



The newsletter of the CAMBRIDGE QUATERNARY

ISSUE 37

EASTER 2007

Common Sense Prevails in the Quaternary Definition Dispute

The long-running dispute between the International Commission on Stratigraphy (ICS) and the Quaternary community led jointly by ISQS and INQUA over the definition of the term Quaternary and its relation to the Geological Time Scale, took a new turn last February with the arrival of a letter from Professor Zhang Hongren the President of the International Union of Geological Sciences (IUGS). This unexpected letter was direct and very much to the point in that it was addressed to all the chairs of the ICS Subcommissions, as well as the ICS Executive. It made the statement:

“important matters which apparently have not been given the attention they deserve by the Commission as a whole. This is likely due to communication problems within the ICS, as there is significant evidence indicating that most individuals within the ICS are not aware of several documents produced by different IUGS bodies with regard to ICS activities. This may be related to the way different matters have been handled by the ICS Executive in the last years”. The statement continued: “Please note that financial support from IUGS to ICS for the year 2007 has been

conditionally approved. These funds are being held in reserve; their release depends upon a satisfactory response to the requests in this letter.”

(The full text of the letter can be downloaded from the ISQS website at: <http://www.quaternary.stratigraphy.org.uk>).

This letter arose from a meeting at which the ICS was reviewed by an IUGS Ad-Hoc Review Committee. The meeting was held in Paris on 7-8 November 2005 and included Felix Gradstein (chair of ICS), Maria Bianca Cita (chair of the Subcommission on Stratigraphical Classification: ISSC) and Frits Hilgen (chair Subcommission on Neogene Stratigraphy: ISNS). The Quaternary was represented by Phil Gibbard (chair ISQS). As a direct result of the meeting, a list of concrete actions to be taken was sent by the IUGS Executive Committee (IUGS-EC) to the ICS Executive in June 2006, and some additional clarifications were added, at the request of the ICS Executive, on 8 September, 2006. There were several actions (all

mandatory) and recommendations provided to the ICS Executive. They included a requirement that the ICS Executive should properly and immediately address the issue of the Quaternary, following the "Procedures for Decisions by ICS-INQUA Joint Task Group on the Quaternary". They were also required to maintain the Quaternary as depicted in the International Stratigraphic Chart published by IUGS in 2000. (i.e. the Quaternary depicted as a full System/Period and its base at 1.8 Ma).

Regarding the current situation, the IUGS President noted "*B) The Quaternary in the Stratigraphic Chart (or GTS) published in the ICS website is not depicted as published by IUGS in 2000. And C) The Quaternary issue has been poorly and ineffectively addressed ignoring the specific IUGS EC instructions (IUGS-INQUA Task Group) and INQUA's opinion*".

Professor Hongren's conclusion was that "*it is necessary to reach as soon as possible an international consensus on the Quaternary problem that has to be ratified during the 2008 IGC (International Geological Congress –Oslo). The IUGS EC deems that at the moment it is appropriate to maintain the Quaternary as depicted in the International Stratigraphic Chart published by IUGS in 2000*". ICS were required to react and to put forward a course of action on these and other points by 1 April 2007.

The catalytic effect of the IUGS President's letter has been to set a series of wheels in motion. Action was clearly needed and this was led by Jim Ogg, the ICS Secretary.

Dr Ogg circulated a discussion document that is currently with ICS officers and others for discussion and reaction. In this Dr Ogg states;

"We would like ICS members to consider the following set of compromises to resolve this issue:

(1) Forward the INQUA position directly to IUGS

ICS would forward the INQUA position to IUGS for immediate consideration as a package, and recommend that the Quaternary be established prior to the INQUA Congress in August 2007. This seems the only way to adequately satisfy the mandate that we establish a Quaternary both through dialogue with INQUA and prior to the 2008 International Geological Congress.

(2) Pleistocene would be extended to enable a Quaternary System/Period

IUGS would be requested to reverse their January 1999 decision, and include the Gelasian Stage into the Pleistocene. No new GSSP is being created; rather, the boundary of the higher chronostratigraphic unit (Pleistocene Series) is being moved to the GSSP of a different stage. The Quaternary would be formally ranked as a Period with its base synchronous with the base of this Pleistocene. The change is being made so that the Quaternary is defined in the manner that it is being used by the majority of its active workers (INQUA), which is the audience with direct interest in its definition and consistent usage of it. In 1997-98, neither the INQUA-ICS working group nor the joint Quaternary-Neogene subcommission votes on these issues could reach a super-majority (67%) agreement on scientific grounds. However, in this case, the main argument is the desire to attain a satisfactory hierarchy that can accommodate the Quaternary, rather than a scientific rationale as to why the current marine-based Pleistocene is unsuitable. INQUA's President, John Clague, has indicated that he will send a letter to IUGS supporting this unusual

procedural action to revisit their 1999 decision and accept INQUA's position on the definition, rank and appropriate hierarchy for the Quaternary.

Suggested additional clarifications:

(3) Tertiary has no official rank

The Neogene and Paleogene would remain as Periods/Systems. The Gelasian/Piacenzian stage boundary (revised Pleistocene/Pliocene boundary) would be the Quaternary/Neogene system boundary. This clarification should be included in the IUGS decision, otherwise we will be immediately asked by many groups to consider 'demoting' the Neogene and Paleogene to become sub-periods. The Tertiary would remain informal as a "super-period" equivalent to the Neogene-Paleogene.

(4) Gelasian Stage remains intact; Pleistocene has stage-level divisions

The Gelasian Stage would remain intact, but the Pleistocene Series would be extended downwards to include it. This also implies that the Pleistocene would be subdivided into named-stages.

(5) Vrica GSSP is retained, but as a Stage Boundary

The Vrica GSSP is not being altered or abandoned. This GSSP will continue to define the top of the Gelasian and the base of the *Calabrian* Stage. The Calabrian, like the Quaternary, was left in limbo by the 1985 base-Pleistocene GSSP document, but is often shown on time-scale charts and is proposed as a regional stage (Cita *et al.*, 2006).

In short, the IUGS EC has strongly and decisively reprimanded the ICS over its handling of the Quaternary issue and has insisted that a solution had to be reached within 18 months. This development is a

major advance on the situation that we have been striving to achieve over the last 5 years. Whilst the ICS have now apparently seen the light, predictable difficulties are developing with the Subcommission on Neogene Stratigraphy who are unsurprisingly dissatisfied with the outcome proposed:

"The ICS bureau now attempts to bring an early end to this continual debate in a way that will "bring the most happiness to the most people" accepting that scientific issues seem to be less important than the political. So, rather than continuously be blamed by both INQUA and IUGS for the Quaternary status, the ICS bureau is considering asking ICS voting members to recommend forwarding the INQUA position directly to IUGS for their immediate consideration and possible approval."

"The request also includes the following compromises: the Neogene is a Period (rather than IUGS suddenly creating the Tertiary Period and Neogene/Paleogene "sub-periods"), and (2) the Gelasian Stage and Vrica GSSP be maintained, and that the name "Calabrian" be given to the stage defined by that Vrica GSSP. The latter, by implication, means that the Pleistocene will have normal marine stages like all other epochs".

It should be realised that following this scenario ICS will not actually vote on the scientific merits, but vote only to forward the INQUA position to IUGS" (Frits Hilgen, ISNS chair; Elena Turco, ISNS secretary - 26.3.07).

The following proposal was sent to all officers of ICS for a formal vote in April:

The unanimous position of the INQUA Executive Committee is the following:

- 1) The Quaternary must be a full formal chronostratigraphic unit, the appropriate status for which is the Period (or System).**
- 2) The base of the Quaternary should be placed at the current base of GSSP Gelasian Stage at the base of MIS 103.**
- 3) The base of the Pleistocene should be lowered to 2.6 Ma to coincide with that of the Quaternary Period/System boundary.**

[“MIS 103” = Marine Isotope Stage 103. NOTE: Because Phanerozoic geological boundaries are not defined by numerical ages, the concluding statement should be worded that “the base of the Pleistocene should be lowered to coincide with the Quaternary System/Period boundary, which is calibrated to an age of 2.6 Ma”].

See Figure 1.

The votes received from the full voting membership of ICS to submit this Quaternary resolution were: **14 “Yes”(82%), 2 “No” (12%) and 1 “Abstain”**

*On 13 May 2007 a letter requesting formal immediate ratification of these decisions was sent by Jim Ogg to the Secretary of IUGS. In this letter, ICS undertook that “if ratified, then a modified form of this important resolution to revise the upper Cenozoic chronostratigraphy will be published in *Episodes*. The ICS will immediately indicate the proposed establishment of this Quaternary system and associated revision of the Pleistocene series on its official website, graphics and visualization software”.*

So it seems that our demands have finally been met. The next 12 months should see a remarkable end to the 50 year-long wrangle over the base of the Quaternary/Pleistocene, to our satisfaction at least, and ideally good relations re-established with the ICS. However, an unfortunate consequence will be that the ‘boot will be on the other foot’ for the already aggrieved Neogene community whose failed attempted annexation of Quaternary time has ironically cast them into a comparable situation to that we have tolerated for 50 years. This is a pity and we must wait to see the consequences, especially since this is a potential cause of future friction. Something tells me that we haven’t heard the end of this issue yet.

Phil Gibbard

May 2007



Phil Gibbard is Professor of Quaternary Palaeoenvironments in the Department of Geography

Reference:

Cita, M.B., Capraro, L., Ciaranfi, N., Di Stephano, E., Marino, M., Rio, D., Sprovieri, R. and Vai, G.B., 2006. Calabrian and Ionian: A proposal for the definition of Mediterranean stages for the Lower and Middle Pleistocene. *Episodes*, **29**: 107-113

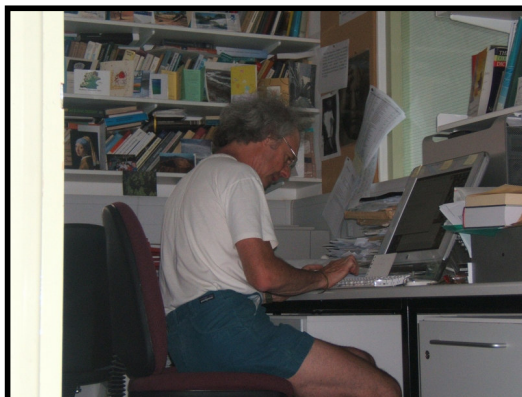
Quaternary	Holocene		
	Pleistocene	Stage 4	
		"Ionian"	
		"Calabrian"	
Neogene	Pliocene	Gelasian	
		Piacenzian	
	Miocene	Zanclean	
		Messinian	
		Tortonian	
		Serravallian	
		Langhian	
		Burdigalian	
		Aquitania	

Figure 1 - Proposed Upper Cenozoic chronostratigraphy, showing current status of ratified GSSPs for Stages
 ["Ionian" is a potential name for the third stage of the Pleistocene, but the formal name will be established when the GSSP is ratified during the coming year.]

NEWS FLASH:

22 May 2007

Summer has *officially* arrived – Prof Gibbard is back in his shorts!
 (Photo: Lisa Kimble)



East Anglian Prehistory – Some Recent Research:

A Conference in Memory of John Wymer

Council for British Archaeology – University of East Anglia, Norwich: March 31st 2007

This one-day conference was held to honour the life and research of the famous East Anglian archaeologist John Wymer, just over a year after his death. Much of the work presented was from research projects that John Wymer had directly been involved with, or concerned subjects that he had devoted much of his life to studying.

An introduction to the life and work of J. J. Wymer - Andrew Lawson.

Despite being a fellow of the British Academy, and having held many important and influential positions in archaeological organisations, John Wymer was entirely self-taught and had no formal academic training, although he did qualify as a teacher. His mother was a pianist, and his father was an artist and illustrator; both were fascinated by archaeology, and had a passion for flint implements. Consequently, John developed a style of meticulous note taking, the outstanding ability to illustrate worked flints, and a sense of fun and merriment, and love of music, which he brought to archaeological digs and field sites.

In July 1955, John Wymer discovered a fragment of skull at Swanscombe, Kent,

which remains the earliest (c.400ky BP) European hominid find. After a brief period working in France, he was appointed assistant curator at Reading Museum, and his search for parallels to British archaeology in Europe took him to Denmark where he studied aerial photographs and undertook excavations. John was then given a research position at the University of Chicago, and began extensive work on early human remains in South Africa. He followed this by focussing on the early hominid occupation of East Anglia, and particularly the sites at Hoxne and Clacton.

John's considerable academic achievements were formally recognised, first by an honorary masters degree from the University of Durham, and subsequently by an honorary doctorate from the University of Reading. His detailed personal notes with illustrations and photographs (1949-2006) have been archived, and will be housed in the British Museum.

Pakefield and Happisburgh – Simon Parfitt.

The collaborative research effort at these sites has been funded by the Natural History Museum (NHM) through the AHOB (Ancient

Human Occupation of Britain) project. Although the Cromer Forest Bed Formation (CFBF) is 'probably the best studied Quaternary deposit in the world', 200 years of research had failed to find any evidence for human occupation of Britain in these 'Cromerian complex' sediments.

Around 600ky BP, the palaeogeography of the North Sea basin was very different than today. A 'Great Northern Rift Valley' occupied the central northern part of the East Anglian – Crag (North Sea) basin. This has been compared in size and form to the African Rift Valley; 'like Oldvai Gorge, with volcanoes in the Rhineland'. Great deltas formed in the southern North Sea basin from the (now extinct) Baltic River, the Rhine-Meuse, and the Thames-Bytham systems. The 3km thick deltaic sequences laid down by these rivers have caused considerable downwarping in the southern North Sea. The Cromer Forest Bed Formation (CFBF) is a margin part of these sediments, and is discontinuously exposed for c.80km along the East Anglian coast from Weybourne, Norfolk to Easton Bavents (Southwold), Suffolk. The work of Richard West on the CFBF has provided an important and solid base from which the AHOB research has been launched.

A worked flint flake was 'discovered' at Pakefield in 2000 by John Wymer. In fact, Richard Preece dislodged the chip of flint with his foot, and it was handed to John for inspection. The discovery of knapped flint prompted the 2003 AHOB excavation of the

CFBF at Pakefield. The '*Unio* bed' provided abundant early Palaeolithic (c.700ky BP) worked flint material, together with a host of palaeoenvironmental information from molluscs, beetles, vertebrates (including bones with cut marks), plant macrofossils and pollen. Several hundred plant and animal taxa have been recorded, and the faunal and floral assemblage is one of the richest known from the CFBF. The palaeoenvironment indicated at Pakefield is that of a broad meandering river with large marshes, and open grassland grazed by large mammals, with broadleaved woodland on the higher ground of the interfluvies. The site was also close to the estuary with some maritime influences, and the climate was of Mediterranean style, similar to that of southern France today.

The coastal village of Happisburgh currently suffers from dramatic coastal erosion, and it is this, which has recently made new exposures of the CFBF available on the foreshore. In 2000, a hand axe and butchered animal bones (including bison) were found at the site by Mike Chambers. An AHOB excavation of the CFBF on the foreshore revealed an area where butchery and processing of animal carcasses had taken place, although the early Palaeolithic worked flints were not as abundant as those at Pakefield. It is suggested that these deposits are younger than those at Pakefield. The palaeoenvironment appeared to be that of a boreal peatland; perhaps rather like the

modern Norfolk Broads, but with a climate similar to that of present day southern Sweden. Further investigations have since taken place at Happisburgh following the work of Richard West on the Ostend channel to the north of the main exposure.

The Hoxnian and Hoxne – Nick Ashton

In 1797, John Frere first recognised a flint hand axe from a pit at the village of Hoxne on the edge of the Waveney valley, Norfolk. A century later in the 1890s, Clement Reid investigated the Old Brickyard Pit and Oakley Park Pit at Hoxne, describing basal boulder clay (till) overlain by lake sediments, lignite (peat), ‘arctic’ beds, fluvial and colluvial sands and gravels, and brickearth (loam). Flint artefacts were recovered by Reid from only the upper ‘Palaeolithic loam’. In the 1960s, Richard West re-investigated the site and argued that because the upper beds had become decalcified (appearing like loam), Reid had been unable to see that the flint artefacts came from the upper parts of the lake sequence, rather than from the brickearth itself. John Wymer, a man ‘generous of spirit’, investigated the site in 1978 and discovered a ‘lower industry’ of Palaeolithic worked flints together with butchered vertebrate bones from ‘bed C’, apparently the ‘arctic bed’ of Reid, and a scattered ‘upper industry’ with no *in situ* fauna from the loam (bed A). John Wymer was fascinated by the apparent paradox of human activity and butchered temperate fauna originating from a

deposit containing cold stage plants including dwarf birch and dwarf willow.

In 2000 John Wymer attempted to understand the relationship between the ‘upper and lower industries’ at Hoxne, by opening a 4m deep trench across the marginal lake sediments. This and later re-excavations showed that a hitherto unknown river channel above the ‘arctic bed’ added a new level of complexity to the site stratigraphy. It now appears that the ‘lower industry’ originates from the marginal part of the river channel, not from the underlying arctic bed, and that the ‘upper industry’ is from colluvium overlying the river channel.

The consequence of these findings is that human activity at Hoxne appears to post-date the 30ky-long Hoxnian interglacial (MIS 11e) in the strictest sense. The ‘lower industry’ at Hoxne is thought to date from about 385ky BP. It is presumed that the upper ‘arctic bed’ (bed C) and the newly discovered river channel with Palaeolithic worked flints and butchered temperate vertebrates (bed B) can be related to cold and warm phases (MIS substages 11a-d) immediately following the Hoxnian interglacial. The climatic variations represented by these substages have now been found in long sequences at various sites throughout the world.

The Long Blade Industry– Peter Robbins

The long blade flint tool industry is thought to date to the upper or final Palaeolithic and the very earliest Mesolithic

in Norfolk and East Anglia. Long blade flint scatters are typically found on Late Devensian gravel or sand surfaces beneath early Holocene (Mesolithic) peat. The scatters comprise blades in excess of 120mm long, together with the flint cores from which they were knapped. The peat deposit exposed on the foreshore at Titchwell in north Norfolk has produced over 200 *in situ* long blade flints, and blades can also occasionally be found on the beach. In contrast, a site at Hockwold in west Norfolk has produced over 800 long blade flints, and excavations for the Thetford bypass revealed a scatter of more than 100 blades.

John Wymer collected hand axes and long blade flints from Lynford pit during archaeological excavations. He observed that these blades were rarely re-touched, although many showed signs of use, with damage to the working surfaces. John was also involved with the excavation of Carrow Road football ground in Norwich, where more than 200 long blade flints were recovered from a buried sand island adjacent to the River Yare.

***The Mesolithic in East Anglia –
Julie Gardiner***

Although many Mesolithic sites are known across East Anglia, they have never been considered together so that patterns in distribution and type can be seen. The main concentrations of Mesolithic activity seem to have been in river valleys, on fen islands, and to a les

ser extent on the higher Chalk and till landscapes. It is known from pollen work that the early Mesolithic vegetation was dominated by pine and birch. The principal artefacts from East Anglian Mesolithic sites are microliths (small worked flints), together with burins, scrapers and hand axes.

John Wymer had worked on a variety of Mesolithic sites including Thetford, Lackford and Sproughton (in river valleys), Lakenheath (sand dune complex) and Great Melton (high on a till plateau). He had observed that Mesolithic tranchet axes and microliths had a distribution associated with the higher Chalk ground. Data on the distribution and type of Mesolithic finds will soon be available on-line as part of the 'PAMELA' (Upper Palaeolithic & Mesolithic Database for England), which is being compiled by Roger Jacobi

***The Neolithic in East Anglia –
Francis Healy***

The Neolithic in East Anglia is typified by the construction of causewayed enclosures, although their distribution is patchy. Many of these seem to have been built about 6000 BP, although precise dating of these features is often a problem. An exception is the excellent radiocarbon dating and dendrochronology of Sea Henge near Holme, on the Norfolk coast; we know that it was built in the spring/summer of 2049BC! When a sequence of radiocarbon dates is available from a site, the uncertainties arising from

calibration using the radiocarbon curve can often be problematic. Using a Bayesian process for refining these dates can help make sense of otherwise jumbled dating evidence.

Causewayed enclosures are not the only type of Neolithic features preserved in East Anglia, with forms ranging from large oval enclosures at Godmanchester, to linear monuments, presumably marking boundaries, at Fornham and Etton. From pollen and other evidence, it appears that in East Anglia, Neolithic causewayed enclosures were built in areas cleared of woodland. In contrast, in Wessex and Kent enclosures seem to have been built in the middle of woodland, away from open areas. It seems that the Wessex enclosures were built about 500 years earlier than those in East Anglia (6500 BP vs 6000BP), which might explain the difference.

Early Bronze Age Burials in East Anglia
– ***Andrew Lawson***

Bronze Age farming societies became established in East Anglia between 4500 and 3500 BP. They are marked by the first introduction of metal working techniques (particularly of copper and bronze). After 4500 BP, the style of burials changed to include inhumations (crouched burials), often in timber coffins in deep graves, with grave goods such as beakers, bracelets, daggers and breastplates. The Norfolk village of Cressingham, where John Wymer lived, has particularly well preserved burials of this

type. The early Bronze Age ‘Beaker’ burials are not associated with later Bronze Age round barrows, but instead were marked by small mounds. It appears that most early Bronze Age burials were confined to Chalk ridge land, or on sandy soils by the coast. High areas underlain by till were avoided. In Wessex, extensive Bronze Age cemeteries are preserved, due to historic land use. The highest concentrations are again on high chalky ground. Contrary to popular belief, Stonehenge is not the centre of Bronze Age burials on Salisbury plain. The presence of ‘Wessex style’ ‘Beaker’ burials from East Anglia to Ireland, shows that this early Bronze Age culture was not confined to central southern England.

Steve Boreham

April 2007



**Steve Boreham is the Department of Geography's
Technical Officer and Laboratory Manager –and
vital aide to every postgrad!**

Diamonds Tell Tale of Comet that Killed off the Cavemen

Scientists will outline dramatic evidence this week that suggests a comet exploded over the Earth nearly 13,000 years ago, creating a hail of fireballs that set fire to most of the northern hemisphere.

Primitive Stone Age cultures were destroyed and populations of mammoths and other large land animals, such as the mastodon, were wiped out. The blast also caused a major bout of climatic cooling that lasted 1,000 years and seriously disrupted the development of the early human civilisations that were emerging in Europe and Asia.

'This comet set off a shock wave that changed Earth profoundly,' said Arizona geophysicist Allen West. 'It was about 2km-3km in diameter and broke up just before impact, setting off a series of explosions, each the equivalent of an atomic bomb blast. The result would have been hell on Earth. Most of the northern hemisphere would have been left on fire.'

The theory is to be outlined at the American Geophysical Union meeting in Acapulco, Mexico. A group of US scientists that include West will report that they have found a layer of microscopic diamonds at 26 different sites in Europe, Canada and America. These are

the remains of a giant carbon-rich comet that crashed in pieces on our planet 12,900 years ago, they say. The huge pressures and heat triggered by the fragments crashing to Earth turned the comet's carbon into diamond dust. 'The shock waves and the heat would have been tremendous,' said West. 'It would have set fire to animals' fur and to the clothing worn by men and women. The searing heat would have also set fire to the grasslands of the northern hemisphere. Great grazing animals like the mammoth that had survived the original blast would later have died in their thousands from starvation. Only animals, including humans, that had a wide range of food would have survived the aftermath.'

The scientists point out that archaeological evidence shows that early Stone Age cultures clearly suffered serious setbacks at this time. In particular, American Stone Age hunters, descendants of the hunter-gatherers who had migrated to the continent from Asia, vanished around this time.

These people were some of the fiercest hunters on Earth, men and women who made magnificent stone spearheads which they used to hunt animals including the mammoth.

Their disappearance at this time has been a cause of intense debate, with climate change being put forward as a key explanation. Now there is a new idea: the first Americans were killed by a comet.

It was not just America that bore the brunt of the comet crash. At this time, the Earth was emerging from the last Ice Age. The climate was slowly warming, though extensive ice fields still covered higher latitudes. The disintegrating comet would have plunged into these ice sheets, causing widespread melting. These waters would have poured into the Atlantic, disrupting its currents, including the Gulf stream. The long-term effect was a 1,000-year cold spell that hit Europe and Asia.

The comet theory, backed by observational evidence collected by the team, has excited considerable attention from other researchers, following publication of an outline report of the work in *Nature*.

'The magnitude of this discovery is so important,' team member James Kennett, of the University of California, Santa Barbara, told the journal. 'It explains three of the highest-debated controversies of recent decades.'

These are the sudden disappearance of the first Stone Age people of America, the disappearance of mammoths throughout much of Europe and America and the sudden

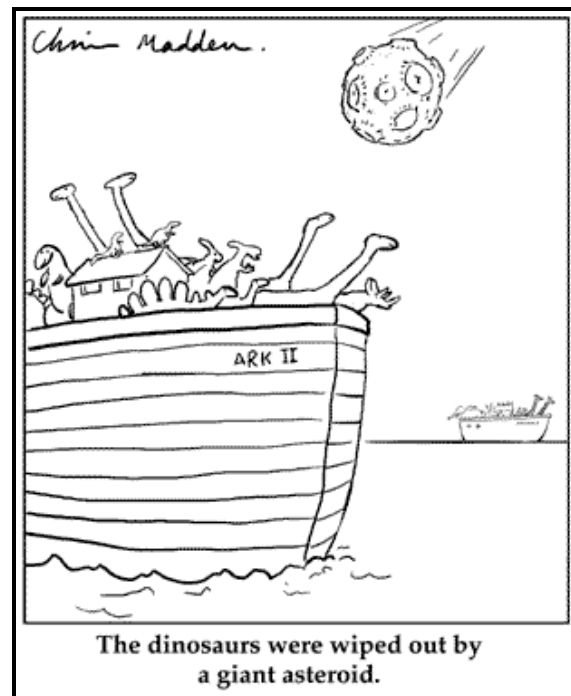
cooling of the planet, an event known as the Younger-Dryas period. Various theories have been put forward to explain these occurrences, but now scientists believe they have found a common cause in a comet crash. However, the idea is still controversial and the theory is bedevilled by problems in obtaining accurate dates for the different events.

'We still have a long way to go,' admitted West. 'But we have a great deal of evidence, from many sites, so this is quite a powerful case that we are making.'

Robin McKie, Science Editor

The Observer

May 20, 2007



Cartoon by Chris Madden reproduced with permission (<http://www.goma.demon.co.uk/>)

Conference/Meeting/Seminar Dates

SPRI seminars: <http://www.spri.cam.ac.uk/research/seminars/physical/>

QDG talks: <http://www.quaternary.group.cam.ac.uk/events/qdg/>

ZOO talks: <http://www.zoo.cam.ac.uk/zooone/forthcoming/index.html>

PSci talks: <http://www.plantsci.cam.ac.uk/seminars/index.html>

ARCH talks: <http://www.arch.cam.ac.uk/pittrivers/GPRtalks.html>

Friday 1st June - Rachel Ballantyne (Dept. of Archaeology)

Charred plant remains, lifestyles and economy upon the Roman fen-edge, Cambridgeshire

Friday 15th June - Emma Lightfoot (Dept. of Archaeology)

Isotopic analysis of diet and migration in Croatia

QUATERNARY ENVIRONMENTS AND THE HUMAN PAST

There is a one day discussion meeting hosted by the Quaternary Environments and Geoarchaeology Research Group at The University of Manchester on Wednesday 20th June 2007. Registration is free and all are welcome (registration form on page 14 of this issue). The day will comprise a series of poster sessions on any theme related to Quaternary environmental change and/or the human past and three 45 minute talks with discussion. We welcome poster presentations from all Quaternary scientists and archaeologists. The speakers will be:

1. **Martin Williams** (University of Adelaide) - *Environmental impacts of an extreme event: the Toba mega-eruption, volcanic winter and the near demise of humans*
2. **Jamie Woodward** (The University of Manchester) - *Quaternary Environments and The Human Past: The View from the Mediterranean*
3. **Mike Baillie** (Queens University of Belfast) - *New Light on the Black Death: the cosmic connection*

XVII INQUA CONGRESS 2007

The XVII INQUA Congress will take place in Cairns, Australia from **28th July - 3rd August 2007**. Information on the congress can be obtained from the Congress website (<http://www.inqua2007.net.au>) where you can also register to receive further information as it becomes available.

QRA 6th INTERNATIONAL POSTGRADUATE SYMPOSIUM 2007

The 2007 Postgraduate Symposium will be held at the Geocentre, University of Copenhagen, Denmark, **21st - 24th September**. For more details, registration and contact information visit the website at <http://www.qra2007.geol.ku.dk>

QUATERNARY ENVIRONMENTS AND THE HUMAN PAST

A one day discussion meeting hosted by the *Quaternary Environments and Geoarchaeology Research Group* at The University of Manchester

<http://www.sed.manchester.ac.uk/geography/research/qeg/>

Wednesday 20th June 2007

Registration is free and all are welcome.

REGISTRATION FORM

Please complete this form and return it to

Jamie Woodward
Geography
Mansfield Cooper Building
The University of Manchester
Manchester, M13 9PL
jamie.woodward@man.ac.uk

Name:

Email:

Address:

I would like to present a poster at the meeting **Yes / No**

Title of poster:

I would like to stay for dinner in the evening **Y/N**
(This is not free)

I would like to receive information about overnight accommodation **Y/N**
(This is not free either!)

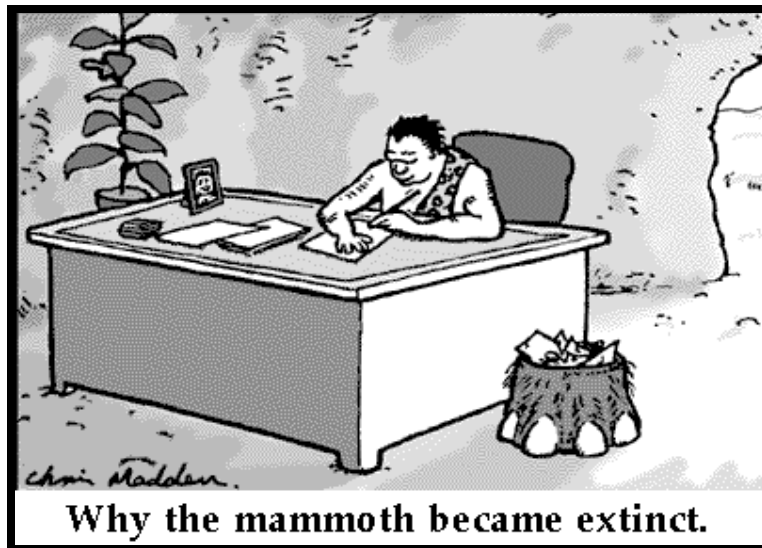
I would like to receive information about the one-day conference on THE
PLIOCENE-QUATERNARY NILE convened by Jamie Woodward and Rob Gawthorpe
that is taking place in Manchester on Thursday 21st June **Y/N**

Letter from the editor

For this newsletter to continue, it is essential that we receive contributions. If you read something relevant in a newspaper then please drop us a line. If you do something interesting then also let us know about it!

Further, we are looking for someone to take up the challenge of editing this newsletter. If you are keen, please email me on the address below. I will continue editing until someone volunteers – but since I have moved out of the Quaternary field, I am keen to hand over the position. Last month I commenced work on the political ecology of an air pollution case study in Durban, South Africa, supervised by Dr Emma Mawdsley. With a background in air pollution, environmental sciences and human geography, I feel I am back where I belong! But I have learnt a great deal during my 18 months in the Quaternary cluster and thank my colleagues for the friendship, mentorship and support. I am sure to be bumping into you in the corridors!

Editor: Lisa Ramsay (lfr26@cam.ac.uk)
Department of Geography, University of Cambridge



Cartoon by Chris Madden reproduced with permission (<http://www.goma.demon.co.uk/>)

Check out back-issues of CAMQUA on-line at
<http://www.quaternary.group.cam.ac.uk/camqua>
