

THE ARCHAEO+MALACOLOGY GROUP NEWSLETTER

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Editorial

This, the twelfth issue of the AMG Newsletter, includes a warning for us all to be aware of the possibility of misidentifications in molluscan reports from archaeological sites: these could have implications for the understanding of world history, as Henk Mienis describes below. Henk has also provided us with another archaeomalacological report from Israel (few other countries can have been so well studied in this respect), and our third article is an abridged translation of a report on the shell ornaments from a Magdalenian site in Switzerland, in an attempt to present it to a wider audience. This issue also includes a book review on Atlantic coast shell middens, abstracts of papers received, and conference news.

When I started to produce this biannual newsletter in 2001, little did I think that it would get as far as twelve issues (with hopefully many more to come). I would like to take this opportunity to thank all past and present contributors, and to put in my usual plea for contributions – without which there would be no newsletter.

My thanks as always are due to Kath Szabo of the ICAZ Archaeomalacology Working Group and to Aydın Östan for posting this newsletter on their websites: <http://triton.anu.edu.au/> and <http://home.earthlink.net/~aydinslibrary/AMGnews.htm>, respectively. These sites also host back issues of the AMG Newsletter. (JRS)

A record of *Mya* from the Yarqon River in Israel? So who actually discovered America?

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Sometimes when I read an archaeozoological report an alarm bell starts to ring. This happened, for example, when I read the report written by Husam El Din Abdel Hamid (1990) dealing with the shells discovered during the excavation of Mit-Rahena, part of the famous Memphis complex in Egypt. Based on the identifications in that report, one gained the impression that during the Old Kingdom (3100-2181 BC) the Egyptians maintained connections not only with the Americas (*Littorina fasciata* and *Dosinia elegans*), but also with the Central Pacific (*Cypraea ventriculus*). A look at the shells figured in that report revealed, however, that all of them represented molluscs commonly occurring either in the Mediterranean Sea or in the Nile River (Mienis, 2003).

That same bell started to ring again when I looked at a rather peculiar shell item found during the excavations at Ohalo II and figured in Nadel (1993). It was identified as belonging to a local freshwater mussel, *Unio terminalis*. However, I was struck by its colour pattern, which was quite unlike that of the thousands of specimens of *Unio terminalis* I had handled so far. An

examination of the item in question revealed that it was made of the shell of a Pearly or Chambered Nautilus, *Nautilus pompilius*, a species from the West Pacific. Moreover the late Dr Glenn Goodfriend, at that time working at the Weizmann Institute in Rehovot, dated it as being less than 200-300 years old, whereas the Ohalo II material is a 19,500-year-old assemblage (Mienis, 2005).

Fairly recently, while working on the recent and fossil aquatic molluscan fauna of the Yarqon River near Tel Aviv, Israel, I came across another weird identification. Gifford and Rapp Jr (1989) described a core, Gerisa 1, taken to a depth of -2.79 m from the banks of Nahal Ayalon where it enters the Yarqon River, as follows:

Gerisa 1 (at water level on Ayalon tributary adjacent to Tel Gerisa, Israel grid 13198/16704, elevation 0 m MSL (mean sea level):

0.00 m to -0.53 m: muddy, sandy gravel with fragments of plastic sheeting, grading to muddy sand at base;
-0.53 m to -0.84 m: sandy mud with lenses of muddy sand and plant fragments;
-0.84 m to -0.96 m: slightly muddy, medium sand;
-0.96 m to -1.04 m: dense clay;
-1.04 m to -1.52 m: muddy, gravelly sand with fragments of *Mya* shell;
-1.52 m to -1.82 m: well-sorted, medium sand;
-1.82 m to -2.06 m: poor sorted, gravelly muddy sand with pebbles up to 4 cm in diameter, including an abraded ceramic vessel handle (possibly of Persian date);
-2.06 m to -2.13 m: sandy mud;
-2.13 m to -2.28 m: muddy, sandy gravel with marine pelecypod shells (including articulated *Mya*), gastropod shells, and small abraded pottery fragments);
-2.28 m to -2.45 m: mud, with a large burned bone fragment and small wood charcoal fragments;
-2.45 m to -2.79 m: clay, with lighter coloured subangular rock granules.

Note the presence of fragments of *Mya* between -1.04 m to -1.52 m, and articulated shells of *Mya* between -2.13 and -2.28 m.

In fact, this is a rather absurd identification. The bivalve genus *Mya* Linnaeus, 1758 has a circum-Arctic distribution (Strauch, 1972). Two recent species are known from the northern part of the Atlantic Ocean: *Mya arenaria* Linnaeus, 1758 and *Mya truncata* Linnaeus, 1758.

Forms belonging to *Mya truncata*, the rarer of these two species, have been present in the East Atlantic at least from the Neogene Coralline Crag. During the Early Pleistocene period it entered the Mediterranean, where it is known in Italy from Sicilian and Calabrian outcrops, i.e. from colder epochs of the Mediterranean. Records from the East Mediterranean are not known. Today the most southern point of the distribution of *Mya truncata* in the East Atlantic is the northern part of the Bay of Biscay.

Mya arenaria was common on both sides of the North Atlantic until it died out in Europe at the beginning of the Pleistocene (Strauch, 1972). The oldest records of a new invasion of European waters by *Mya arenaria* were, until recently, all considered of post-Columbian age, i.e. man-made introductions that took place after 1492. However, Petersen *et al.* (1992) showed that, at least in the northern part of Jutland, Denmark, valves of *Mya arenaria* have been found in marine deposits dating back to AD 1245-1295, i.e. from the time of the Vikings. This means that most probably Leif Eriksson and his compatriots were not only responsible for carrying *Littorina littorea* from European waters to North America shortly after AD 1000, but also brought *Mya arenaria* back from America (see Mienis in Inchaustegui, 2006). Whether this formed the beginning of a new conquest of northern European waters by this large bivalve species or the main invasion only happened after 1492 has still to be confirmed by more archaeological finds. Although it has also recently been recorded as an invasive species in the Mediterranean (Zenetos *et al.*, 2004), fossil records from that region are unknown.

Therefore the question is raised: how do we interpret the records of *Mya* from the Yarqon River? None of the layers or items found in the core have been dated. The survey by Gifford and

Rapp Jr (1989) was carried out as part of the excavation of Tel Michal, supervised by archaeologists of Tel Aviv University. However, none of the specimens are present in either the zoological, palaeontological or archaeological collections of Tel Aviv University. Parts of the core were taken to the USA for further study, but had to be "destroyed" according to US law after completion of the analyses (George Rapp Jr, in litt.). Another possibility, mentioned by George Rapp Jr, is that the archaeozoologist, the late Dr Salo Hellwing who was associated with the Tel Michal excavation, looked at the shells in the core before they were taken to the USA. Usually Hellwing transferred such shells for identification to the late Prof. Eitan Tchernov of the Hebrew University of Jerusalem, who in turn passed on any archaeomalacological material to the present author. However, neither of us remember ever having seen *Mya* or any other shells from the Gerisa 1 core.

Therefore I have to admit that I failed to have a second look at the so-called *Mya* shells. That is a pity, because if it was indeed *Mya* then it was neither Columbus in 1492 nor Leif Eriksson in about 1000, but an unknown seafarer from the Levant who may have been the first man from the Old World to arrive in and return from the Americas!

This is, however, a most unlikely scenario. Most probably we are dealing here again with a case of wrongly identified material. Unfortunately I could not carry out a core at the same spot on the bank of the Ayalon tributary because today the pillars of a highway bridge are standing in that area. However, during excavations at Ramat Gan near the Seven Mills along the Yarqon River, by Dr Eitan Ayalon in the summer of 2001, large bivalves were found in several layers at about the same depths as they were found in the Gerisa 1 core from Nahal Ayalon. All these bivalves belonged to *Leguminaia saulcyi* (Bourguignat, 1852), a large freshwater mussel, which almost approaches the size of *Mya arenaria* (Mienis, 2002). Since the site of the Seven Mills is situated only some 500 m to the east of the place where the core had been taken, I tend to believe that the bivalves found in the Gerisa 1 core did not belong to a marine species and certainly not to *Mya arenaria*, but to a freshwater bivalve species, most probably *Leguminaia saulcyi* or another unionid species, which once inhabited the lower part of Nahal Ayalon and the Yarqon River.

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Molluscs from two soil samples taken at Horbat Hammim, Israel

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In January 2006 Dr Amir Gorzalczany (Israel Antiquities Authority, Tel Aviv) carried out an excavation at Horbat Hammim South (I.G. 148/144), in the vicinity of the new town of Modi'in, Israel. The site dates back to the Early Bronze I-A period.

Two soil samples were taken at the site for an archaeomalacological study. One was taken from the centre of a hearth (Locus 104, Basket 1025); the other consisted of heavy brown soil (Locus 109, Basket 1047). The soil samples were soaked and subsequently sieved with the help of a flour sieve in a steady stream of water. The residue was screened for the presence of molluscs. These shells consisted mainly of very small fragments and it was impossible to count the minimum number of individuals present in each sample. Altogether nine different species of terrestrial snails and one marine bivalve were recognised. The molluscan material was not equally distributed over the two loci. The hearth contained five gastropod species, while eight gastropod species and the bivalve were found in the heavy soil sample (Table 1).

	Date	25.01.2006	29.01.2006
	Sample	Hearth	Heavy soil
	Locus	104	109
	Basket	1025	1047
Species			
<i>Euchondrus chondriformis</i> (Mousson, 1861)		-	+
<i>Euchondrus septemdentatus</i> (Roth, 1839)		-	+
<i>Calaxis hierosolymarum</i> (Roth, 1855)		-	+
<i>Sphincterochila cariosa</i> (Olivier, 1804)		-	+
<i>Monacha obstructa</i> (Pfeiffer, 1842)		+	+
<i>Monacha syriaca</i> (Ehrenberg, 1831)		+	+
<i>Xeropicta vestalis joppensis</i> (Schmidt, 1855)		+	+
<i>Helix engaddensis</i> Bourguignat, 1852		+	+
<i>Levantina spiriplana</i> s.l.*		+	-
<i>Donax trunculus</i> Linnaeus, 1758		-	+

Table 1: Distribution of the molluscan finds from Horbat Hammim according to locus

* Only a single fragment, which could not be identified at the subspecies level

The large difference between the numbers of species present in the two soil samples is most probably directly correlated to the different composition of the soils. The heavy soil sample consisted almost entirely of very small particles of earth with only a few larger pieces of chalk; the soil from the hearth consisted for the main part of very small, burnt pieces of chalk. Burnt chalk is today a basic element in the cement industry and has well-known desiccating properties, which under certain circumstances may be lethal for terrestrial snails and slugs (Woodward, 1906; Mienis, 1994, 1999). The burnt chalk in the hearth may have created adverse conditions for snails, which subsequently avoided entering this locus.

The bivalve, *Donax trunculus*, was represented in the form of a single tiny fragment. It is an edible marine species from the Mediterranean Sea.

All the gastropods are common land snails, which still live in the vicinity of the site today. All these species are more or less characteristic of an environment with a Mediterranean climate and vegetation. If the nine gastropod species indeed represent an Early Bronze I-A terrestrial snail fauna, and are not later intrusions, then the climate prevailing during that period was probably hardly different from that of today.

I would like to thank Dr Amir Gorzalczany for allowing me to study this material.

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The Magdalenian site of Monruz, Switzerland Ornamental elements: the fossil shells

Jérôme Bullinger and Nigel Thew

(translated and slightly abridged by Janet Ridout-Sharpe)

The small assemblage of 38 pierced fossil shells collected at Monruz comprises four species: *Gyraulus trochiformis* (n=19, from the Steinheim Basin); *Viviparus suevicus* (n=11, from the Upper Danube); *Glycymeris* sp. (n=7, from the Mainz or Paris Basins); *Brotia escheri* (n=1, from the Upper Danube). The shells of *Glycymeris* sp. and *Gyraulus trochiformis* are generally well preserved, with three complete examples of *Glycymeris* sp. and 12 of *Gyraulus trochiformis*, while those of *Viviparus suevicus* are more fragmented. The single example of *Brotia escheri* is represented by five small fragments of the same shell.

Glycymeris sp.

The examples from Monruz may be *Glycymeris* cf. *obovata*; they could have come either from the Mainz Basin (Oligocene), or the Paris Basin. Three valves are entire, four are fragmentary. The maximum dimensions of the complete shells are 17, 18.5 and 20 mm. They are smaller than the shells of different species of *Glycymeris* from Upper Palaeolithic sites in France, where the mean values have two peaks at 20-27 and 40-50 mm, respectively. Two examples present a shiny surface, which suggests that the shells have been worn; the five others have a chalky appearance.

The three complete valves each present a single perforation at the tip of the shell, on the umbonal prominence. A plane surface of 1-2 mm around the hole, and a thinning of the shell wall attest to the technique of piercing by abrasion. The perforation of one shell is intact (2.6 mm in diameter), whereas those of the two other shells are broken at the hinge plate. The holes in these last two examples have an asymmetrical oval circumference (3.9 x 2.5 and 4.1 x 2.9 mm, respectively) and a shiny appearance due to the rubbing of the string used for attachment or suspension, which probably caused the enlargement of the hole due to the weight of the shell pulling against it, and hence the fracture. This type of wear pattern suggests that these pieces were freely suspended as pendants, or in a necklace.

Gyraulus trochiformis

This is a small freshwater gastropod with a conical, spirally coiled shell. Its origin is the Steinheim Basin, a Miocene basin 3.5 km in diameter located some 60 km to the east of Stuttgart. This is the most frequent species at Monruz with 19 specimens. The height of 12

complete shells varies between 2.8 and 6.9 mm; 23 small fragments ranging between 0.5 and 3 mm represent a further seven shells. Six of the shells present discrete marks of red ochre. Two specimens also contained residues of an orange colourant within the umbilicus. It is not possible to exclude intentional coloration, but the presence of large patches of red ochre on the site could equally well explain the presence of colourant on these pieces.

The artificial hole in these shells is consistently placed in the last whorl, just below the keel and opposite the natural aperture; this placement determines the oval form of the perforation. The latter, as with the *Glycymeris* valves, was produced by abrasion and the opening is found in the centre of a flattened zone. This flat surface bears the faint striae of abrasion, orientated in the direction of the large diameter of the perforation. The average size of the holes is 2.6 (range 1.9-3.1) x 1.5 (range 1.1-1.8) mm. On 11 pieces, the hole has been preserved in its entirety; in three cases, the edge of the hole is chipped. These straightforward breaks are attributed to the fragility of the shell and not to the effect of wear, in contrast to the *Glycymeris* valves. The very slight wear on the holes and the generally good preservation of the shells suggest that these elements were sewn onto a substrate, possibly clothing, rather than strung on the thread of a necklace.

Viviparus suevicus

This gastropod has a globular, spirally coiled shell. It is found in Miocene lacustrine levels in the Upper Danube region (Messkirch, Riedlingen, Kirchberg), where it is sometimes associated with *Brotia escheri*. None of the 11 shells was complete. The six most complete examples are broken on the last whorl, at the perforation. Seven examples show a shiny surface suggesting wear, while four are marked with small depressions or cupules where the shell surface has eroded or dissolved away. The height of the best preserved examples ranges between 7.5 and 9.5 mm and suggests that the shells are juvenile individuals, as was the case at the site of Petersfels where only juveniles or apical fragments of adult individuals were used.

The perforation is opposite the natural aperture of the shell and was made by abrasion. Although the position of the hole in relation to the natural opening is comparable to that in *Gyraulus trochiformis*, the fact that all the perforations have been damaged suggests that the shells were deployed in a different way. This type of break suggests drag or traction caused by the thread between the lip of the shell and the edge of the perforation, probably in relation to the mode of attachment.

Brotia escheri

This is an elongated, spirally coiled shell with an ornamented surface from the Miocene lacustrine levels of the Upper Danube. The fragmentation of the single example found at Monruz is too extensive to allow any perforation to be discerned.

Spatial distribution on site

All the shells of *Gyraulus trochiformis* were concentrated at the edge of Hearth R54 in an area of about one square metre, which suggests that they had been lost together at the same time. In contrast, *Glycymeris* and *Viviparus suevicus* were more dispersed. Two valves of *Glycymeris* were found on the perimeter of Hearth C61, two more next to Hearth R54 and two small fragments, probably from the same shell, were found in two adjacent metre squares (K53 and K54). Three fragments of *Viviparus suevicus* were collected next to Hearth V57 and may represent the same shell as they were found within a distance of little more than 3 m.

The geographical distribution of the fossil shells

Glycymeris sp. is relatively frequent in the Magdalenian levels of the Jurassic arc and adjacent regions. This shell has been particularly noted at the sites of Hollenberg-Höhle 3, Kohlerhöhle,

Chesselgraben, Kastelhöhle Nord, Rislisberghöhle, Kesslerloch, Schweizersbild, Petersfels, Hohle Fels and the Romains Cave. *Gyraulus trochiformis* is only present in the Magdalenian levels of Petersfels, Felsställe and Hohle Fels. This shell is also present in Mesolithic levels in south-west Germany. *Viviparus suevicus* is found in the same Magdalenian deposits of south-west Germany as *Gyraulus trochiformis*, namely Petersfels, Felsställe and Hohle Fels, and also Gnirshöhle. In Switzerland, Kohlerhöhle and Schweizersbild have also produced one example each. *Brotia escheri* is only present in two Magdalenian deposits in the Jurassic arc, Petersfels and Hohle Fels. No Magdalenian site in France appears to have yielded *Gyraulus trochiformis*, *Viviparus suevicus* and *Brotia escheri*. Monruz therefore appears to be the most westerly site within the distribution area of these three species.

The distances over which these shells were transported, which can be deduced from their probable collection sites, are important: about 260 km for *Viviparus suevicus* and *Brotia escheri*, and about 300 km for *Gyraulus trochiformis*. As for *Glycymeris* sp., which could have come either from the Paris or Mainz Basins, the distances are greater than 350 km. Their mode of transport – whether they were collected directly from the fossiliferous deposits or transmitted indirectly through the intermediary of neighbouring groups – remains to be determined.

Source

Bullinger, J. and Thew, N., 2006. Les éléments de parure: les coquillages fossils. In: Bullinger, J., Leesch, D. and Plumettaz, N. (eds), *Le site magdalénien de Monruz, 1. Premiers éléments pour l'analyse d'un habitat de plein air*. Neuchâtel, Service et musée cantonal d'archéologie. (Archéologie neuchâteloise 33.) pp. 154-158.

***Nassarius* shell beads at the dawn of human culture**

Another dig at a Middle Palaeolithic site in North Africa has yielded dated evidence for the very early use of *Nassarius* shells as beads: 12 deliberately perforated shells, stained with red ochre, were excavated from deep cave deposits at Grotte des Pigeons at Taforalt in northern Morocco and dated to 82,000 BP. This African shell bead tradition is more than twice as old as that of Upper Palaeolithic Europe (Barton, 2007).

This follows on from the report of *Nassarius* shell beads from Palaeolithic sites at Oued Djebbana in Algeria and Skhul in Israel (Vanhaeren *et al.*, 2006). Analysis of sediment matrix adhering to one of the shells from Skhul provided a date of 100,000-135,000 BP, although this date has since been questioned as the Skhul material was excavated back in the 1930s. In contrast, the Taforalt shells were recently excavated and have been dated using four independent dating methods (Natural History Museum, 2007). It now appears that *Nassarius* shells have been found at other Palaeolithic sites in Morocco, and it is expected that these may turn out to be as old or older than those from Taforalt.

Nassarius beads have also been found in a Middle Palaeolithic context in South Africa. In 2004 it was reported that 41 perforated shells had been excavated at Blombos Cave and dated to 75,000 BP. This was then considered to be the earliest evidence for the use of shell jewellery (Henshilwood *et al.*, 2004). Like the Taforalt shells, these shell beads bore traces of red ochre.

These finds from North Africa, Israel and South Africa represent the corners of a triangle and suggest that some time after 100,000 BP personal ornamentation came into widespread use in Africa and the Near East. Together they represent the earliest signs of the beginnings of modern human culture or 'symbolic behaviour'. The three points of the triangle are represented by different stone industries, suggesting that such behaviour had spread right across the early human range by that time, and would have been carried by modern humans as they dispersed from Africa over the last 100,000 years (Natural History Museum, 2007).

A possible parallel may be drawn between this very early shell bead tradition and the use of beads by recent African groups as exchange media to reinforce reciprocity networks, thereby ensuring the survival of the group in times of environmental stress (Barton, 2007). [JRS]

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Book review

Shell middens in Atlantic Europe

Edited by Nicky Milner, Oliver E. Craig and Geoffrey N. Bailey, and published by Oxbow Books, Oxford, in 2007. ISBN 978 1 84217 243 8.

This book is the result of a workshop on shell middens in Atlantic Europe, which was held at the University of York in September 2005. There has been a notable resurgence in the excavation of shell middens over the last few decades, which has been accomplished by the development of a range of new scientific methods applicable to shells and other midden components. The contents are organised geographically, starting with Scandinavia and moving down to include Britain, Ireland, France and Iberia. Some papers provide historical reviews of the status of shell midden research in their respective areas; others are case studies, and several papers provide information on recently developed scientific techniques that are being applied to shell midden sites along the Atlantic façade.

Hein Bjerck, Søren Andersen, Caroline Wickham-Jones, Nicky Milner and Peter Woodman, Catherine Dupont with Rick Schulting and Anne Tresset, and Miguel Fano provide overviews of shell midden research in Norway, Denmark, Scotland, Ireland, France and Cantabria, respectively. Case studies providing more in-depth information on less well-known sites are written by Nigel Melton and Rebecca Nicholson (A Late Mesolithic-Early Neolithic midden at West Voe, Shetland); Jose Manuel Rolão and Mirjana Roksandic (The Muge Mesolithic complex: new results from the excavations of Cabeço da Amoreira 2001-2003); Eva Schaller Åhrberg (Fishing for storage: Mesolithic short term fishing for long term consumption [on the Skagerrak coast, western Sweden]); and Lydia Zapata, Nicky Milner and Eufrosina Roselló (Picos Ramos cave shell midden: the Mesolithic-Neolithic transition by the Bay of Biscay).

Papers discussing the application of scientific methodology to shell midden sites are presented by Anders Fischer (Coastal fishing in Stone Age Denmark – evidence from below and above the present sea level and from human bones [=underwater archaeology and stable isotope evidence]); Carl Heron with Oliver Craig, Marcus Foster, Ben Stern and Søren Andersen (Residue analysis of ceramics from prehistoric shell middens in Denmark); Marcello Mannino and Kenneth Thomas (Determining the season of collection of inter-tidal gastropods from $\delta^{18}\text{O}$ analysis of shell carbonates); Nina Nielsen (Land snails and shell middens: a new approach in Danish archaeological research [=palaeoenvironmental reconstruction]); and Tim van der Schriek with David Passmore, Anthony Stevenson and Jose Manuel Rolão (The influence of environmental change in Mesolithic settlement-subsistence and shell midden formation along the Lower Tagus River, Portugal [=geomorphological mapping and sedimentary analysis and dating]). In addition, Jordi Estévez and Assumpció Vila (Twenty years of ethnoarchaeological

research in Terra del Fuego: some thoughts for European shell-midden archaeology) provide an interesting perspective on shell midden excavation methodology.

With the identification of a range of new sites, shell middens are now seen to be far more variable than was once thought. The earliest sites to be described, which are often referred to as 'type sites', are in fact no longer representative of the majority. Throughout the Atlantic façade, shell middens vary in size, composition and time span. They can no longer be automatically assigned to the Mesolithic: many are later. It is suggested that the pattern of shell midden occurrence represents a subtle interplay between the marine biotope and environmental change, preservation, residential stability and cultural factors such as food preferences and taboos. A final discussion chapter, by Atholl Anderson, suggests ways forward for shell midden research in Atlantic Europe from a Pacific perspective. This book is a valuable addition to the literature on shell middens, bringing together many scattered aspects of a wide-ranging and hitherto rather neglected aspect of archaeomalacology. The editors are to be congratulated on pulling this excellent volume together; the only quibble is the rather poor quality of some of the illustrations. [JRS]

Abstracts of some recent publications

With thanks to Henk Mienis and David Reese for the following papers:

Galili, E., Zviely, D., Ronen, A. and Mienis, H.K., 2007. Beach deposits of MIS 5e high sea stand as indicators for tectonic stability of the Carmel coastal plain, Israel. *Quaternary Science Reviews*, 26: 2544-2557.

ABSTRACT: Ten beach deposits situated within or close to seasonal stream (nahal) channels on the Carmel coastal plain, northern Israel, are discussed. The morphology and lithology of most of the deposits are similar, comprising mainly fine quartz sand and calcium carbonate-cemented marine mollusc shells (mostly Glycymerididae, Cardiidae and Donacidae). Their uppermost elevation varies from 0 to 9 m above present sea level. The marine gastropod *Lentigo latus* (syn. *Strombus bubonius*), which is an index fossil for the MIS 5e high sea stand in the Mediterranean, was found in the deposit from Nahal Ahuza. The presence of this species, Th/U, AAR and RTL dating, and the presence of Middle Palaeolithic flint artefacts (including Levallois flakes) relate these beach deposits to the last interglacial maximum about 125 ka BP. An unexpected find was *Architectonica nobilis* from the Nahal Kebara deposit, which today is found off the coasts of West Africa and western Central America and in the Caribbean; other gastropods from these deposits were *Patella caerulea* and *Hexaplex trunculus*, which are common in the eastern Mediterranean today. By comparing the elevations and characteristics of these beach deposits with known MIS 5e deposits elsewhere, it is concluded that the Carmel coastal plain has remained relatively tectonically stable during the last 125 ka.

Láng, O.T., 2006. Decorated *Pinctada margaritifera*: new data to the presence of eastern people in the civil town of Aquincum? *Communicationes Archaeologicae Hungariae*, 2006: 149-161.

ABSTRACT: A fragment (10.7 x 6.6 cm) of a large valve of *Pinctada margaritifera* from the Red Sea was found in the 'Diana Sanctuary' in the Roman town of Aquincum, Pannonia, in 1993. The valve is decorated with two running animals, possibly lions, which had been formed by drilling numerous 1 mm-diameter dots on the inner pearly surface. A third, unidentifiable figure and three 3.5 mm-diameter circle-and-dot patterns can also be seen. Workshops for similarly decorated shells are known in Syria, Jordan and Israel, and it is suggested that it might

have been brought to Pannonia during the movement of eastern people into the region following the Marcomannic wars in the 3rd century AD. It is the first example of its kind so far to be found in Europe.

Mienis, H.K., 2006. The local and freshwater molluscs. In: Garfinkel, Y. and Dag, D. (eds), *Gesher: A Pre-Pottery Neolithic A site in the Central Jordan Valley, Israel. A final report. Berlin, ex oriente (Bibliotheca neolithica Asiae meridionalis et occidentalis)*. pp. 175-180.

ABSTRACT: This excavation yielded 291 non-marine mollusc shells and fragments, representing nine species: *Theodoxus jordani*, *Melanopsis buccinoidea*, *M. costata*, *Sphincterochila cariosa*, *S. fimbriata*, *Monacha obstructa*, *Xerocrassa langloisiana improbata*, *Helix engaddensis* and *Unio terminalis*. Aquatic shells accounted for 45.7% of the total and it is considered that these were probably natural inclusions in the mud used for the production of bricks. Despite the high frequency of burnt molluscs (43.6%), it is doubtful that they served as food items; instead, partial burning suggests that the settlement may have been destroyed by fire. The land snails are characteristic of a dry steppe habitat and indicate a climate similar to that of the present day.

Mienis, H.K., 2007. Shells. In: van den Brink, E.C.M., Tel Malot (east). *Hadashot Arkheologiyot: Excavations and Surveys in Israel*, 119 (Journal 7/2/2007): 7 pp. Available online: <http://www.hadashot-esi.org.il>.

ABSTRACT: In January-February 2006, two 4 x 4 m trial excavations (Squares A and C) were conducted in a low-lying agricultural area c.150 m south-east of Tel Malot, in advance of a gas pipeline. Square A contained the remains of two Late Chalcolithic pits, dated from artefact evidence. Two shell fragments, parts of the ventral margin of valves of *Glycymeris insubrica* and *Chambardia rubens arcuata*, were found. Both these species are well known from other Chalcolithic sites in Israel.

Mienis, H.K., 2007. Archaeomalacological finds from Tel Te'o, Hula Valley, Israel. *Triton*, No. 16: 29-31.

ABSTRACT: Twenty samples of molluscan material resulting from the excavation of Tel Te'o in advance of highway construction, and dating to the Pre-Pottery Neolithic (PPN), Pottery Neolithic (PN) and Chalcolithic/Early Bronze I (Ch/EBI), contained 32 shells and fragments representing just four species: the freshwater *Melanopsis costata* (PPN=2, PN=1) and *Unio terminalis* (PPN=15, PN=12), and the marine bivalves *Glycymeris insubrica* (Ch/EBI=1) and *Cerastoderma glaucum* (PPN=1). The *Cerastoderma* valve and one of the *Unio* valves from the PPN showed a man-made hole at the umbo and these shells may have served as pendants. The edible *Unio terminalis* is not known to occur today in the vicinity of Tel Te'o.

Mienis, H.K., 2007. Archaeomalacological material from Tel Kitan, Israel. *Triton*, No. 16: 32-34.

ABSTRACT: The excavation of Tel Kitan, on the west bank of the River Jordan, in 1975-1978 yielded just 18 shells of land and freshwater molluscs representing six species: *Theodoxus jordani ponsoti* (n=2), *Melanopsis buccinoidea* (n=1), *Monacha obstructa* (n=1), *Helix engaddensis* (n=6), *Unio terminalis* (n=6) and *Chambardia rubens arcuata* (n=2). Most of the shells (12) were found in Chalcolithic deposits; the rest were from Early (1), Mid (3) and Late Bronze levels (2). All the species are of local origin except for *Chambardia* (one specimen each from the Chalcolithic and Late Bronze I), which was imported from the Nile.

Mienis, H.K. and Ashkenazi, S., 2006. Remains of egg capsules from *Theodoxus* on 780,000- and 14,000-year old shells from Gesher Benot Ya'aqov. *Haasiana*, No. 3: 70-71.

ABSTRACT: The remains of 38 egg capsules of *Theodoxus* sp. were found on the surface of a single adult shell of *Melanopsis costata* from 780,000-year-old Lower-Middle Pleistocene material from the Acheulian site of Gesher Benot Ya'aqov in the Upper Jordan Valley, Israel. The same deposit contained specimens of *M. buccinoides*, *T. jordani*, *T. michoni*, *Unio* sp. and *Viviparus* sp. Similar *Theodoxus* egg capsules were also found inside four broken shells of *Melanopsis* in groups of two, three, four and six, respectively, in material from the Epipalaeolithic site (13,450-14,850 BP) of Gesher Benot Ya'aqov, which is about 1 km north of the Acheulian site; this layer contained *M. costata*, *M. buccinoides*, *Theodoxus* sp., *Valvata saulcyi*, *Heleobia longiscata*, *H. contempta*, *Unio terminalis* and *Pisidium* sp. The egg capsules may provide information on the seasonality of the sediment deposits.

Reese, D.S., 2006. Faunal remains. In: Betancourt, P.P. (ed.), *The Chrysokamino metallurgy workshop and its territory. Hesperia Supplement 36*. Athens, The American School of Classical Studies at Athens. pp. 149-152.

ABSTRACT: Several species of marine molluscs were recovered from a slag pile and an apsidal structure at a Minoan metallurgical site in Crete. These are mostly edible species that could have been collected from the seashore in the vicinity of the site. The slag pile contained pottery dating from the Final Neolithic to Middle Minoan 1A, 61 limpets (*Patella caerulea*) and six topshells (*Monodonta turbinata* [*Osilinus turbinatus*]). The apsidal structure, dating from Early Minoan III to Middle Minoan 1A, contained 35 limpets, 34 topshells, three fragments of *Fasciolaria lignaria*, two *Columbella rustica* (one complete shell and one fragment), single shells/fragments of *Alvania montagui*, *Cerithium vulgatum* and *Pisania maculosa*, and scanty remains of fish, crab and sea urchin.

Reese, D.S. (in press). Marine shells. In: Barako, T.J. (ed.), *Tel Mor – a Late Bronze Age Egyptian outpost in southern Canaan. The excavations directed by Moshe Dothan 1959-1960*. Jerusalem, Israel Antiquities Authority (IAA Reports 32). pp. 233-238.

ABSTRACT: Except for a large sample of thousands of *Murex brandaris* [*Bolinus brandaris*] recovered from a deep well in a probable dyeing workshop dated to the Hellenistic period, relatively few shells were collected from this site: 19 from Late Bronze Age contexts, one from Iron Age I, one from the Hellenistic period, and eight undated shells. Most (16) are *M. brandaris*, followed by three *Ostrea edulis*, three *Murex trunculus* [*Hexaplex trunculus*], three *Acanthocardia tuberculata* and three *Glycymeris* sp. Two specimens each of the two bivalve species were naturally holed and may have served as ornaments. A single hinge fragment of *Pinctada margaritifera* was also recovered: this species occurs in the Red Sea, whereas all the others are Mediterranean. The Hellenistic purple dye industry at Tel Mor is compared with other such sites in the Levant.

And finally:

Ridout-Sharpe, J., 2007. Molluscan evidence. In: Peltenburg, E. (ed.), *The Chalcolithic cemetery of Souskiou-Vathykakas, Cyprus. Investigations of four missions from 1950 to 1997*. Nicosia, Department of Antiquities, Cyprus. pp. 141-150.

ABSTRACT: Forty-two (39.3%) of the 107 tombs listed at Souskiou-Vathykakas yielded molluscan material: 15 species of marine shells and 2616 individuals (complete and fragmentary), of which 2516 (96.2%) were dentalia, and 22 species of land snails comprising over 1200 individuals. This site appears to be unique with regard to the large number of dentalia

found, mostly the small *Antalis inaequicostatum* (n=2423) with a few *A. vulgare* (n=4), but also including the large ribbed Pliocene fossil, *Dentalium sexangulum* (n=89). A single tomb contained 1180 *A. inaequicostatum*, and 87 of the *D. sexangulum* also came from a single tomb. Other species of marine shells were found in only 12 (11.2%) of the tombs and were present in low numbers: all appear to have been collected as dead shells. Some, but not all, of these shells were perforated for suspension. Similarly, some of the dentalia were too fine to have been threaded as beads. None of the shells exhibited thread wear. It is suggested that the dentalia may represent the accumulation of wealth, rather than ornaments, or simply reflect opportunistic beach combing after a storm.

Readers are reminded that abstracts of papers published in the Archaeo+Malacology Group Newsletter may reach a wider audience than the original printed publications. Authors are invited to send paper copies to JRS at the postal address at the top of page 1; alternatively, articles may be sent as pdf files to j.ridout-sharpe@cabi.org (please note this is a different email address from that given on page 1).

Conference news

ICAZ Archaeomalacology Working Group, Santander, February 2008

The 2nd Meeting of the Archaeomalacology Working Group will be held at the University of Cantabria, Santander, Spain, from 19-22 February 2008. The theme of the meeting will be 'Not only food: marine, terrestrial and freshwater molluscs in archaeological sites'. Studies of molluscan remains typically concentrate on diet, but other aspects of human existence, such as palaeoenvironmental context, trade and exchange, and artefact production will also be discussed. There will be two days of sessions presenting papers on the many aspects of mollusc use by human societies, and two days of field trips to shell midden sites and caves with Palaeolithic art.

For the latest information on this meeting, including registration, transport and accommodation, see <http://grupos.unican.es/prehistoria/novedades/icaaz.html> (also available in English) and http://triton.anu.edu.au/santander_meeting.htm.

World Archaeological Congress, Dublin, July 2008

The 6th annual World Archaeological Congress is scheduled to be held at University College Dublin, Ireland, from 29 June to 4 July 2008. For submission of papers and the scientific programme, contact Gabriel Cooney, Academic Secretary, WAC-6, UCD School of Archaeology, Belfield, Dublin 4, Ireland; email: wac6programme@ucd.ie.

More information is available at www.ucd.ie/wac-6.

Congress of the European Malacological Societies (CEMS), Azores, September 2008

The 5th CEMS meeting will be held at the University of the Azores, Ponta Delgada, São Miguel, Azores, on 2-6 September 2008. This meeting is being organised by the Instituto Português de Malacologia (IPM) and the Marine Palaeobiogeography Working Group (MPB) and will be held jointly with the 2nd Atlantic Islands Neogene International Congress (AINIC). Themes will include biogeography, the role of collections and the conservation of freshwater molluscs.

For more information, see <http://www.uac.pt/~cicia/5thcongr/index.html>.
