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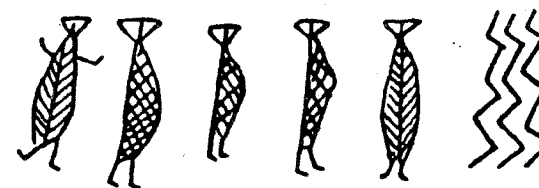
Mesolithic Miscellany appears twice a year, usually in May and November, as an informal communiqué among individuals interested in the European Mesolithic. The yearly subscription is US\$4 or £3. European subscribers should send payment directly to Clive Bonsall, Department of Archaeology, University of Edinburgh, 16-20 George Square, Edinburgh, Great Britain. North American subscribers should apply directly to the editor. Individuals for whom currency exchange may be difficult should contact Clive Bonsall at the address above. Subscriptions for 1990 are due.

From the Editor

This is our tenth anniversary year! One way or another the newsletter has now been around for ten years. If you wish, we can probably go on for another ten. But please remember to contribute to this newsletter. If you enjoy reading about the work of others, chances are they will enjoy reading about yours. Mesolithic Miscellany publishes research reports, book reviews, national synopses of recent excavations and research, statements for debate, conference summaries, important radiocarbon dates, announcements and summaries or abstracts of recent publications to inform readers of current developments in the field. Recent Publications is a category that is particularly important and particularly difficult to keep up-to-date. Reprints or simple citations of your work would be most useful. Please prepare a brief abstract of the article or publication if one is not included in the text. We always need more reports, reviews, and papers from you, the reader. The deadline for the May issue of Volume 11 is 31 April 1989.

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Mesolithic Miscellany

November 1989

Volume 10 Number 2

MUSHOLM BAY

Excavation of a submarine settlement
in a drowned forest 9 meters below present sea level

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In 1988 a test excavation was conducted at a submarine Stone Age site lying 8 to 9 meters below sea level in Musholm Bay, off the shore of Western Zealand, Denmark. The site was originally lying in a small bay close to a river mouth. This location has been ideal for fishing with such stationary fish traps of wattle and wicker, as were used in this country until the turn of the century.

Traces of habitation were found scattered between trunks of trees having formed at littoral forest prior to the transgression of the site. Besides numerous finds of worked flint the cultural remains include shells of hazel nuts as well as bones of fish and terrestrial mammals. From the style of flint manufacture the site belongs to the Kongemosean epoch. The typology of the flint points (broad trapezes, Figure 1) indicates a date before the stage usually termed older Kongemose.

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Arrowheads sharing the typological characteristics of the Musholm Bay site (i.e. type N in Fischer 1985 fig. 34 and 1989b fig. 10) are known from surface collections in various parts of Denmark. Among the numerous excavated settlement sites of Mesolithic age from this country, assemblages characterised by such flint tips are however totally lacking.

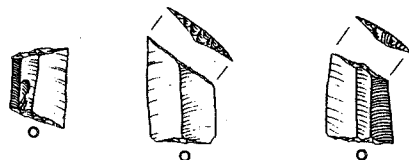


Figure 1. Arrow points from the Musholm Bay site.
Scale 1:1. Drawn by K. Petersen.

As to size and topographic location the site is clearly related to the seasonally and socially "complex" coastal settlements of the subsequent stages of the Mesolithic (cf. Fischer Vol. 8 No. 1 and Vol. 9 No. 1 of this newsletter).

Until radiocarbon and pollen dates from the site itself become available its absolute age can only tentatively be defined by the aid of typology and shore line displacement. On the one hand it must be older than the "older Kongemose" stage, which is dated as far back as approximately 7,500 b.p. (Petersen 1984). On the other hand it must be younger than a submerged oak trunk found in the vicinity of the site at a depth of approximately 10 meters. This tree, which probably died as its roots were transgressed by the ocean, has been dated to 8070 ± 110 b.p. Thus the site must belong to the almost unexplored, half a millenium long interval around the transition from the Maglemosian to the Kongemose epoch.

The site is not just the oldest known excavated coastal habitation of the Danish area. It is also the deepest lying Stone Age site having been systematically excavated by underwater archaeological methods.

Considering the relatively small effort invested in locating and excavating submerged sites from the Old Stone Age, the results from various parts of the Danish sea floor indicate the potential of such investigations in many shallow water areas all over the world.

Acknowledgements: The excavation of the Stone Age site in Musholm Bay was conducted by the Danish Forest and Nature Administration in cooperation with Kalundborg Museum and the Department of natural sciences of the Danish National Museum.

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Olenii Ostrov: Radiocarbon dates from a major Mesolithic cemetery in Karelia

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The site of *Olenii ostrov* (Red Deer Island) is one of the most important in northern Europe. On an island in Lake Onega, Karelia, USSR, excavations between 1938 and 1936 uncovered the skeletal remains of 177 human individuals and associated artifacts, found in 141 distinct graves. These data derive from the accession records in Leningrad (studied along with the skeletal material by K.J. in 1986) and corroborated from information in Gurina 1956.

The total number of graves at the site is estimated to have been ca. 400, making it the largest known Stone Age cemetery in Europe. More than 7000 artifacts were recovered including a variety of decorated pieces, pendants, perforated teeth, and effigies of snakes, elk, and humans. The absence of pottery in the graves and the similarity of the artifacts to materials in known contexts suggested a Mesolithic date (Pankrushev 1978). The large size of the cemetery and the wealth of artifacts led Ravdonikas (1940) to argue that it was Neolithic, dating to the second millennium B.C. Gurina (1956: 14) is more specific, postulating a date of 2350 B.C. Shoreline displacement studies also support a pre-Neolithic age for these remains (Siiriäinen 1973).

Olenii ostrov has been the focus of other studies as well, including one concerned with status differentiation among hunter-gatherers (O'Shea and Zvelebil 1984). Chemical analysis of the human bones, however, suggests a largely carnivorous diet with no differences in diet by sex or age or status categories (Price n.d.).

Examination of the human skeletal remains by Jacobs (1987, n.d.) documents an unexpected profile of the dental and osteological nature of the skeletal sample. Considering only

the maxillary and mandibular canine through third molar bucco-lingual breadths, fully 33% of the Olenii ostrov means fall below those of Skateholm, a contemporaneous site in southern Sweden (data graciously provided by Dr. David Frayer) as well as from a large series of Scandinavian Neolithic site (data from Dr. Dana Cope).

Some 45% of the dental breadth means from Olenii ostrov are intermediate between those of Skateholm and the Neolithic sample. However, in these cases, the range of variation for Olenii ostrov never overlaps that of Skateholm and, in the majority of cases, encompasses the Neolithic mean. In only a single case (male mandibular M3) does the mean breadth for Olenii ostrov exceed that for Skateholm and the Scandinavian Neolithic sample. However, there was considerable overlap of the ranges of variation of the three.

Obviously, Olenii ostrov is a site of major significance for the Stone Age of northern Europe for a number of reasons. Most of the Mesolithic burials in northern Europe (e.g., Vedbæk, Skateholm) date to ca. 4000 B.C. The skeletal remains of the individuals in these graves are generally very large and robust. The skeletal remains from Olenii ostrov are incredibly gracile. While conditions of preservation and the relatively primitive nature of the excavations resulted in few complete skeletons, the existing crania and post-crania are extremely gracile and reminiscent of what had once been assumed to be proto-typical "Neolithic." This fact, plus the complexity of the mortuary rituals, has contributed to the idea that the Olenii ostrov cemetery dated to the Neolithic.

The question of the actual age of these materials has until now remained unresolved, leaving open the problem of their position in the chronology of the later Mesolithic and Neolithic. Recent acquisition of bone samples from the skeletal materials and the advent of accelerator mass spectrometry (AMS) in radiocarbon dating have made possible a series of determinations from the cemetery. The radiocarbon dates for samples of human bone from five different individuals from Olenii ostrov are listed in Table 1.

Table 1. Oxford Accelerator Radiocarbon Dates from Olenii ostrov

OxA#	Material	Burial #	Fraction	Date b.p.	Notes
1664	Human bone	57	Crude Collagen	5700±80	1
1665	Human bone	57	Gelatin	7280±80	
1666	Human bone	57	Ion-ex. Gelatin	6100±90	1
1667	Human bone	80	Crude Collagen	7330±90	
1668	Human bone	80	Gelatin	7560±90	2
1669	Human bone	80	Ion-ex. Gelatin	7560±90	
1972	Human bone	89	Ion-ex. Gelatin	9020±450	
2124	Human bone	89	Amino Acids from Ion-ex. Gelatin	7280±90	
2125	Human bone	85	Amino Acids from Ion-ex. Gelatin	7510±90	
1973	Human bone	108	Ion-ex. Gelatin	7750±110	

1. The sample has an IR spectrum indicating the presence of conservation contaminants and the date is therefore biased. The sample contains carbon that is of a different age from the bone and does not reflect the true age of the bone.

2. This sample gave a low beam in the accelerator - hence the large error for the date - and is also biased. The measured date has no relationship to the age of the bone.

These determinations were made by the Radiocarbon Accelerator Unit of the Research Laboratory for Archaeology and the History of Art at Oxford University. All the dates are in uncalibrated radiocarbon years BP using the half life of 5568 years. Samples OxA-2124 and OxA-2125 both had measured $\delta^{13}\text{C}$ values of -20.1‰ [parts per mil], while the others used an assumed $\delta^{13}\text{C}$ of -21‰. All dates have been normalized to a $\delta^{13}\text{C}$ of -25‰.

Sample numbers refer to the acquisition numbers from Olenii ostrov. Sample 57 was a mid-shaft portion of a radius, most likely from the left site. Sample 80 was a lower left parietal near the sphenoidal angle. Sample 85 as a mid-shaft portion of a right humerus. Sample 89 was either part of a frontal vault, or more likely a parietal vault. Sample 108 was very probably parts of the left occipital squama and posterior parietal.

These samples were heavily conserved and contaminants were carefully removed by the accelerator unit. This cleaning resulted in four different chemical fractions: (i) crude collagen, (ii) gelatin, (iii) ion-exchanged gelatin, and (iv) amino-acids from ion-exchanged gelatin. The procedures used to produce these fractions, and the techniques used to measure the samples are described in *Archaeometry* 31(2), 1989, pp. 99-114. Several of the techniques for cleaning and removal of the contaminants are new and will be described by Housley and others in the near future.

The carbon isotope values from the Olenii ostrov samples are more negative than those from other Mesolithic sites in northern Europe. The $\delta^{13}\text{C}$ values from Vedbæk range from -13.4 ‰ to -15.3 ‰ (parts per mil) and are close to measurements from historical Greenland Eskimo remains where the diet is known to have been based primarily on marine foods (Tauber 1981). Measurement of a human skeleton from Tybrind Vig in Denmark gave a $\delta^{13}\text{C}$ value of -15.7 ‰, indicative of a primarily marine component in the diet. The skeletal materials from Skateholm gave $\delta^{13}\text{C}$ values ranging from -16.8‰ to -20.1‰ (Håkansson 1982, 1984). The values from Skateholm are lower than those from Vedbæk and Tybrind Vig, perhaps reflecting a more terrestrial diet or the more freshwater nature of the Baltic. The $\delta^{13}\text{C}$ values of -20.1‰ from Olenii ostrov fall at the low end of the range from Skateholm, emphasizing the greater importance of terrestrial species in the diet, possibly including significant quantities of freshwater fish.

Removing the three biased samples (OxA-1664, OxA-1666, OxA-1972), the measurements from Olenii ostrov suggest a date for the cemetery ranging from approximately 7300 to 7700 BP, clearly in the Mesolithic. The dietary, dental, cranial and postcranial data and the new radiocarbon determinations combine to present a biological picture of this population that is out of step with what seems reasonable from the previously accepted archaeological models, based solely on western and central European sites and chronologies. There are numerous possible interpretations, including, but not limited to, a different source of origin for the gene pool represented by this sample. Rather than representing the Danube basin Neolithic expansion, it is entirely possible that there was a very early and sizable gene flow up the Dnepr, Volga, and Don basins as well. Perhaps additional evidence for this movement will begin to appear.

Acknowledgements. The authors would like to acknowledge and thank those individuals and institutions that made this study possible. Rudolf Fernandovitch Its of the Museum of Anthropology and Ethnography was a great friend and singularly responsible for access to the skeletal material, including the bone samples reported here. Also essential was the cooperation of I.I. Gokhman and Sasha Kozintsev, of the Institut antropologii, MAE, in Leningrad. Ken Bennett of the University of Wisconsin made the bone identifications given in this report. Paul Mellars of Cambridge referred the dating to the Oxford Laboratory. Rupert Housley and the staff of the Radiocarbon Accelerator Unit of the Research Laboratory for Archaeology and the History of Art at Oxford University kindly undertook the project, developed several new cleaning techniques, and measured the samples that were submitted. The interest and cooperation of all these individuals made this study possible.

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The Lateglacial/Early Flandrian Hunter-gatherer Site at Three Ways Wharf, Uxbridge, Middlesex, England

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The Museum of London's Department of Greater London Archaeology has been undertaking a program of excavations in the medieval market town of Uxbridge, Middlesex, since 1983 (Fig. 1). In 1986 a proposal to redevelop a large site near the River Colne resulted in an approach to the developers, Trafalgar Brookmount Ltd., for funding to conduct trial excavations. The trial work was aimed at documenting the development of the medieval town and assessing the survival of prehistoric deposits in the valley bottom. The excavation located an undisturbed sequence of sediments containing in situ flint artifacts and associated fauna which, it transpired, offered the opportunity for dating and characterizing the archaeological transition between the late Devensian and early Flandrian in Britain. As a result, in December 1987, a six month developer funded excavation program commenced; this was subsequently extended until the end of August 1988 with a grant from English Heritage.

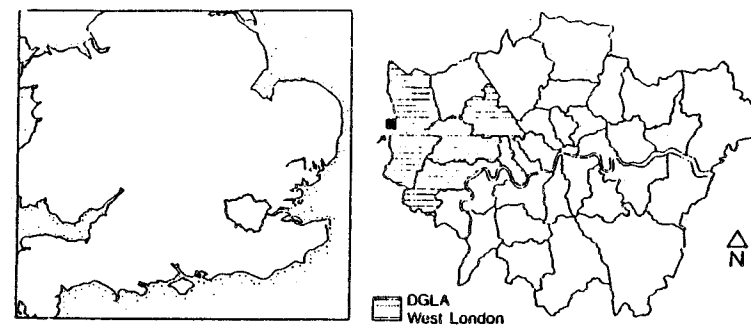


Figure 1. Location of Three Ways Wharf, Uxbridge, Middlesex, England

This article is intended as an initial statement of results and the potential of the site. A more complete interim report will appear shortly. It must be stressed that the great majority of post-excavation analysis is still to be done; the results of those analyses will necessarily modify the views expressed here.

The Excavation

The full-scale excavation was conceived from the outset as a multi-disciplinary project aimed at studying the archaeology within a detailed paleoenvironmental and paleotopographical framework. Lithic and skeletal material were three-dimensionally recorded while most of the excavated sediments (in excess of thirty tons) was sieved to recover microdebitage and microfauna. Pollen, ostracod, molluscan, and soil micromorphology samples were also taken.

The basal deposits encountered at the site were found to be of fluvial origin and to consist of gravels overlain by argillic sediments deposited by gentle overbank flooding. These may be interpreted as permanently damp surfaces temporarily stabilized by sedge cover. Human occupation would have occurred on these surfaces prior to burial by sediment from more overbank flooding. Within the sequence is a grey clay horizon which contained three in situ flint and faunal scatters (Fig. 2). It is assumed that these scatters represent the product of hunting and food processing activities.

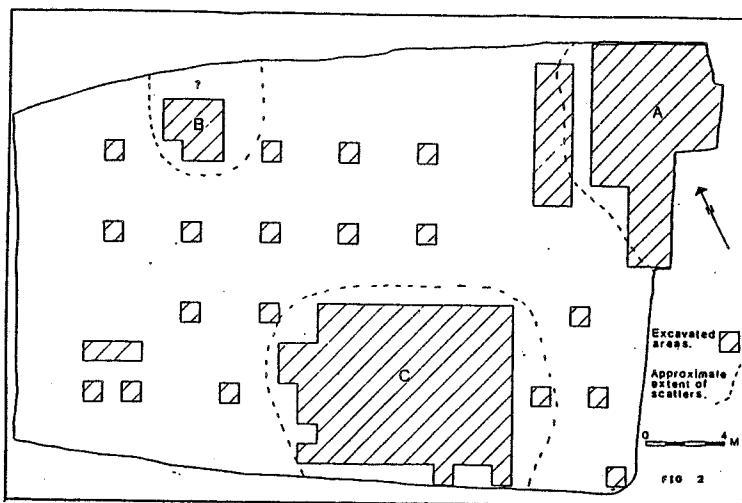


Figure 2. Artifact Scatters A-C at Three Ways Wharf

Scatter "A"

This area produced ca. 700 pieces of flint, bearing some affinity to the "Long Blade" industries of the Lateglacial period (Barton 1989) and ca. 100 fragments of bone. The flint assemblage comprises 11 opposed platform cores, six obliquely backed points, and a heavily edge-damaged crested blade ("lame machuree"). The rest of the assemblage is composed of knapping waste and unretouched flakes and blades, a number of which display faceted butts. The obliquely backed points are virtually the only constituent of the retouched tool element, which represents ca. 1% of the assemblage. No microburins have been identified, although this does not preclude the use of the technique.

The fauna so far identified consist of a horse mandible and fragments of reindeer bone. One or two pig teeth were also present. Two radiocarbon dates have been obtained from the horse material:

OxA 1778 10,270±100 BP (uncalibrated)
OxA 1902 10,010±120 BP (uncalibrated)

Scatter "B"

The low density of flint in the second scatter suggests that the excavated area lies at the edge of a more substantial concentration to the north which has probably been destroyed by a back-filled canal dock. The 24 pieces of flint are non-diagnostic, apart from a small opposed platform core.

Scatter "C"

The third scatter yielded some 7000 pieces of flint and ca. 2000 fragments of bone, some of which have been charred. The retouched tool element of scatter "C" is composed of obliquely backed points (made with microburin technique), end scrapers, burins, and a fragment of a tranche axe. Unretouched utilized blades, as well as pyramidal and opposed platform cores rejuvenated by removing core tablets are also present. Burnt flint produced a thermoluminescence date of:

OxTL 772f 8000±800 BP

Thus the lithic assemblage is of broadly early Mesolithic type, while the associated fauna is dominated by red deer. No horse or reindeer material has so far been identified in this area. The large, tightly associated lithic and faunal assemblages provide an unparalleled opportunity in Britain for studying functional behavior of an early Mesolithic hunter-gatherer group.

Overlying and sealing the artifact horizon was a black clay with a strong organic and charcoal content, dated on the basis of pollen evidence from ca. 8500 BP to ca. 8000 BP. This layer probably represents a sedge swamp (Wiltshire in press); the large quantities of charcoal likely are derived from both in situ burning and from in-washed soils destabilized by the burning of surface vegetation (McPhail and Wiltshire, pers. comm.). The rest of the sequence is comprised of deposits ranging from a late Neolithic/ early Bronze Age occupation horizon to the gatehouse of a Tudor mansion.

Further Work

At present the Department is negotiating with English Heritage over the level of analysis and funding required to fully publish the site. It is hoped to employ a variety of techniques to study the lithic, faunal, and other environmental materials. The distributions of these assemblages would then be analyzed three dimensionally and the micro-topography of the site studied. A further series of radiocarbon dates from scatters A and C is also envisaged. In conclusion, it is hoped that the Three Ways Wharf site will greatly advance our knowledge of the archaeology and environment of the Lateglacial/Flandrian transition.

Acknowledgements

I would like to thank Trafalgar Brookmount Ltd. and English Heritage for funding the project, and Andrew David, Chris Bergman, and Nick Barton for their support. I would especially like to thank all my colleagues at the Museum of London as well as the other specialists who have worked on the project.

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Mesolithic Graves from Spiginas, Lithuania*

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The site of Spiginas is located on the largest island in Lake Birzulis in west Lithuania (Fig. 1). One Neolithic and three Mesolithic graves were discovered during archaeological investigations there in 1985-86.

Grave 1 (Mesolithic) was destroyed during World War II, and only pieces of long bones and skull were preserved. Two flint arrowheads of early Kongemose microlithic type (Fig. 2) were found among the bone fragments.

Grave 3 (Mesolithic) was intact but the condition of the human bone was very poor and only the leg bones were preserved.

Grave 4 (Mesolithic) the skeleton of a 30-35 year old female, buried in a supine position was found (Fig. 3). The outline of the grave was marked with red ochre, concentrated particularly in the head area. Grave goods (flint tools and animal tooth pendants) were placed with this burial. Two flint blades (Fig. 4) were discovered in the area of the chest. There were seven animal tooth pendants found in the region of the chest and legs. These pendants were from elk and beaver teeth, perforated through the roots (Fig. 5). The grave is radiocarbon dated to 7470 ± 60 b.p (GIN5571 - Moscow).

According to the physical anthropology, odontological, and paleopathological data (G. Cesnys, I. Balciuniene, R. Jankauskas 1987), the female from Grave 4 belongs to the group of mesomorphic, brachycranial Caucasoids with a moderately wide face. Her height was 154.9-157.1 cm, body build was fine, musculature was well developed, especially in the extremities, and, judging from the pubic sympheses, she had borne 3-4 children.

At a distance of 8 m from Graves 3 and 4 was found an oval pit, filled with red ochre, with a diameter of 40 cm and a depth of 5 cm. A single flint blade was found in the pit.

Based on the burial rites and grave goods, the remains from Spiginas are quite similar to the late Mesolithic graves from Avejnieki (north Latvia) and the Mesolithic graves from Janislawice (Poland). However, the flint tools and the radiocarbon date suggest that these graves are more closely related to the Kongemose culture circle.

Burial traditions observed in the graves of Spiginas and connected with the Kongemose circle continued on the other island in Lake Birzulis (Duonkalnis) at a late Neolithic burial site where 14 graves have been excavated.

*Presented at the Soviet-Danish Symposium, "Interaction of Ancient Cultures in the Baltic Sea Basin, Leningrad, November 1989.

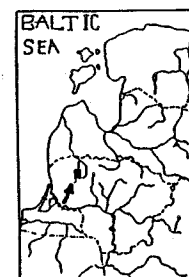


Figure 1. Location of the site of Spiginas in Lithuania.



Figure 2. Microlithic points from Grave 1

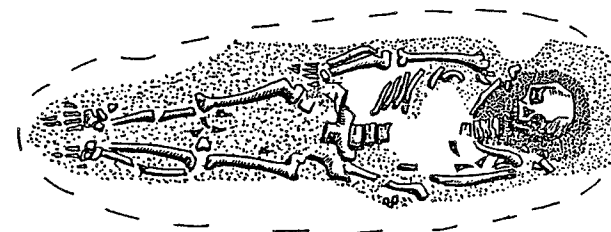


Figure 3. Grave 4 at Spiginas.

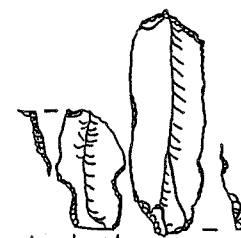


Figure 4. Flint blades from Grave 4.

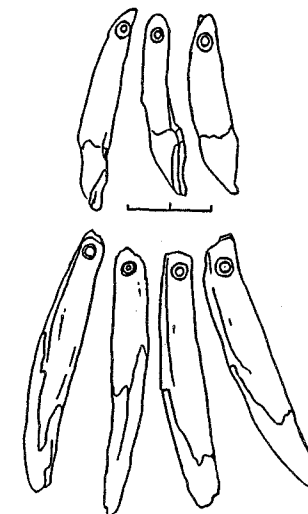


Figure 5. Perforated elk and beaver teeth from Grave 4.

NEW PUBLICATIONS

Andersson, Stina, Carl Cullberg, Karin Rex-Svensson, and Johan Wigforss. 1988. *Fångstfolk för 8000 år sedan - om en grupp stenåldersboplatser i Göteborg*. Arkeologi i Västverige 3. Göteborgs arkeologiska museum.

Bang-Andersen, Sveinung. 1988. New findings spotlighting the earliest Postglacial settlement in northwest Norway. *AmS-Skrifter* 12: 39-51. Stavanger.

Within the last decade 10 settlement sites of supposed Preboreal age, with artifact inventories and flint technology in clear conformity with the Fosna tradition, have been located on the coast line of southern Hordaland and northern Rogaland. These new findings seem to determine a far more southerly extension of the Fosna tradition along the western coast of Norway than generally believed. The lack of early Postglacial on the coastline of southern Rogaland is most probably illusory, caused by a complicated and only partially understood shoreline regression history. Now, however, an extraordinarily well preserved 9000-year old settlement site - recently investigated at Myrvatnet in the interior of southern Rogaland - indirectly sheds light on this question.

Baroni, Carlo, and Paolo Biagi. 1988. Rinvenimento di manufatti mesolitici sulla Collina di Ciliverghe (Brescia). *Natural Bresciana* 24: 269-274.

A Mesolithic assemblage from the Ciliverghe Hill (Brescia - Northern Italy). The flint industry from Ciliverghe is attributed to a Late Mesolithic Castelnovian complex which flourished in Northern Italy between the first half of the VI and the second half of the V millennium b.c. A similar assemblage had already been recovered from Monte Netto di Poncarale, an isolated hill rising from the northern Po Plain.

Biagi, Paolo, R. Maggi, and R. Nisbet. 1987. Primi dati sul Neolitico della Liguria Orientale. *Estratto Dagli Atti della XXVI Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria*. Firenze.

The authors take into consideration the Early Neolithic sites recently discovered in the eastern Ligurian Apennine as well as a few stations which produced rare chipped stone artifacts of the same age. The eastern Ligurian Impressed Ware potsherds are similar to those of the so-called Tuscan group "a linee dentellate" while relationships with the western Ligurian Arene Candide group are totally absent. Many of the sites examined seem to have been occupied both by Mesolithic and early Neolithic communities, but where sporadic Mesolithic tools are present, the Neolithic assemblages are rich in finds and vice versa. Some considerations of the exploitation of the nearby jasper outcrops and on the flint trade together with some hypotheses on the exploitation of the landscape and the activities developed in the various sites conclude the paper.

Borgognini, S.M., D. Della Santina, P. Francalacci, and E. Repetto. 1989. Reconstruction of Mesolithic Diet using Dental Microwear and Trace Element Analysis. The Case of Grotta dell'Uzzo (Sicily). In *People and Culture in Change. Proceedings of the Second Symposium on Upper Paleolithic, Mesolithic, and Neolithic*

Populations of Europe and the Mediterranean Basin, edited by I. Hershkovitz, pp. 283-320. British Archaeological Reports, International Series, 508.

Grotta dell'Uzzo is up to now the only Italian Mesolithic site in which an appreciable number of human skeletal remains have been found during recent excavation. This work continues the research in dietary reconstruction, already attempted by the study of dental microwear and pathology and of skeletal indicators of subsistence patterns, extending it by means of the study of dental microwear and trace element analysis.

Dental microwear was examined by direct observation under an optical stereomicroscope. The wear patterns were classified according to the literature, with the exception of some features not previously described. Frequency distributions of common features were analyzed by tooth category, arch, side, and individual. Further quantitative data were obtained by the analysis of measurable features. The results point to the presence of non-alimentary tooth use such as grasping and pulling of fibers and to the use of probes. Alimentary wear patterns indicate various kinds of abrasive contaminants in the diet as well as the effects of occlusal stress and pressure chippings.

A multi-elementary approach to dietary reconstruction was performed in parallel. The amounts of Ba, Cu, Mg, Mn, Sr, V, and Zn were measured in faunal and human bones. Statistical elaboration of the data shows a behavior difference for the seven elements. In particular while Zn and Ba provide an excellent discrimination between carnivores and herbivores, V and especially Mn show clear evidence of diagenetic alteration. High levels of Zn can be noted in human bones, even higher than in those of carnivores.

The integration of archaeozoological, paleobotanical, dental, and trace element analysis evidence suggests a diversified, balanced diet with a constant vegetable intake including fruits, berries, and nuts and an appreciable animal protein intake based mainly on deer and wild boar but relying significantly on marine food, especially molluscs.

Breest, Klaus. 1987. Ein spätmesolithische Seidlungsplatz im Übergang zum Protoneolithikum bei Grabow, Ldkr. Lüchow-Dannenberg. *Die Kunde* 38:49-58.

Cloutman, E.W. 1988. Palaeoenvironments in the Vale of Pickering. Part I: Stratigraphy and palaeogeography of Seamer Carr, Star Carr, and Flixton Carr. *Proceedings of the Prehistoric Society* 54: 1-20.

Cloutman, E.W., and A.G. Smith. 1988. Palaeoenvironments in the Vale of Pickering. Part 3: Environmental history at Star Carr. *Proceedings Prehistoric Society* 54: 37-58.

The new evidence presented in this paper is perhaps best summarized by a description of the local environment of the Star Carr occupation area as it can now be understood. The occupation was on the N side of the relatively narrow outflow channel of an extensive lake. The area occupied was apparently on the dryland as well as on the wetland. It was at the lower end of a shallow gully running down from low birch-clad hillocks to the north. If the native birchwoods of Scotland provide any parallel, the birchwood would have been rather open and airy, and dry underfoot. Towards the wetland, willows became dominant and the ground cover was perhaps somewhat denser.

The reconstruction made by Walker and Godwin in 1954 first demonstrated the close proximity of the occupation to open water. We have found addi-

tional evidence of an inlet in the predominant reedswamp and fen. The occupants of the sites described by Clark would, therefore, probably have had a view of the open water in the lake only immediately in front of them. To the east of the major occupation area there were also engaged in some activity on the edges of the wetland, in an area of fen dominated by ferns and sedges. They consolidated the dampest area with timbers. Further offshore the fen became wetter, and was dominated by tall, tussocky, saw sedge.

As the occupants faced the lake at Clark's original site, the fen would have formed an extensive tract to their left, fringed by reed swamp, before giving way to open water. This wide, wet expanse of sedges and reeds ran up to a spit of land extending out into the lake from the hillock that gave shelter from the N and E. Because of the height to which both the saw sedge and the great reed grow, however, the spit would have been largely invisible from the occupation area except where clothed by birch. The area to their right has not been investigated in detail but it also would have been covered by quite extensive fen and reedswamp. The general impression is that the site was chosen for its shelter and easy access to the lake. At no other place in the immediate area did the open water so closely approach the shore. It is notable also that the site could be approached over dry land from the N and that it was situated on the outflow channel of the lake which itself may have had some characteristics of special importance as compared with the lakeshore in general.

Dewez, M., J.M. Cordy, E. Gilot, S. Koslowski, E. Mourer, and G. and M. Toussaint. 1988. *La Couche Mésolithique de la Grotte du Coléoptère a Bomal-sur-Ourthe (Belgique)*. Second Edition. Société Wallonne de Paléontologie, Mémoire 5.

Jochim, Michael. 1988. *Mittelsteinzeitliche Forschung am Federsee. Archaeologische Ausgrabungen in Baden Württemberg 1987*: 35-38. Stuttgart: Konrad Theiss.

Larsson, Lars. 1988. The use of the landscape during the Mesolithic and Neolithic of southern Sweden. In *Archeologie en Paysage*, edited by M. Bierma, O.H. Harsema, and W. van Zeist, pp. 31-48. Groningen.

Larsson, Lars. 1988. A construction for ceremonial activities from the Late Mesolithic. *Meddelanden från Lunds universitets historiska museum 1987-88*. New Series 7: 5-18.

A rectangular construction, measuring 4 x 4 m which both in shape and composition with archaeological investigation of a find-complex comprising settlement remains and graves at the site of Skateholm II in southern Scania, Sweden, dated to an early part of the Ertebølle culture. Its outer limits were demarcated by a belt of sand-admixed red ochre on all sides, enclosing an area of soot-admixed sand. A trapezoid-shaped, thin layer of red ochre underlay the latter in the western half, where post-hole colorings were also documented, as well as a hearth. The latter is most probably of later date than the remainder. The circa 16 m² area could have been covered by a roof-construction which was colored by red ochre. The abundant occurrence of red ochre, the deposition of bone and flint concentrations in the res'outer belt and its location in the grave-field are factors which lead to the conclusion that the construction had primarily a ritual function. No similar constructions are

known from the Mesolithic period, but certain parallels are obtained through the study of constructions from both the Late Paleolithic and Neolithic periods.

Larsson, Lars. 1988. *Ett fångstsmåhålle för 7000 år sedan. Boplatser og graven i Skateholm*. Kristensstad: Signum.

Legge, A.J., and Peter A. Rowley-Conwy. 1988. *Star Carr Revisited. A re-analysis of the large mammals*. Centre for Extra-Mural Studies, Birkbeck College, University of London.

Mikkelsen, Egil. 1989. *Fra Jeger til bonde. Utviklingen av jordbrukssamfunn i Telemark i steinalder og bronsealder*. Universitets Oldsaksamlings Skrifter. Ny rekke 11. Oslo. 441 pp.; illus. [From hunters to settled farmers. The development of agrarian societies in Telemark in the Stone Age and the Bronze Age. English summary].

Through a detailed analysis of Mesolithic finds from Telemark, four adaptational models for this phase (the Nøstvet/microblade phase) have been suggested. They are based partly on evaluations of the available resources in the different ecological zones, partly on the location of settlement sites and on analyzes of the raw material of the lithic component, etc. The main principle employed in our models is the assumption that hunters minimize the cost of getting food: the easiest way is to leave the storage of food to nature and to move (if necessary) to that area where the resources are most easily exploited at the different seasons.

During the late Mesolithic two hunting groups lived by the coast the whole year (Models B and C). This was a relatively stable type of adaptation and settlement, made possible by the combination of the exploitation of marine and coastal resources and plant food, with task groups making periodic migrations to exploit larger land mammals in the nearby forest districts in the autumn and winter. A third group (Model F) made seasonal migrations between the coast and the mouth of the fjord in the spring and summer while exploiting reindeer in the mountain district during the autumn and winter. The last adaptational model (Model G) is also mainly based on the exploitation of marine resources in spring and summer near the mouth of the fjord. The hunting group paddled up the fjord during the summer, visited the winter camps by the inner part of the fjord, and moved on to the mountains to hunt reindeer in the autumn. When winter came they moved to their camps back at the fjord.

It is important to keep this Mesolithic pattern in mind when we study why and how agriculture was introduced in our country. There are several observations made at the settlement sites which support a continuity in the exploitation of resources from the Mesolithic to the Neolithic, and there is no conclusive evidence that agriculture was brought in by migrating farmers. A number of factors may explain why agriculture was adopted into a previously Mesolithic economy. One important cause was the rise of the timberline in the

mountains which resulted in a decrease in the reindeer population. As land mammals became less available, hunting groups began to exploit the increasingly rich marine and coastal resources more heavily. This led to a more stable settlement and an increase in the people which created a relative population pressure.

Nándris, John G. 1988. The r- and K-strategy societies of Lepenski Vir in early Neothermal perspective. *Revista di Archeologia* 12: 6-13.

Noe-Nygaard, N. 1988. $\delta^{13}\text{C}$ values of dog bones reveal the nature of changes in man's food resources at the Mesolithic-Neolithic transition. *Chemical Geology (Isotope Geoscience Section)* 73: 87-96.

Carbon isotope ratios of bone collagen yield important information on the nature of the human diet. Non-marine foods are characterized by significantly lower $\delta^{13}\text{C}$ values than foods of marine origin. Analysis of dog bones reveals a diet comparable to humans from the same site. Measured differences in collagen isotope content at coastal sites between Mesolithic hunter-gatherers and Neolithic farmers is ca. 6 parts per mil. This value confirms the mixed hunting-gathering food sources of man from the early Neolithic coastal sites and shows that agricultural food plants and animals constitutes ca. 70% or more of the total diet in the Neolithic.

Schadla-Hall, R.T. 1988. The Early Post Glacial in Eastern Yorkshire. In *Essays in Honor of T.C.M. Brewster*, ed. by T.G. Marby, pp. 25-34. Sheffield University Press.

The aim of this paper is firstly to briefly characterize and assess the existing evidence of earlier Mesolithic activity in eastern Yorkshire, to once again examine Star Carr against that general background, and finally to offer alternative interpretations and new directions for the examination of the earlier Mesolithic period.

Thomas, Julian. 1988. Neolithic explanations revisited: the Mesolithic-Neolithic transition in Britain and south Scandinavia. *Proceedings of the Prehistoric Society* 54: 59-66.

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IV International Symposium, The Mesolithic in Europe

Katholieke Universiteit Leuven, 18 -23 September 1990

GENERAL INFORMATION

Second Circular

Organizing Secretary:

Pierre M. Vermeersch
Laboratorium voor Prehistorie
Instituut voor Aardwetenschappen
Redingenstraat 16 bis
B - 3000 LEUVEN
Belgium
Tel. 016/226920 (office)
016/203717 (private)

Dates

The symposium will open at 9.00 am on Tuesday 18 September 1990. Participants should arrive in the afternoon of Monday 17 September 1990 before 11 pm. The final session will end on Sunday 22 September 1990 at 6.00 pm.

Accommodation

Accommodation will be in Justus Lipsiuscollege, Minderbroedersstraat 15, in the center of Leuven. Each participant will have a single study-bedroom. Participants should note that unfortunately there are no facilities for receiving them prior to the evening before the opening of the symposium or after Monday 23 September. If you wish to stay for a longer time, the Organizing Secretary can provide advice on finding hotel accommodation, but the cost will be borne by the participant.

Payment of Fees

The fees for the full 6-day symposium are:

Symposium participants	BEF 7000
Accompanying Persons (guests)	BEF 6000

This total includes a fee for administration, participation in all plenary sessions, accommodations, breakfast and lunch. (There are plenty of good and cheap restaurants in the immediate vicinity for dinner.) The fee also includes a copy of the published symposium papers which will reach the participants by end July 1990. A small additional charge may have to be added for the field excursion on 20 September 1990. Payments must be made in BEF (Belgian Francs) and sent with the final Registration Form to the Organizing Secretary to arrive no later than 31 December 1989. Payments can be forwarded by:

- Eurocheque
- or a cheque drawn in BEF on a Belgian Bank;
- of by post giro transfer on account number 000-1181995-50

Payments should be made to P. Vermeersch, Redingstraat 16 bis, B-3000 Leuven. On receipt of your symposium Fee/Registration Form you will be sent an acknowledgement. In the event that you have to cancel your plans to attend the symposium, your money will be refunded in full, provided that you notify the Organizing Secretary by 1 August 1990. Thereafter, a cancellation charge may be applied.

Registration

You are asked to use the official Registration form to confirm that you will be attending the Symposium. This form must be completed and returned with your payment of 7000 BEF (13000 BEF if accompanied by a guest) to the Organizing Secretary, if possible by 31 July 1989, but certainly not later than 31 December 1989.

Symposium Program

More than 100 papers have already been proposed for the symposium; the majority of the proposed lectures are regional review contributions. Such a high number of lectures is a major organizational problem. Since in the Edinburgh discussions the parallel sessions and poster presentations were not favored, we could propose to organize four daily regional sessions with very short paper presentations (10 to 15 minutes) and a longer discussion. This would provide the opportunity for all participants to rapidly obtain new information on the regional scale. We will try to organize a one day excursion into the field (Belgium, Southern Netherlands) visiting Mesolithic sites.

Publication

In order to have a profitable discussion it is important that, before the start of the Symposium, each participant has already had the opportunity to read all the papers. Therefore we urgently request that all participants forward their contribution in final draft by the end of February 1990. This would give us the opportunity to edit a volume of the kind of a good quality offset book by the end of July 1990. It will bear the title "Contributions to the Mesolithic of Europe."

Each participant will receive a copy of the book. No offprints will be made available as each author can make copies of his published contribution. The fee for guests does not include a copy of the published papers but they will be able to obtain one at a special concessionary price. Participants may also purchase additional copies of the published volume. Guidelines for preparation of manuscripts will be provided on request.

Travelling to Leuven

Participants are responsible for making their own travel arrangements. Leuven is easy to reach by air, rail, or road. There is a frequent (every 30 minutes) fast train from Brussels which is linked with a frequent train from Brussels airport (Zaventem). Direc-

tions for getting to Justus Lipsiuscollege will be provided later. Arrangements can be made to meet participants at the airport or railway station on request.

Further Information

A third and final announcement containing full details of the Symposium will be circulated in June 1990. All correspondence and enquiries should be directed to the Organizing Secretary, P. M. Vermeersch.

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A Correction

Lawrence Straus
University of New Mexico

The bear ulna from Azilian Stratum 3 of the Abri Dufauré is of *Ursus arctos* (the common brown bear), not *Ursus spelaeus* (the cave bear) as was reported in *Mesolithic Miscellany*, May 1989.