



IRISH ASSOCIATION FOR QUATERNARY STUDIES

IQUA NEWSLETTER

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Edited by Peter Wilson

INTRODUCTION

This issue of the Newsletter contains a lengthy report on the recent Annual Discussion Meeting, AGM and field excursion held at The Queen's University, Belfast. Those of you who were unable to attend missed an extremely interesting meeting, as indicated by the abstracts of the papers presented.

For several years I have produced a listing of recent publications on Irish Quaternary research for each issue of the Newsletter. However, not all publications come to my attention and some important papers may never be listed. Could I ask that all members pass details of their publications to me so as to ensure as complete a listing as possible. Several of our members are not based in institutes of higher education, the listing of research publications is particularly valuable to these members.

The next Newsletter is due out in October, material for inclusion must reach me by the end of September.

Peter Wilson (University of Ulster)

ABSTRACTS OF PAPERS - IQUA ANNUAL DISCUSSION MEETING 1993

A late pine decline in Kerry

Uragh is a mature oak wood on the Beara Peninsula. Pollen analysis of a small hollow describes a 3000 year history of vegetation dynamics in the wood. Pine was the dominant canopy tree until about 1800 BP when it declined abruptly. This decline is about 2000 years later than the decline described by regional data. The dynamics of pine, human disturbance and soil development will be discussed in the light of the pollen evidence.

Sebastian von Engelbrechten & Frazer Mitchell, School of Botany,
Trinity College, Dublin.

Grèzes litées or stratified scree in France and Wales - in
Ireland?

Grèzes litées or stratified scree is one of the least known Pleistocene periglacial slope deposits in Britain. It has been intensively studied in France by Prof. Yves Guillien. It is also widespread in Central Wales. Has anyone seen it in Ireland? A range of slides will be shown and commentary given.

Sybil Watson, 85 Rawbrae Road, Whitehead, Carrickfergus.

Sedimentation in a glacio-isostatically depressed peripheral
basin: the Late Pleistocene south coast of Ireland.

This paper examines glaciogenic and associated sediments exposed along the coastal fringe of the south coast of Ireland from Kilmore Quay, Co. Wexford to Clonakilty Bay, Co. Cork. Previous investigations in this area have emphasised interglacial beach formation followed by subglacial deposition of till and associated periglacial mass movement in a subaerial environment. In contrast, recent lithofacies analysis indicates that the south coast sequences are the result of sedimentation in glaciomarine and arctic shallow-marine environments with high sea-levels being due to crustal downwarping beyond the ice margin followed by rapid emergence in a cold periglacial setting.

Following initial rock platform formation by frost shattering, arctic beach gravels were deposited. East of Cork Harbour coarse grained periglacial sediment gravity flow facies which underwent resedimentation into the marine environment are interbedded with beach gravels and are overlain and interbedded with a range of glaciomarine muds, muddy diamicts and sands. These fine grained facies formed by the interplay of suspension sediments from plumes, ice rafting, bottom current activity and sediment gravity flow. At the northern end of the study area in the vicinity of Kilmore Quay these muds have thrust up underlying laminated diamict facies and contain contorted rafts and rip-ups of this lower unit thereby demonstrating that this was the southern on-shore limit of late-Midlandian ice in the Irish Sea basin. Sequences are capped by subaerial debris flow facies which are either resedimented tills or periglacial mass flows. West of Cork Harbour, beach gravels are overlain by hummocky cross stratified shallow marine sands and periglacial sediment gravity

flow facies. The sequences thus record on-lapping subaqueous deposition and can be accommodated within the time-scale of the Midlandian Glaciation.

Colm O'Cofaigh, Department of Geography, Trinity College, Dublin.

Holocene marine flooding at Carrownisky, Co. Mayo.

Deposits behind a low, gravel and sand beach barrier at Carrownisky, Co. Mayo consist of interbedded layers of sand and peat. Sedimentological analysis of the sand confirms the layers were deposited by barrier overtopping, probably during storm surges. These flood deposits show an overall increase in frequency upwards through the sequence, with periods of increased deposition imposed on this trend. Radiocarbon dating of the peat layers indicates increased flood deposition between 650 and 1260 AD, and 1350 and 1830 AD.

Catherine Delany, Department of Geography, University College, Cork.

The impact of the eruption of the Icelandic volcano Hekla in 2310 BC on vegetation dynamics throughout the northern British Isles.

Dendrochronological studies of sub-fossil oaks and pines from Ireland and widespread areas of the USA imply severe climatic downturn in the aftermath of distant volcanic activity. Recently layers of volcanic ash or tephra have been detected in organic deposits throughout the northern British Isles. Tephra-linked pollen studies enable the possible impact of these eruptions on the vegetation of these areas to be assessed.

Recent studies on blanket peats from Caithness in northern Scotland and lowland raised bog peats in the north of Ireland describe two contrasting stories. Investigations in the north of Scotland show an apparent temporal linkage between tephra from the Icelandic volcano Hekla (H4) and the mid-Holocene Scots pine decline. Tephra-linked pollen analytical and dendrochronological studies in the north of Ireland show that, in this area, no link existed.

The work on the two areas of study will be compared and an assessment given of looking for volcanic impact on vegetation systems using pollen analysis.

Valerie Hall, Palaeoecology Centre, School of Geosciences,
Queen's University, Belfast.

The origin, chronology and environmental significance of
Holocene aeolian and alluvial sands at Blue Mountain, Falkland
Islands.

Extensive and thick sand accumulations, containing organic-rich horizons, at Blue Mountain, Falkland Islands, are most likely derived from weathering of local bedrock under late Pleistocene periglacial conditions. Weathering and subsequent erosion produced several shallow basins that are now occupied by lakes. Sand morphology, sedimentary structures and site characteristics indicate that the sand deposits are predominantly aeolian, although some alluvial sands are also present. Aeolian erosion occurred either before the lakes existed or at times of lower lake levels. Sixteen ^{14}C dates from organic-rich horizons show that some sand accumulated in the early Holocene or late Pleistocene, but that most is of mid- to late Holocene age. Landscape stability/instability phases were not synchronous between sites and cannot be explained by the regional trends of Holocene climatic change. A period of significantly lower lake levels and major aeolian erosion at c. 5.0-4.5 ka BP is proposed, but is not supported by regional evidence of greater warmth and/or aridity. More environmental data concerning periods of increased aridity and windiness are required before the relationship between landscape evolution and climatic change can be established.

Peter Wilson, Department of Environmental Studies, University
of Ulster, Coleraine.

Poster - Mapping past vegetation in the Mournes using
palynological and tephrochronological techniques.

Tephra (volcanic dust) is injected into the upper atmosphere during major volcanic eruptions. It can be carried substantial distances and deposited over wide areas forming unambiguous isochrones. Tephra layers have been isolated in blanket peats in the Mourne Mountains, Co. Down, and are currently being used as time markers in palynological studies of the region. By using these isochrones, precise correlation of temporally similar yet spatially distinct floras can be made. Methods for tephra extraction will be presented along with tephra dated pollen diagrams for the Mourne Mountains.

Joanne McVicker, Palaeoecology Centre, School of Geosciences,
Queen's University, Belfast.

ANNUAL GENERAL MEETING 1993

The AGM took place in the Palaeoecology Centre, The Queen's University, Belfast, following the annual discussion meeting, on Saturday 13th March. The meeting was chaired by W. Warren.

The various officers of the Association presented reports on the activities during the past year. The Newsletter Editor, P. Wilson, encouraged members to provide material for the bi-annual Newsletter. It was decided that, as well as titles of research projects being undertaken by postgraduate students, abstracts of completed M.Sc. and Ph.D. theses will be included in future issues. It was also agreed that an account of the Quaternary research activities in the various institutions might be an interesting feature. It is envisaged that a particular institute be featured in each issue.

The October field excursion 1993 will be based in Co. Fermanagh and will take place over the weekend 1st-3rd. The organiser, V. Hall, reported that plans were well advanced and details would be circulated to members during the summer.

The November symposium will have as its title 'Glacial Events' and will be held on Friday 26th November. This symposium will be organised on behalf of IQUA by P. Coxon. If any member has a contribution he/she feels may contribute substantially to the programme, please contact the organiser as soon as possible, at the Department of Geography, TCD.

Concern was expressed that the Field Guide for the October 1992 excursion to the Burren, which was rated a successful event, was not yet published and also that the November symposium 1992 did not take place. W. Warren, who had undertaken responsibility for the printing of the Field Guide and for organisation of the symposium, expressed regret that, due to exceptional work pressure within the GSI, it had not been possible for him to complete these commitments. However, he indicated that the guide was now ready for printing and should be distributed within a few weeks to those who had pre-paid for the same. The importance of the November symposium in the calendar of the Association was affirmed and it was agreed that it should not be allowed to lapse in future.

Nominations to serve on the Committee for 1993-94 as put forward by the out-going Committee were unanimously accepted. These are as follows:

Chairperson: Dr. F.J.G. Mitchell, Department of Botany, Trinity College, Dublin 2.

Hon. Secretary: Dr. M. O'Connell, Department of Botany, University College, Galway.

Hon. Treasurer: Mrs. B. Miller, Department of Geography, University College, Dublin 4.

Newsletter Editor: Dr. P. Wilson, Department of Environmental Studies, University of Ulster at Coleraine, Cromore Road, Coleraine, Co. Londonderry BT52 1SA.

Ordinary committee members: Dr. V. Hall, Ms. A. Sinnott, Dr. J. Collins, Dr. J. Sweeney.

Finally, R. Creighton expressed thanks on behalf of the IQUA membership to W. Warren for the services rendered as Chairperson during his four-year term of office.

The weekend activities concluded early on Sunday afternoon after a visit to Sluggan Bog, north of Randalstown. This is now a type site from which detailed pollen analytical investigations have been published by Smith & Goddard (1991, *New Phytologist* 118, 167-187) and more recently the occurrence of tephra - the first from Ireland - has been reported by Pilcher & Hall (1993, *The Holocene* 2, 255-259). The most spectacular feature for most of the participants was the pine stump layers, intercalated in the thick raised bog peat deposits. These layers are at present being dendrochronologically investigated in the Palaeoecology Centre, The Queen's University.

The meeting concluded with expressions of thanks by F. Mitchell, the newly elected Chairperson, to V. Hall for organising the discussion meeting and leading the field excursion and for ensuring that this was a most profitable weekend for all participants. Members departed in the early afternoon after being served cups of steaming tea and coffee by Barbara Russell and Sybil Watson.

Michael O'Connell (Hon. Secretary)

SUBSCRIPTIONS 1993

Subscriptions for 1993 are now due and should be sent to the Hon. Treasurer, Mrs. B. Miller, Department of Geography, University College,

Dublin 4. The membership fee remains at IR£5, and IR£3 for students and the unwaged.

QUATERNARY RESEARCH AT QUEEN'S UNIVERSITY, BELFAST

At the regular meetings of IQUA which are hosted by academic institutions throughout Ireland, it is pleasing to note that there is usually a goodly number in the audiences made up of post-graduate students and staff from Queen's University, Belfast. Within the community who are collectively the occupants of the School of Geosciences are found Quaternary research workers with such wide-ranging interests as glacial processes and radio-carbon isotope studies.

Tree-ring and pollen analytical studies have a long history at Queen's. As well as a most precise dating technique, tree-ring studies have contributed substantially to calibrating radiocarbon dating and provide a proxy record of climatic change over the last 7000 years. Much interest has been shown by the international scientific community in current dendrochronological research at Queen's which has linked poor growth in oak trees, seen as bands of extremely narrow tree-rings, with periods of massive volcanism. Further research in this area is continuing using pine dendrochronology to clarify and expand the dendroclimatological proxy record.

Research into the impact of volcanism on past climate and vegetation in Ireland is ongoing. Recently the first records of layers of volcanic ash or tephra which have been trapped in upland and lowland peats in the north of Ireland have been published. It is gratifying to note that the links established through IQUA have been of great help to those interested in this new field. The willing assistance of our colleagues from TCD and UCG in particular have shown that much work on tephra-linked pollen studies of past vegetational systems in Ireland and Great Britain as well as throughout the N.E. Atlantic area awaits our attention.

Queen's pollen studies have been noted for their excellence in past landscape reconstruction especially in conjunction with archaeological research. This fine tradition continues to be upheld. The same can be said of Holocene faunal studies which have made a very valuable contribution to the history of pastoral farming throughout Ireland.

Queen's Radiocarbon Dating Laboratory is recognised as one of the best in the world. Included in its wide research interests are carbon isotope studies and continuing investigations into aspects of radiocarbon dating.

It is well known that this unit provides a commercial dating service with customers from all over the world.

Geomorphological research is one of the strengths of the School of Geosciences. There is a fine tradition of research into glacial processes and coastal processes, and staff and students continue to conduct work in Canada, Scandinavia and Iceland.

It is the range of disciplines which gives much support to Quaternary studies at Queen's. My training was as a botanist and I would find working on Icelandic volcanic ash and the associated pollen and tree-ring studies more complicated were it not for the assistance of my geomorphological and radiocarbon colleagues. I look forward to similar brief articles from the Universities throughout Ireland where Quaternary studies are undertaken. I am sure that the same friendly and co-operative spirit is active there also.

Valerie A. Hall

RECENT PUBLICATIONS ON QUATERNARY RESEARCH IN IRELAND

CARTER, R.W.G. & WILSON, P. 1993. Aeolian processes and deposits in northwest Ireland. In: Pye, K. (Ed.) *The Dynamics and Environmental Context of Aeolian Sedimentary Systems*, Geological Society Special Publication No. 72, 173-190.

HALL, V.A. & PILCHER, J.R. 1993. Volcanic ash in Irish bogs. *Technology Ireland* 24(9), 22-24.

HANVEY, P.M. 1992. Variable boulder concentrations in drumlins indicating diverse accretionary mechanisms - examples from western Ireland. *Geomorphology* 6, 41-49.

HEIJNIS, H., RUDDOCK, J. & COXON, P. 1993. A uranium-thorium dated Late Eemian or Early Midlandian organic deposit from near Kilfenora between Spa and Fenit, Co. Kerry, Ireland. *Journal of Quaternary Science* 8, 31-43.

MITCHELL, G.F. 1992. A note on the presence of cryoturbated drift with silicified limestone at 570m in the Knockmealdown Mountains. *Irish Geography* 25, 102-103.

MITCHELL, G.F. 1992. Notes on a raised beach between two diamicts, Beginish Island, Valentia Harbour, Co. Kerry. *Irish Journal of Earth Sciences* 11, 151-163.

MOLLOY, K. & O'CONNELL, M. 1993. Early land use and vegetation history at Derryinver Hill, Renvyle Peninsula, Co. Galway, Ireland. In: Chambers, F.M. (Ed.) *Climate Change and Human Impact on the Landscape*, Chapman & Hall, London, 185-199.

PILCHER, J.R. & HALL, V.A. 1992. Towards a tephrochronology for the Holocene of the north of Ireland. *The Holocene* 2, 255-259.

SEYD, E.L. 1992. Moss mites (Acari: Oribatida) in a lichen sample from Mount Leinster, Co. Carlow, Eire, and their bearing on a land connection between Britain and Ireland during Quaternary and Post-glacial times. *Journal of Biogeography* 19, 401-409.
