



IQUA

IRISH ASSOCIATION FOR QUATERNARY STUDIES

IQUA NEWSLETTER

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Edited by Peter Wilson

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INTRODUCTION

After four years and seven Newsletters, Ronnie Creighton has come to the end of his term of office as Newsletter Editor. On behalf of the IQUA Committee I'd like to thank him not just for producing the Newsletter, but for rescuing it from an uncertain future back in 1988. The task of Editor landed in my lap as from the recent AGM and I hope that members will continue to support the Newsletter by submitting items for inclusion that are of general interest to all IQUA members - e.g. abstracts of research in progress, recent publications, notices of forthcoming meetings, etc. This issue contains abstracts from the recent discussion meeting, a report on the AGM, a report of the annual symposium, and details of two forthcoming meetings. The next Newsletter is scheduled for October, items for inclusion should reach me by the end of September.

Peter Wilson

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ABSTRACTS OF PAPERS - IQUA ANNUAL DISCUSSION MEETING 1992

The origin of the Dublin brown boulder clay

The relationship between the brown boulder clay and the underlying black boulder clay of the Dublin region has for long been in dispute. Some workers regard the brown clay as a separate deposit while others see it as the result of weathering of the black clay.

We have studied the geotechnical properties, chemical composition and mineralogy of samples of brown and black clay from a borehole at Tallaght. An additional sample of black clay from a site at Christchurch Cathedral has also been investigated.

The total iron content, the organic carbon content, and the clay mineralogy of the brown and black tills is identical. The

<2  $\mu\text{m}$  fraction of both the Tallaght clays consists of illite, chlorite, quartz and calcite. Intercalation with DMSO and hydrazine revealed no trace of kaolinite in the samples.

After oxidation with  $\text{NaOCl}$  both black and brown samples became the same brown colour. The greatest contrast between the black and brown clays is seen in Mossbauer spectra, which show that 84% of the iron in the brown till is  $\text{Fe}^{3+}$  while the corresponding value for the black till is only 69%. Thus we conclude that the brown till originates through oxidation of the black till.

D.H. Doff, Dept. of Geology, TCD.

E.R. Farrell, Dept. of Civil Engineering, TCD.

L. Pred'Homme, Ecole Nationale Supérieure d'Hydraulique et de Mécanique de Grenoble, France.

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#### Glaciotectonic structures at Kilcummin Head, Co. Mayo

Glaciotectonic structures occur in Quaternary deposits at Kilcummin Head, Co. Mayo and are evidence of north - northwestward ice movement. The main expression of glaciotectonic processes is seen in the 200m megaraft in which there is development of duplex structures. The megaraft contains evidence of lateral and vertical variation in compressional and extensional deformation. In the vicinity of Kilcummin Head compressional fold structures occur in incompetent mudstone bedrock. There is tilting and displacement of bedrock at the margin of a zone of more pronounced erosion.

Richard M. Herriott, Dept. of Earth Science, TCD.

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#### A strange river and a new moraine

The Owenabee River flows eastward along a synclinal valley (the Cloyne Syncline) south of the Lee Valley. The valley is flat-floored, choked with alluvium, as noted in the Geological Survey memoir, liable to floods and very difficult to drain. The main source of the Owenabee descends from the north to the valley at Crossbarry and turns abruptly eastward. The valley floor narrows eastward from a maximum width of some 600m to a mere 60m at Paddy's Bridge 9.5km east of Crossbarry.

Westward of Crossbarry the synclinal valley continues for 13km or so in a very regular valley with a concave floor profile in sharp contrast to the flat floor of the section occupied by the Owenabee. 4.5km west of Crossbarry the drainage of this western section escapes to the south as the Brinny River via a gorge to join the Bandon at Dwndaniel above Innishannon. The Brinny headwaters and gorge are aligned with the S.S.E. flowing section of the Bandon below Innishannon.

From Crossbarry the Owenabee flows eastward for about 18km



to join the tidal water at Carrigaline while the distance to the tide at Innishannon via the Brinny is only 7.5km. This and many other anomalies suggest that the drainage has been upset by some means.

Westward of Crossbarry the valley floor rises slowly for about 3km and then drops more steeply by 30m or so to the Brinny. The ground begins to get hummocky as the highest point of the valley is approached and in the townland of Garryhankard there are three pools 70-80m in diameter in undrained hollows, with a fourth in Brinny townland. The soils in this region are gravelly with a very large proportion of rounded stone of ORS origin.

The hummocky ground continues up the hill to the north in the townlands of Brinny and Clashanimud. There are some anomalous channels here at the N.E. margin of the hummocky ground.

The conclusion offered is:

(a) Pre-glacially, the Owenabee valley, from at least as far east as Paddy's Bridge, drained westward to the Brinny.

(b) A moraine, hitherto not recognised, consisting largely of O.R.S. material derived from the ridge to the north now blocks the valley in the townland of Garryhankard. It is up to 30m in height.

(c) Outwash sands and silts have filled the valley to the east of this. The total volume of material involved is in the order of 100,000,000m<sup>3</sup>.

(d) There are some possible marginal channels and deltas in the vicinity of the moraine.

Amhlaoibh O h-Aonghusa, 11 Wainsfort Rd., Dublin 6.

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#### Cryoturbated 'drift' with silicified limestone at 570m in the Knockmealdown Mountains

Both Farrington (1947) and Lewis (1976) considered that the summits of the Knockmealdown Mountains had never been glaciated, as erratic material was not seen above 365m.

In the early '80s a forest road was cut across a flat spur called Knockaunabullaga, 4km west of Knockmealdown itself. The cut, 20181091, at 570m was 2m deep, and showed cryoturbated 'drift', with some silicified limestone clasts.

Vertical bands of open-texture cobbles, spaced at 2-3m intervals, suggested that the road had been cut across a polygon-field.

G.F. Mitchell, TCD.

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#### Occurrence and significance of ventifacts in the Falkland Islands, South Atlantic

Ventifacts, developed on a variety of lithologies and at a

range of scales, are reported for the first time from the Falkland Islands, South Atlantic. Detailed observations of ventifact locations and site stratigraphies indicate most examples are associated with a major occasion of wind activity following a period of severely cold climate but before restoration of vegetation cover and peat formation.  $^{14}\text{C}$  dates (c. 13.6-11.0 ka B.P.) from basal peats consign ventifact formation to the late Glacial period. Abundant material susceptible to wind movement was available at that time. The erosion and movement of sand continues at many sites but at none can it be demonstrated that ventifact formation is entirely a recent or contemporary process. The  $^{14}\text{C}$  dates also reveal that climatic amelioration following the last cold episode occurred significantly earlier than previously considered.

Richard Clark, Hartsop, Cumbria.

Peter Wilson, Dept. of Environmental Studies, UUC.

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#### Irish interglacial stratigraphy - a brief review

A number of recent research projects have allowed a better approximation of Irish Quaternary stratigraphy to be obtained. The most important findings have included the discovery of marine Gortian deposits in Cork Harbour and the successful dating of organic sediments from Fenit in Kerry. As well as these two sites, Marshall McCabe has discovered organic material reworked into glacial sediments in Wexford which appear to be last interglacial in age.

The Cork Harbour site was discovered during engineering geological investigations during planning for the Eamon de Valera Bridge in the late 1970s and early 1980s. The drilling proved a thick organic deposit (15m+) below 17m of gravels. The organic silty clays record a marine or intertidal environment (the first such material from the Gortian Interglacial) and contain fossils of foraminifera, Ostracoda, Mollusca, diatoms and coccoliths which have been interpreted biostratigraphically and analysed geochemically using amino acid geochronology. New material was obtained from fresh boreholes funded by the Royal Society in 1987 and the preliminary palynological findings suggest that the upper part of the Cork Harbour deposit belongs to zone Gn III of the Gortian. The conclusion of the work on this site, based on a number of lines of evidence, was that the interglacial represented at Cork Harbour was correlatable with the Hoxnian/Holsteinian or an earlier temperate stage.

The depositional sequence at Fenit records an erosional marine platform at, or slightly above, present sea level which is overlain by variable marine sediments. Some facies of these marine sediments contain organic materials that have been deposited in a lagoon environment. Palynological evidence suggests that these latter sediments were deposited in cool temperate conditions and Uranium-Thorium dating of the biogenics



gives an age of between 115,000 and 120,000 years. This age implies that the deposit belongs within Oxygen Isotope Stage 5, possibly towards the end of 5e, or more likely during 5d or the beginning of 5c (the latter suggested by the pollen which indicates a slight amelioration in climate towards the top of the deposit).

The unique nature of the pollen assemblages does not allow biostratigraphic correlations to be made but the dating of the peats shows that the sequence is probably Late Eemian or represents an interstadial of Early Midlandian age. As the sediments are no longer regarded as belonging to the Gortian Interglacial it is suggested that the temperate episode be referred to as the Kilfenora Interstadial until further information can be gathered.

The recent discovery by Marshall McCabe of a reworked ball of organic sediment within the sands and gravels of the Screen Hills moraine gives hope of finding deposits of Last Interglacial age as here for the first time in Ireland a *Carpinus* rich pollen assemblage has been recorded.

This paper will briefly review these discoveries and attempt to put them into context.

Peter Coxon, Dept. of Geography, TCD.

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#### Lake sediments as a record of recent vegetation and land-use changes: a case study from Ballydoo Lough, Cornamona, Co. Galway

Detailed palaeoecological investigations on the uppermost metre of sediment from Ballydoo Lough, north-eastern Co. Galway, have been undertaken with a view to providing a detailed reconstruction of recent land-use history in a small catchment. The results available to-date provide evidence for changing farming economies and the resultant impact on the catchment soils over more than 150 years. Agricultural statistics, which cover the same period, provide another line of evidence for land use and supports the interpretations made on the basis of the palaeoecological data. It is shown that, in this catchment situated in an area of high rainfall and with steep slopes, soil erosion is high and has, in the past, varied considerably with land-use practices.

Chun Chang Huang and Michael O'Connell, Dept. of Botany, UCG.

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#### The Postglacial history of *Arbutus unedo* L. in Ireland

*Arbutus unedo* is essentially a Mediterranean shrub with a disjunct distribution up the Atlantic coast of Europe. In Ireland its distribution is concentrated in the south-west with an outlier population in the north-west near Sligo which represents the northern limit of this species.

Little has been published about the history of *Arbutus unedo* in Ireland, its pollen is rarely preserved in lake and bog sediments due to poor dispersal. Temporal palynological data of *Arbutus* have been obtained by adopting the technique of fine spatial resolution pollen analysis. These palaeoecological data and historical sources will be reviewed to elucidate the history of this species in Ireland. The impact of changing land use and climate on the distribution of *Arbutus* will be considered from both historical and future perspectives.

Fraser Mitchell, School of Botany, TCD.

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### ANNUAL GENERAL MEETING

The AGM took place in the Department of Botany, TCD, after a well attended and interesting discussion meeting. The main items covered by the AGM were as follows:

#### Signposting of Heritage Areas:

Following on from an IQUA symposium on Conservation of Earth Science Areas of Scientific Interest, the Association contacted a number of Societies/Associations with a view to encouraging each Society to adopt a particular site and take the necessary steps to have it suitably signposted. W. Warren informed the meeting of the difficulties that arose from possible public liability claims. In these circumstances it was agreed that such signposting can only be undertaken by the local authority to which groups such as IQUA might supply information.

#### Closer co-operation with Soil Science Society of Ireland:

It was agreed that closer liaison with the SSSI be established. This should be facilitated by the election of Dr. J. Collins, Agricultural Science, UCD, to the IQUA Committee (see below).

#### Field Guide to N. Mayo:

Copies of this latest IQUA Field Guide are available from the Treasurer, Mrs. B. Miller, price IR£4 plus £1 postage.

#### Quaternary International:

This journal, published by INQUA and issued free to affiliated Quaternary associations, was requested by IQUA during the past year. The Geological Survey library has agreed to act as a repository for the journal where it may be consulted by IQUA members.

#### IQUA Representative on the National Committee for Geology:

Dr. W. Warren has been accepted by the RIA as the Association's nominee on the National Committee for Geology.

#### Mailing List:

The mailing list is maintained and updated by the Secretary,



to whom any amendments should be notified. Please note that the last year for which your IQUA subscription has been received is indicated on the address label. Ordinary membership, payable to the Treasurer (see below), stands at IR£5, and IR£3 for students and the unwaged.

Committee for 1992-93:

Chairperson: Dr. W. Warren, Geological Survey of Ireland, Haddington Road, Dublin 4.

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

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

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

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

Dr. R. Creighton retired as Newsletter Editor; he was formally thanked for his services to IQUA over many years by the Chairperson, Dr. Warren.

A.O.B.:

Under this item the question of the siting of a visitor centre at Mullaghmore, the Burren, and IQUA's attitude to the present OPW proposals were raised. Following some discussion it was decided that the matter should be referred back to the Committee who would take whatever action it deemed appropriate.

M. O'Connell (Hon. Secretary)

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IQUA ANNUAL SYMPOSIUM 1991

THE POST GLACIAL PERIOD (10,000 - 0 BP): FRESH PERSPECTIVES

Ten years ago terms like 'ozone layer' and 'global warming' were referred to only occasionally on science-based television programmes or in special features on radio or in newspapers. Today these terms are part of everyday language. The public at large have been made aware of the damage which relatively recent human activity has done to our climate and major ecosystems.

Here in Ireland there is continuing interest in studies of past climate and ecosystems, especially those which have developed since the end of the last glaciation. Recent research performed in a number of centres throughout the country has made a valuable contribution to our understanding of the global changes which have occurred and continue to occur.

Recognition of the importance of the range of work in a

number of disciplines prompted the meeting of approximately 70 participants at the IQUA Annual Symposium in November 1991. The participants were warmly welcomed by Dr. W. Warren who then introduced Professor Bill Watts. Professor Watts spoke briefly about the importance of Holocene studies and placed those in Ireland in an international context. The guest speaker was Dr. John Matthews of the University of Wales, Cardiff, and editor of the recently launched journal *The Holocene*. Dr. Matthews' talk demonstrated the vitality of Holocene studies in the world scientific community and stressed the importance of studying rare catastrophic events.

There then followed a series of papers covering an astonishingly diverse number of topics all with an Irish slant. These presented new evidence for climate change and its effects on the shape of our island and its vegetation as well as the most up-to-date news from the archaeological and 'time-scales' fraternity.

Sites yielding new information included Clew Bay in Co. Mayo, where sea level changes have altered the coastline, and the central peatlands where the discovery of wooden trackways bear testimony to the ingenuity of prehistoric man. New work on establishing a chronology based on tephra was described and a review of recent pollen analytical work shed new light on past vegetational changes.

The concluding remarks showed clearly that the meeting had generated debate and supportive interest. Congratulations to all.

Valerie Hall

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#### FORTHCOMING MEETINGS

##### IGCP 274 UK NATIONAL COMMITTEE

The final annual meeting of the UK IGCP 274 will be held at the University of Ulster, Coleraine, between 17th and 21st September 1992. The meeting will include paper sessions, discussions and poster displays, plus two field trips - one full-day excursion to the Inishowen Peninsula, Co. Donegal and a short visit to the Giant's Causeway cliffs and coast.

Accommodation will be available in Halls of Residence.

All enquiries to:  
Professor Bill Carter  
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#### IQUA ANNUAL FIELD EXCURSION

The annual field excursion will take place from the 2nd to 4th October 1992 and will be centred on the Burren. This is the first IQUA excursion to a region that offers so much of interest to Quaternary scientists.

The meeting begins on the evening of Friday 2nd October in Ballyvaughan with some short introductory lectures. Saturday will be devoted to the western Burren. Topics covered will include: geology, coastal geomorphology, glacial and karstic geomorphology, palaeoecological evidence for vegetation and land-use history, field systems and archaeological features including the recently excavated portal dolmen at Poul nabrone.

On Sunday the excursion will focus on the eastern Burren. Again, a variety of sites will be visited and, in particular, late-glacial and Holocene vegetation history of the Mullaghmore area will be covered. Lurga, a recently investigated late-glacial site in the Tubber area will be visited.

Contributors to the excursion include: Bill Carter, David Drew, Paul Gosling, Ann Lynch, Conor MacDermot, Michael O'Connell, Willie Warren and Bill Watts.

The final programme and information on accommodation etc. will be circulated to members in July/August.

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