary, Symposium on Natural Hazards, Australian Academy of Science, P.O. Box 216, Civic Square, A.C.T., 2608, or one of the organizing committee (eg. B. Thom, Biogeography and Geomorphology, A.N.U.).

QUATERNARY DISCUSSION GROUPS

A Quaternary Sciences Discussion Group has been formed in Brisbane. The first meeting, on 16th July, attracted twelve people, mostly graduates in employment. They favoured the idea of more-or-less regular meetings to foster personal contacts and discussion. Several have had little direct contact with others of like interest. They recognised that a discussion group would provide a forum for visiting specialists. There was unanimous support for informal gatherings and

alone. The convenor keeps records of membership and arranges for principle speakers. He is W.T. Ward (CSIRO, Soils) for the moment. Gerhard Hofmann (Qld. Geol. Surv.) will take over later. They would like visitors to Queensland to get in touch with them. Local knowledge will be exchanged, and if there is time, a short address could be arranged.

The idea for the discussion group was one result of the joint ANZAAS - Royal Society of Queensland "Stradbroke Island Symposium" held on Queen's Birthday weekend (15-17 June). This was a very worthwhile meeting with much of Quaternary interest among the 15 papers presented. (in press, Proc. Roy. Soc. Qld.). George Benussi (Minsands) spoke on the formation of the island. He related its successive deposits of dune sand to vigorous wind circulation at successive times of low Pleistocene sea-levels. C.H. Thompson and W.T. Ward (CSIRO) related Pleistocene events to soil distribution and genesis. John Laycock (Geol. Survey) discussed the hydrogeology. Dr A.H.A. Bensink (Dept. Entomology) described the biological effects of perched and groundwater in a report on the Brown (perched) and Blue Lakes. F.P. Woolston showed how to prepare fern root (Bungwal) for food, and provided us with the makings to grind our own. It has a very pleasant coffee-like flavour. Several field trips had been arranged, and it was on one of these that the idea for a discussion group along the lines of similar meetings in the south came up.

The Victorian Quaternary Group held a meeting on Quaternary climates on July 26th at the University of Melbourne. Emphasis was on evidence for climatic change during the last 50,000 years in Australia. The meeting was convened by Dr J.A. Peterson (Geography, Monash). Speakers included P.G. Macumber (Dept. of Mines, Victoria) on "Evidence from the Late Quaternary and Holocene at Kow Swamp", A.P. Kershaw (Geography, Monash) "Evidence from the Late Quaternary and Holocene from N.E. Queensland", and J.M. Bowler (Biogeography and Geomorphology, A.N.U.) "The last 50,000 years in the semi-arid zone : some palaeoclimatic implications".

The Western Australian Quaternary Studies Group came out of aestivation in April and organized a meeting to hear Myra Shackley talk about sedimentological techniques used on cave deposits. Myra visited Western Australia to study the sediments in the Devils Lair archaeological site being worked by the Western Australian Museum. In June a weekend field excursion to the southwest of the state aimed at an interdisciplinary exchange of knowledge. Features of the trip were soil stratigraphy (expounded by W. McArthur), ancient shorelines (J. Baxter and D. Lowry) and Devils Lair archaeological site (D. Merrilees).

The Canberra Quaternary Discussion Group held a meeting on Salt Lakes in Southern Australia on September 26-27th at A.N.U. The meeting was convened by Dr J.M. Bowler. A full day was given to seminars covering aspects of the morphology, stratigraphy, sedimentology and Quaternary history of lakes in southwestern Western Australia, salt lakes in northwestern Victoria, and Lake Frome in South Australia. Speakers included Leo Killigraw (Dept. of Soil Science, Univ. of Western Australia), Dr Chas Lawrence (Hydrologist and Regional Geologist, Victorian Geological Survey), Roger Callan (Regional Geologist, South Australian Geological Survey), Dr Ralph Jensen (B.M.R., Canberra), John Draper (B.M.R., Canberra) and Dr J.M. Bowler. ✓

On the 27th a workshop meeting was held to discuss (i) laboratory techniques for examination and analysis of playa sediments and soils; (ii) chemistry and mineralogy as environmental indicators in playa sediments; and (iii) new developments in laboratory techniques relevant to the study of playa sediments.

BOOK REVIEW

← Quaternary Plant Ecology; The 14th Symposium of the British *Ecological Society*. Eds. H.J.B. Birks & R.G. West. 1973 Blackwell. 326 pp.

We don't advise any individual to rush out and buy this book at \$39.00 per copy, but it does represent a "latest state of the art" volume which is a good guide to what is going on in plant palaeoecology at present. The symposium papers are grouped in size sections:

1. Methodological Problems (in pollen analysis)
2. Pollen Dispersal and Sedimentation
3. Pollen Representation
4. Macrofossil Assemblages
5. Vegetational History and Community Development
6. Limnological History.

The volume is dominated by pollen analytical work, with the first 3 sections detailing investigations into the relationship between a source vegetation and such pollen from it as is preserved ultimately in sediments. It is good to see pollen analysis showing some conscience about their Heath Robinson contraption of a subject; one is left with a feeling that vegetation histories derived from early work are consistent and reasonable more by luck than skill. The last three sections provide case studies of vegetation change investigated both through pollen and other methods. The precision of these studies is remarkable and shows that improved understanding of processes and refinement of techniques can provide data on palaeoecology as distinct from more general palaeoenvironmental information.

G. S. Hope.

RESEARCH REPORTS

QUEENSLAND

i) University of Queensland, Dept. of Geology and Minerology

Peter Flood is studying the sediments and sedimentary processes in specific reef types of the Great Barrier Reef Province. Areas of investigation include reefs of the Capricorn - Bunker Groups east of Gladstone and reefs of the Howick Group north of Cooktown.

Michael Friederich has commenced an M.Sc. investigation of the so-called "raised" coral reefs of Peel Island and the Cleveland area and is evaluating evidence from the foreshores of Moreton Bay. Subsurface investigations are being made in mangrove swamps and salt marshes in the Cleveland area.

A.T. Grenfell: a B.Sc(Hons.) study on sediments and sedimentation in the carbonate - terrigenous province of a nearshore insular fringing reef around Double Island, Cairns.

Lance Grimstone has developed an expert eye for the various profiles shown on modern beaches. He is working on the Gold Coast, in association with the City Council, studying coastal processes and sand transport beneath shoaling waves. The formation of inner and outer barriers of the Coolangatta area is being related to these processes, and the effects of Quaternary environmental changes is being assessed.

John Hughes has commenced (for M.Sc.) a study of the geomorphic history of the Brisbane River valley, with emphasis on Pleistocene effects. Physiographic features such as knick points, gradient changes, and perched gravels are being examined, and evidence for former high base levels is being sought. The Dept. of Harbours and Marine has provided him with geophysical records for the lower Brisbane river. There is evidence that the Brisbane river is incised in an older fluvial and marine sequence deposited during an early phase of marine transgression.

John Jell is continuing his work on reefs. He has a special interest in the microstructure, growth, and distribution of scleractinian corals.

Norman McIntyre has commenced a Ph.D. study of the geological evolution of Fraser Island and is giving some attention to modern sedimentation in adjacent environments.

Andrew Stephens: coastal inlets and related environments in the Moreton region. The hydrodynamics of coastal inlets are being related to channel and bank dynamics, sedimentary structures and textures in an effort to develop criteria for the recognition of ancient sedimentary environments and depositional systems.

ii) Other university departments.

Chris Bell (Botany) is continuing his work on the Quaternary and modern palynology of Coalstown crater, in the South Burnett district.

Ed. Lovell (Zoology) is trying to unravel the history of coral development in Moreton Bay. His main study sites are Flinders Reef, Peel Island, St. Helena and Green Island. The nature of past marine environments is being determined from a study of beach ridges and associated elevated (2 m) beach rock on St. Helena Island. He reports that almost all of the coral that was living in the western part of the bay was wiped out by the Australia Day flood. He attributes this to the drop in salinity produced by the floodwater.

SOUTH AUSTRALIA

From the Dept. of Mines, South Australia comes the following information:

Mr A.F. Williams is collaborating with Dr R.A. Tedford (American Mus. Nat. Hist.) on a study of the Lake Eyre Basin. Amongst other things, he will be considering Quaternary (and earlier) stratigraphy, depositional environments and the problem of possible external

A.C.T.

John Chappell (Geography, S.G.S., A.N.U.) : Recent results of studies of the upper Quaternary Tectonics and sea levels from Huon Peninsula, New Guinea, and elsewhere.

The raised coral reefs of Huon Peninsula constitute a detailed record of Quaternary glacio-eustatic sea level changes, superimposed on a tectonically rising coast. The first phase of study of the region has drawn to a close, with completion of the 3rd radiometric dating program (1st program, C^{14} , with H. Polach; 2nd program, Th^{230}/U^{234} , with H. Veeh; 3rd program, Th^{230}/U^{234} , with A. Bloom, W.S. Broecker, and others). Tectonic movements have been separated from sea level movements, principally by using the internationally-recognised 120,000-year sea level of $+5 \pm 3m$ as a datum. The resulting sea level curve is shown below. Tectonic deformation and faulting in the region have been used to identify the stress field and upper earth rheology, beneath northeast Huon Peninsula. A pilot study of landform evolution on the coral terraces has also been completed.

A second phase of study at Huon Peninsula is under way, concentrating on certain aspects in more detail. David Dunkerley (Geography, S.G.S., A.N.U.) is investigating hydrologic and fluvial processes with a highly-developed array of instruments, as a Ph.D. research project. I have recently completed a relatively detailed analysis of the relationship between Holocene sea level change and coral reef growth, supported by a 4th dating program (C^{14} , with H. Polach). Further stratigraphic studies are in progress.

Results from Huon Peninsula are being pursued in a broader context. The sea level curve provides a basis for further understanding of Pleistocene ice volume changes, and correlates very strongly with the variations of earth - sun distance arising from orbital perturbations. On the tectonic front, I have extended my studies of Late Quaternary warping to the North Island of New Zealand. Consideration of the interaction between tectonism and eustasy has recently led me to analyse patterns of hydro-isostatic deformations, at global and at more local scales, using a visco-elastic earth model. Results of these various studies which are published, or accepted in final form for publication, are listed below.

Chappell, J., 1973 : Astronomical theory of climatic change : status and problem. *Quaternary Research*, 3, 221-236. ✓

_____, 1973 : Stress fields associated with a dense fault pattern in New Guinea. *Journal of Geology*, 81, 705-716. ✓

- _____, 1974 : Upper mantle rheology in a tectonic region : evidence from New Guinea. *Jour. Geophysical Research*, 79, 390-398. ✓
- _____, 1974 : Geology of coral terraces, Huon Peninsula, New Guinea : a study of Quaternary tectonic movements and sea level changes. *Geol. Soc. Amer. Bull.*, 85, 553-570. ✓
- _____, 1974 : Modifications of Ting-Ying Ma's "Two fundamental behaviours of the earth" : evidence from New Guinea. *Geol. Soc. China, Proc.* 17, 139-146. ✓
- _____, 1974 : The geomorphology and evolution of small valleys in dated coral reef terraces, New Guinea. *Journal of Geology*, 82. —
- _____, 1974 : Relationships between sea levels, O^{18} variations, and orbital perturbations, during the last 250,000 years. *Nature* (1082). —
- _____, (in press) : Late Quaternary Glacio - and Hydro-isostasy, on a layered earth. *Quaternary Research* (v. 4/5). —
- _____, (in press) : Upper Quaternary warping and uplift rates in the Bay of Plenty and west coast, North Island, New Zealand. *N.Z. Jour. Geology Geophysics*, (18). —
- _____, (in press) : Aspects of Late Quaternary physical paleogeography of the North Australian-East Indonesian region. *Aust. Institute of Aboriginal Studies 1974 Conference Volume*. ✓
- Chappell J., and Polach, H., 1972 : Some effects of partial recrystallisation on C^{14} dating of late Pleistocene corals and molluscs. *Quaternary Research*, 2, 244-252. ✓
- Chappell, J., Broecker, W.S., Polach, H., and Thom, B.G., 1974 : Problem of dating Upper Pleistocene sea levels from coral reef areas. *Second Internat. Coral Reef Symposium*, Univ. of Queensland Press. —
- Bloom, A.L., Broecker, W.S. Chappell, J., Matthews, R.K., and Mesolella, K.J., 1974 : Quaternary sea level fluctuations on a tectonic coast : new Th^{230}/U^{234} dates from Huon Peninsula, New Guinea. *Quaternary Research*, 4. ✓

N.S.W.

R.J. Blong, Macquarie University (School of Earth Sciences)

1. Quaternary history of the New Guinea Highlands with special reference to volcanic and swamp stratigraphy.
2. Quaternary history of the Sydney Basin with special reference to Dee Why Lagoon and the Razorback area.

R. Kidd (Ph.D. scholar) Thesis aims to determine role of rivers as sources of sand to the South Coast of N.S.W. between Bermagui and Green Cape. It is hoped to produce an evaluation of sediment budgets generally within the estuaries and estuarine lagoons of the area, and to consider the geomorphic consequences of these sediment exchanges; includes appraisal of forms developed within inlets and factors controlling closure and breaching of same.

S. Riley

1. An investigation of sediment transport in an urban - rural catchment.
2. Description and investigation of distributary development in north-eastern N.S.W.

R. Wasson The history and nature of alluvial fan deposition and entrenchment in western semi-arid and arid N.S.W., and a formerly periglacial area in south-eastern Tasmania.

E. Bryant Research involves an investigation into the relationships between sediments and incoming wave energy for a fairly simplistic, semi-barred system of beaches in and around Broken Bay, New South Wales, with the aim of outlining variations between and along the beaches. Hopefully the results can be then tested and interpolated to other similar sites along the New South Wales coast.

M. Williams Areas of research since 1970 :

- a) Central Sahara, where I worked in close collaboration with Professor J.D. Clark of Berkeley and studied the pattern of erosion and deposition and the prehistoric environments at Adrar Bous and in the Ténéré Desert from about 100,000 years ago until the present.
- b) Central Sudan, where I led a combined group of scientists from Berkeley, Khartoum, and Macquarie in an inter-disciplinary investigation of the past and present environments in the Sudan Gezira.
- c) East central Ethiopia, where I am at present investigating the late Quaternary prehistoric environments in the southern Afar Rift and adjacent uplands, in a project directed by Professor J.D. Clark.
- d) Northern Territory of Australia, where I am monitoring rates of slopewash and soil creep, and re-examining some of the classic lateritic deep-weathering profiles with colleagues from Macquarie and Darwin.

Publications of interest include:

- M. A. J. Williams (1971): Geomorphology and Quaternary geology of Adrar Bous. In: British Expedition to the Air Mountains, by D. N. Hall and others. *Geographical Journal* 137(4), 449-455.
- T. R. Paton and M. A. J. Williams and D. A. Adamson (1973): The physiography of the central Sudan. *Geographical Journal* 139(3), 62(1), 42-56.
- M. A. J. Williams and D. A. Adamson (1973): The physiography of the central Sudan. *Geographical Journal* 139(3), 498-508.
- D. A. Adamson and M. A. J. Williams (1975): Late Quaternary prehistoric environments along the Blue and White Nile, central Sudan. Abstracts, *Ninth Congress International Union for Quaternary Research, Christchurch, December 1973*, p.2.
- M. A. J. Williams and D. A. Adamson (1973): Quaternary palaeochannels of the Australian Riverine Plain and the Sudan Gezira. Abstracts, *Ninth Congress International Union for Quaternary Research, Christchurch, December 1973*, p.404.
- D. A. Adamson, J. D. Clark, and M. A. J. Williams (1974): Barbed bone points from Central Sudan and the age of the "Early Khartoum" tradition. *Nature* 249, 120-123.
- M. A. J. Williams and D. A. Adamson (1974): Late Quaternary desiccation along the White Nile. *Nature* 248, 584-588.

We would like some more research reports, especially from people whose work has not yet been mentioned in the Newsletter. Longer reports such as that by John Chappell in this issue are welcome. If you can help, please return this sheet to:

J.H. Hope (Dept. Prehistory,
or B. Thom (Dept. Biogeography & Geomorphology
Research School of Pacific Studies
A.N.U., P.O. Box 4,
CANBERRA CITY. A.C.T. 2601)

Name

Address

Nature of activities: (25-100 words indicating character of research, conferences, publications, departmental developments etc.)

Comments and Requests for information