Reviews

GÖRAN BURENHULT (ed.): *The Archaeology of Carrowmore. Environmental Archaeology and the Megalithic Tradition at Carrowmore, Co. Sligo, Ireland.* Theses and Papers in North-European Archaeology 14. Stockholm 1984. 396 pp.

This volume is the fourth and final volume publishing the results of the Swedish Archaeological Expedition to the Carrowmore megalithic cemetery in western Ireland 1977–1982. Being the final volume, it includes material which has already been published in the earlier ones and thus, by itself, offers a comprehensive presentation of the archaeological and ecological material and results obtained through the period covered by the field work. The most detailed description of the megalithic tombs of Carrowmore is, however, to be found in the volume published in 1980 by the Institute of Archaeology, University of Stockholm.

This – fourth – volume is divided into four parts, the first one being Göran Burenhults own presentation of the Carrowmore project in all its many facets, both archaeological and those concerned with such aspects as cultural ecology, physical environment and paleoenvironment studies. The second contains the environmental and economical analysis, while the third part deals with Neolithic hut sites and the kitchen middens in the area. The final part publishes contributions from the participants of the Carrowmore Seminar held in August 1982. Here many current problems of megalithic and Neolithic research in North-western Europe are presented and discussed by Irish, British and Scandinavian scientists.

In the first part of this Carrowmore publication the introduction shows the reader that the Carrowmore Research Project is indeed a very well-structered one. Three main aims are presented: The first, to establish the cultural and chronological sequence for the megalithic cemetery, to date the main types of tombs and to study the time-span during which they were used; the second was to identify a territory and resource area, mainly for the Stone Age populations, by locating settlements as well as food and raw-material resources in the area around the megalithic cemetery, while the third was to study the ecology of the area in order to understand the cultural adaptations and the shifts in the subsistence-settlement system.

The research-project was focussed on the Knocknarea Peninsula in Co. Sligo (on the west-coast of Ireland) as a whole, the area which surrounds the Carrowmore cemetery, and the thoroughness with which the initial examination was carried out can be judged from the fact that both field, aerial (including infrared photography) and phosphate surveys were performed (the last-mentioned only in selected areas) – it was from the results of these that certain sites were chosen for test-excavations and finally, from these last, certain points worthy of more detailed study were decided upon. Together with this work – concerning the whole area of the Knocknarea Peninsula – four megalithic graves of different types were investigated in the Carrowmore cemetery itself.

A good deal of work has been done to analyze and describe the physical environment of the Knocknarea Peninsula – for instance the project has used radar exposures taken from the space shuttle Colombia to describe the geological surface of the area, while the description of the environment also includes the different ecological resources in the region, which consist of a remarkable variety of ecological zones such as the Atlantic coast, the estuaries, the rivers, the lake district, the lowlands, the mountain slopes, and the high mountains. Perhaps, not too surprisingly, the region offers conditions very favourable to a prehistoric population, which could have utilized the different zones at different times of the year. A short chapter also sums up and discusses the paleoecological results, published in detail in the second part of the book.

Perhaps the most important part of the Carrowmore project is the excavation of four megalithic tombs from the megalithic cemetery which consists of 63 more-or-less well preserved graves, which do not seem to belong to the Irish passage grave tradition, apart from the grouping of the monuments and the finds of certain passage-grave artifacts in some of them. The very thorough excavation technique and the intensive use of C14 dating have revealed interesting facts about the use and construction of megalithic tombs: For instance, grave no. 7, which is a polygonal dolmen, does not seem to have had any covering cairn, there is a posthole in the center of the chamber, which marks the center of the boulder circle around it, while, in corners of it, four intact cremations were found, partly inserted in the dry-walling between the orthostasts in such a way that they must have been deposited during the actual construction of the monument. Grave 4 shows different building phases of the stone-circles around the stone cist. In many of the graves the essential grave-goods seem to be cremated seashells, but outside the tombs the survey test holes gave no evidence of this. The many C-14 dates show that the graves have been used both in the Bronze Age and the Iron Age, but the most astonishing C14 dates are related to the construction-phase or the early use of the tombs. Charcoal from the central post in grave 7 has yielded the date 3290 ± 80 b.c., which, considering the statistical weakness of this method, can just fit in with the earliest C14 datings of megalithic tombs in

the British Isles. From grave no. 4, however, comes the dating 3800 ± 85 b.c. and this indeed very early date will be further discussed below. From another grave come three datings around 3000 b.c.

Due to the very intensive surveys many settlement sites were found in the area, both kitchen-middens and hut sites, but none can be dated to the late Mesolithic and the earliest Neolithic, which is a pity since it was especially sites from this period which could give us deeper knowledge of the cultural environment of the megalithic tombs. The earliest C14 date from the kitchen middens is 2760 ± 100 b.c., but from a later part of the Neolithic was found some hut sites with dates around 2400 b.c. The bulk of the settlement material is of late Neolithic, Bronze Age, and Iron Age date, though in the early Christian period the kitchen middens were still in use.

The reason why the material before and around 3000 b.c. is missing, seems to be that the sea level in that period was considerably lower than today. At the coast, covered by shallow water, has been found submerged peat which both from the pollen analysis and the C14 evidence can be dated to between appr. 3700 and 3200 b.c. The sea level would thus have been lower at this time, and the kitchen midden material would have been washed away. This does not correspond with the evidence of the Atlantic maximum of eastern Ireland, where this, at different sites, is dated to around 3300–3200 b.c. Göran Burenhult states that "the discovery of a present day submerged peat... has however thrown new light on the local differences of marine submergence limits" (p. 38). In part three of the book (p. 326) Inger and Sven Österholm comment on these circumstances in a diverging way – they seem to reject the evidence from eastern Ireland by referring to the Scandinavian date of the littorina transgressions which, they tell us, culminated 6500 years ago and which will be in accordance with the date of a regression at Knocknarea at around 3500 b.c. – "after all sea levels must be almost the same in Ireland as in Scandinavia". The sea levels must of course be the same, but not the terrestrial uplift. I see no reason to invoke evidence from the very complicated Scandinavian transgressions in this context, since it has been known for long that the transgression maximum does not occur at the same time in the different regions: for instance there are clear differences in such a relatively small geographical area as Denmark. Since the transgression maxima even in Scandinavia do not mark an absolute chronological horizon, we cannot postulate any such horizon including both Scandinavia and Ireland. It can be added, that the Atlantic maximum in northern Ireland seems to be earlier than the maximum in eastern Ireland, which also seems to be the case in western Scotland and Shetland, where it is to be found shortly before 3500 b.c. Thus we must admit that the maximum Atlantic sea level can occur at different times in different regions due to differential terrestrial uplift.

The cultural-historical part ends with a shorter discussion and interpretation of the results obtained, which is also very stimulating, but – since it is an interpretative part – much can be disputed. One feels that perhaps more Irish and British evidence could have been included in this interpretative part – on the other hand, the contributions from the participants of the Carrowmore Seminar and the published discussion of this, remedy the lack. It is indeed not very often, but most praiseworthy, that an archaeological monography ends with reviewing articles and discussios of itself by prominent scholars, as does this book, thus giving the reader much better opportunities to see results and interpretains in a wider context. Some of the arguments expressed below have thus already been mentioned in the Carrowmore-book itself.

G. Burenhult's model based upon the Carrowmore project is that the megalithic tombs started being built as early as in the Mesolithic period by a population which, due to the extremely favourable ecological conditions, had developed a relatively highly structured social system. During what we call the late Mesolithic and the early Neolithic, megalithic tombs were built at Carrowmore, and the economy mostly based on the excellent coastal resources showed little change. The megalithic cemetery is regarded as being the central point of a society (and its territory) which utilized mainly non-agricultural resources within a 5 km radius around it. Since, according to this model, there only seems to be very little economical and social change in the time around the beginning of the Neolithic, Burenhult suggests that we perhaps need to break up the definitions "Mesolithic" and "Neolithic" and find other, less rigid ways of defining the changes.

Even though this model is very fascinating and we can find some parallels in certain hunter-gatherer societies such as the North-West Coast Indians, it is nevertheless built upon the author's own assumptions, whilst others might have been considered. The Mesolithic date of the beginning of the megalith building is based on a single C14 date (3800 ± 85 b.c.). One must look very critically on such a single-standing date and test it on the archaeological evidence available. We must admit that the C14 method is a statistical one, not an absolute one, and even though the charcoal used for the date seems to come from a primary position, we also know that a few datings out of a hundred must be wrong, just because of the statistical weakness of this method. Perhaps this date is such one, since all other dates of megalithic tombs and earthen long barrows in the British isles and Ireland are early Neolithic or later, both seen from the archaeological and the C14 evidence. Burenhult mentions some dates in support of the earlyness of this tomb: At Ballynagilly in northern Ireland we have three dates from 3795–3675 b.c., but in some respect they seem irrelevant to the Mesolithic date of the Carrowmore megaliths, since they are connected with a clear Neolithic material (flint and pottery). If we accept the earlyness of these Ballynagilly-dates they document a Neolithic economy at this time and therefore show that the earliest Carrowmore tombs were built at a time when a Neolithic culture already was present in Ireland; but there are problems with these Ballynagilly dates: From the same site a Neolithic house with the same cultural material has yielded two dates around 3200 b.c. which is in reasonable accordance with the C14 dates of the landnam-horizon in the neighbouring bog. The elm decline starts at 3345 ± 90 b.c. and there are no signs of human interference in the forest before that – no pre-elm decline.

Apart from the C14 date from tomb 4, which has to be treated with reservation, the documentation for a Mesolithic economy or a Mesolithic date for the tomb-builders is very

meagre, no more than the crushed sea-shells from the chambers. Apart from the description of the environment and the pollen analyses the project has given no direct clues to the economy of the population in the late Mesolithic and the early Neolithic: settlements and kitchen-middens have been found, but they do not show dates of that period. That the intensive surveys within the 5 km circle around the cemetery have shown no traces of settlement on the low-land areas is taken as evidence for the non-agricultural economy; as mentioned earlier it is reasonable to think that the kitchen-middens from that period have been washed away by the sea.

Another model can as well be proposed: That the megalithic tombs were built by a conventional Neolithic society whose basecamps or agricultural settlements are to be found outside the research area – in fact Burenhult, in the discussion at the Carrowmore Seminar, admits that the areas which will give the best conditions for the base camps are just outside the intensive survey area of the project (p. 390). The megalithic cemetery does not need to lie in the center of the resource area, it may as well lie at the edge of it, or lie in a position which combines different ecological zones; for instance the earthen long barrows of Southern England have been regarded by Colin Renfrew as being the central or focal point of a population of the chalkland, but it can as well be argued, that they lie in a not-so-clear "geometrical" position, to "control" the different resource areas, such as the chalk, the lowlands and the clay-with-flint soil, which is rich in surface flint. Also, distribution maps of Danish dolmens can be interpreted so that these can express territorial behaviour as well at the edge of the territory as at the center.

The Carrowmore cemetery can thus very well lie at the edge of a resource area, while the "Neolithic" part of the way of life was carried out elsewhere; the reason why the megalithic tombs lie near the coastal resources might reflect a territorial behaviour, where the most critical resources are stressed – even though farming and pasture in calories were the most important, it might have been essential for a prehistoric society to have access to the kitchen-midden sites at the coast during the critical winter-period.

In connection with the ecological model for the Carrowmore area Burenhult discusses the definition of the border between Mesolithic and Neolithic. The Carrowmore model shows a very diffuse borderline between the Mesolithic hunter-gatherer population and the Neolithic farmers. In a more general European sense, Burenhult also suggests that the borderline has been overestimated, that the elm decline is more or less a fictive border. I fully agree with Burenhult, that the so-called pre-elm decline found at many places in the British Isles and Ireland in the centuries before the actual elm decline, show some gradual development towards a Neolithic economy, and it is also my personal opinion, that the neolithisation in many places is an indigenous development, of course under some influence from outside, but it is perhaps going too far to state that: "A long time has passed since the idea of migration farmers into southern Scandinavia and other parts of north-western Europe was rejected as a main explanation for the introduction of a Neolithic life-style, ...". It is Burenhult's hypothesis that the Neolithic way of life developed locally, and in some areas (such as the Knocknarea Peninsula) the local conditions were so favourable that a Neolithic economy did not develop until very late in the "Neolithic" – therefore he finds the elm decline too sharp a border line (see also the discussion of the pollen evidence below).

It must be stressed that in the British Isles and Ireland many of the sites do not show any selected elm decline – the elm decline can be seen as an integral part of the fall in the forest curves and the general landnam effects; this landnam horizon can still be seen as a clear border-line; after it we find a culture different from that of before (as in eastern Ireland), a farming culture building megalithic tombs, and there is nothing new or spectacular in the fact that people, also after the landnam horizon, utilized coastal resources – that does not alter the whole concept of the differences between a Mesolithic and Neolithic economy. Both in the British Isles and Ireland, as well as in Scandinavia, neolithic hunting stations are well known. In Britain and Ireland the use of coastal resources seem to culminate in the later part of the Neolithic, and, it is from this period that the shell midden activity at Carrowmore is well-documented.

Even though late Mesolithic hunter-gatherers, such as, for instance, the South-Scandinavian Ertebølle-culture, can have developed a rather sedentary system, perhaps including some very early agriculture, the society had not yet reached a cultural and economical level where megalithic tombs were built. Perhaps there is in this respect nothing very special about the Carrowmore area, which could have generated the building of megalithic tombs in the mesolithic period and (later) with a "Mesolithic" economy. The Carrowmore tombs can as well be a part of a "normal" Neolithic system in which the coastal resources were of importance.

On p. 142–146 Burenhult presents "an alternative view of the megalithic tradition", where megalithic tombs can occur in very different subsistence-settlement systems, from Mesolithic hunter-gatherers to chiefdom-like agricultural systems. I share the opinion that megalithic research can have overestimated the similiarities of megalithic tombs and their underlying societies, but in some way the building of megalithic tombs and earthen long barrows must express some common solutions of the structural problems in the different Neolithic societies. To stress that megalithic tombs can be built under very different ecological conditions Burenhult states (p. 142): "As we have already seen, the elm decline can no longer be used as an indicator of the introduction of the Neolithic, maybe even as an expansion phase, and this can be further demonstrated if we compare Swedish and Danish megaliths with reliable construction dates with the expansion phase diagram (fig. 117). All megalithic construction dates appear before or after the elm decline, not during the elm decline expansion phase itself, and most tombs were actually built during the so-called regeneration phase". Looking at the C14 dates from the tombs mentioned, I see no clear evidence that they should have been built before the elm decline and the landnam horizon. Considering the C14 method as a not totally absolute one, one must expect some overlap between the dates of the elm decline and the earliest dates of the megalithic tombs, and, furthermore, the number of C14 dates from Scandinavia are still too small to make such a statement. From the

British Isles and Ireland, however, we do have quite a number of C14 dates related to megalithic tombs, earthen long barrows and the landnam-horizon. There does not seem to be any documentation for a dating of the beginning of the building of these tombs to a period before the elm decline. The erection of them seem to start shortly after the landnam in the two last centuries of the fourth mill. b.c. and the building continuies in the following centuries. In addition, analyses of sealed soil horizons from underneath earthen long barrows of southern England show clear signs of forest clearance and Neolithic economy in a certain period before the monuments were erected.

The types of graves which can be dated to an early part of the Neolithic are the earthen long barrows of England, the Severn-Cotswolds tombs of western England and Wales, the Clyde tombs and court cairns of western Scotland and Ireland. From the pottery evidence alone, also the portal dolmens of Cornwall, Wales and Ireland can be regarded as belonging to an early part of the Neolithic. Together with, for instance, the Danish dolmens, they are all to be found in an early agricultural society.

Since the Carrowmore megaliths in Burenhult's model have been built in a mesolithic and "early Neolithic" society with very little agriculture, if any, he sees them as the earliest megalithic tombs of Ireland, representing that special "early Neolithic" way of life. Therefore he regards some other megalithic tombs of Ireland, such as the court cairns, as belonging to a later part of the Neolithic – in the first of the Carrowmore volumes he documents this be means of three C14 dates from the court cairns at Annaghmare, Ballyutag and Ballymacdermot (2445 ± 55 b.c., 1710 ± 300 b.c. and 2170 ± 300 b.c.) All three are, in the way in which the author uses them, invalid, since none of them can be related to the building phases or the early use of the three tombs. They all seem to belong to a late phase in the use of the tombs, probably not too long before their final blocking. All three dates come from the forecourt area. In fact, we do have C14 dates related to court cairns (and in more primary positions) which are much earlier than the three used by Burenhult. From Dooey's Cairn, Co. Antrim, we have three dates, which tell us that the megalithic part of the structure has been erected in the first half of the 3rd mill. b.c. perhaps early in this period and from the court cairn Tully, Co. Fermanagh three C14 dates tell us that the monument was built early in that millennium (around 3000-2900 b.c.). Also, from the Scottish counterparts of the Irish court cairns, the Clyde Tombs, come dates, which indicate that this group was erected in the first centuries of the 3rd mill. b.c. The C14 evidence is in accordance with that of the pottery. The court cairns must belong to an early part of the Neolithic, and perhaps that is also the case with the Carrowmore megalithic tombs (which are not court cairns), since the other early dates (apart from the one from grave no. 4) are from this period.

The environmental and palynological studies of the Carrowmore project are presented by Hans Göransson in part II, p. 154–193. The most detailed pollen diagrams comes from the Carrowkeel Mountains showing a normal elm decline, which in one of them clearly is accompanied by the fall of other forest trees. In the centuries before the elm decline two pre-elm decline events are seen, marked by microscopic charcoal particles and an increase in pollen of grasses and bracken spores. Some very big grass pollen are recorded just before the elm decline – perhaps cereal pollen. From Ballygawley Lough *plantago* L and three very big grass pollens occur before the elm decline.

What dominates, however, is a general working hypothesis of the development of the Neolithic economy – an indeed very interesting hypothesis – but it does not seem to have been developed as a consequence of the Carrowmore field work – it is a general hypothesis dealing with northern Europe, to some degree based upon Swedish evidence.

According to this hypothesis a very important element in the early farming economy was the coppice forest, which created pollen in such a way that it is difficult to see any difference from the normal forest in the pollen spectrum. An early farming system based on such a forest is supposed to have yielded a relatively hich surplus, and a very great advantage is that the standing trees nourish the soil and prevent soil erosion. Such a system should have developed before the elm decline which is seen as being non-anthropogenous. The elm decline causes the breaking down of that very stable system and more open areas are created. What is normally seen later in the Neolithic as a regeneration phase is interpreted as a reestablishment of that older, very efficient ecological system. So, according to Hans Göransson the elm decline does not mark any introduction or culmination of the Neolithic economy. This theory is indeed very interesting, and future research will perhaps tell how general it is, but it might be dangerous to use a hypothesis partly based on Swedish evidence in western Ireland. At any rate the pollen diagrams from the Carrowmore area are not very different from other diagrams from the British Isles and Ireland, and in the following paragraphs the hypothesis will be reviewed upon that evidence.

The use of coppice forest was discussed in England as early as 1972 by Andrew Fleming, who regards it as giving very low yields – to him, it seems profitable only if combined with a wider system including open fields, grassland and regenerating forest. Göransson stresses that the forest is not to be seen as the enemy of man, but the same can be said of Fleming's system – the forest can be used in several ways (e.g. winter-fodder) and it can, in a very long shifting cycle, be used to improve the soil. Part of this (regenerating) forest may have been coppiced.

That the pre-elm decline, which is found all over the British Isles and Ireland can be the results of the very first farming was already in 1973 proposed by the British palynologist Sims working on pollen-material from East Anglia: The pre-elm decline marks the first agriculture, which was performed on a very limited scale, but later, the elm decline/landnam horizon marks a certain culmination of population, so that now a more profitable system was needed. According to Göransson the pre-elm decline does not reflect an actual opening of the forest, but coppicing, which he sees as being much more efficient. In support of this, we are told that even though we find *plantago* L and probable cereal pollen there was no great interference with the forest: "It is very interesting to observe that the pollen

curves of elm, and in NW Europe outside Ireland, lime are very smooth and undisturbed from ca. 7000 B.P. up to the elm decline level" (p. 171). This, however, does not seem to be the case. Actually, the pre-elm decline in the British Isles and Ireland is characterized by the same elements as the elm decline proper, though in a more limited form – the presence of *plantago* L, bracken, and for instance nettle, is accompanied by the fall in the curves of the mixed forest including oak, elm, and (if present) lime. Examples are Hockham mere and Seamere in East Anglia, Blea Tarn in Cumberland and Ballyscullion in Northern Ireland. So, from the British and Irish evidence the pre-elm decline shows an opening of the forest of the same sort as the elm decline/landnam and not a particular coppice forest in the sense proposed by Hans Göransson.

The most detailed paleo-ecological study in Britain has been made in the Somerset Levels, where many wooden trackways are found. Pollen analyses has given a lot of information about the utilization of the environment in and around the big swampy basin. Shortly after and during the elm decline, which is a part of the general fall for the forest trees, the first trackway was constructed and the wooden material (together with the ecological analyses) shows that the hills around the basin carried controlled stands of coppice forest. Many wooden parts show the characteristic elbow where the twig has grown out from the stool and one stool with remains of the twigs has even been found. The species coppiced are e.g. hazel, oak, lime, and elm. In the beginning of the 3rd mill. b.c. more clearings were made and the material in the trackways then came from species growing near the shore, such as birch and alder. In other words, the coppiced stands higher up on the surrounding hills had then been cleared. In the Somerset Levels there is no pronounced regeneration of the forest during the Neolithic, but in the centuries just before 2000 b.c. there is again some evidence of coppicing. The conclusion from the Somerset evidence must be, that we find the coppice forest shortly after the elm decline in a period when the forest was opened by man and not in a later regeneration phase.

That the regeneration phase seen in so many other areas does not reflect an economical set-back but a stable coppice system is a very interesting point, and it will probably hold true in some parts of Britain, but there is evidence which supports the idea of some sort of ecological set-back. For instance the south English chalk plateau, in the early Neolithic, seems to have been covered with a very productive loessic soil which had been blown and washed away during the Neolithic and now we find these loessic components washed down into the river beds. Also in other parts of the British isles there is evidence of soil erosion.

The evidence from sealed soils underneath monuments in southern England shows a tendency during the Neolithic towards larger areas of open grassland, best fitted for extensive pasture. Under some of the earthen long barrows from the earlier part of the Neolithic we sometimes find a background of tree pollen, which might reflect a coppice forest system, but on the other hand the landsnail analyses mostly show open country species – so perhaps the tree-pollens just reflect some forest areas around a barrow.

The many field boundaries found in western Ireland, which seem to have been in use in the middle and later neolithic, do not fit very well with a landscape of coppice forest.

Even though the hypothesis can hold true in some areas of the British Isles and Ireland (perhaps best in more "marginal areas") it is an open question how general it is. By looking at the spores of ferns of the dryopteris type, which is shade loving, in connection with the so-called forest regeneration, one might get some impression of how much light reached the forest floor, thus perhaps solving the problem of whether the forest regeneration reflects an actual set-back for agriculture or not in a given area.

As will appear from the foregoing, many new and unconventional ideas have been proposed in order to understand the Neolithic way of life and megalithic tombs and, of course, new hypotheses and models will always stimulate discussion. Not only has this book by its interpretative sections given us some alternative models for neolithic society and economy, but it is also a very comprehensive publicatin of the Carrowmore research project, which has given us a lot of new valuable information.

Flemming Kaul

JUTTA MEURERS-BALKE: *Siggeneben-Süd. Ein Fundplatz der frühen Trichterbecherkultur an der holsteinischen Ostseeküste.* Mit Beiträgen von Peter Breunig, Jürgen Freundlich, Dirk Heinrich, Birgitta Hulthén, Dietrich König, Günter Nobis und Burghart Schmidt. *Offa-Bücher* Band 50, Karl Wachholtz Verlag, Neumünster 1983. 136 pp, 96 plates.

Due to isostatic movements in the postglacial period the coastal settlements of the Ertebölle and Funnel-Beaker (TRB) Cultures in Schleswig-Holstein now lie below the present sea level. Only in low-lying areas that have become blocked off from the sea by coastal ridges is it possible to investigate sites of this kind using 'dry land' excavation procedure. Such is the situation in the former Dahmer Bucht in eastern Holstein where archaeologists of the University of Cologne have been carrying out excavations since 1969 under the leadership of Professor H. Schwabedissen.

Although only briefly presented in literature the site at Rosenhof has taken a central place in the discussion about the formation of the early TRB Culture in North Germany and its relation with the Ertebölle Culture. At this settlement there is a C 14-dated sequence with Ertebölle-Ellerbek as the oldest (c. 4200–3500 bc) followed by material of the 'Rosenhof Gruppe' (c. 3500–3000 bc) characterized by the survival of Ertebölle 'blubber lamps' alongside with funnel-beaker pottery and evidence of farming and husbandry. Pottery with both Michelsberg and Baalberge affinities is found with the short-necked funnel-beakers of the Rosenhof Group.

In her dissertation Jutta Meurers-Balke presents the results from the excavation of the site of Siggeneben-Süd situated some 500 m north of Rosenhof. The find material belongs to the later part of the Rosenhof sequence (Rosenhof b by Schwabedissen) being for the main part younger than the

material from the Rosenhof site, i.e. c. 3300/3200 – 3000 bc, and it is attributed to the TRB Culture alone. Like at Rosenhof, the finds come from gyttja and sand layers and were deposited during a time with low water level in a small lagoon adjacent to a (not located) habitation area. The conditions of preservation for all kinds of organic material including pollen were optimal. Jutta Meurers-Balke herself reports on the sedimentation and pollen analysis as well as on the analysis of the archaeological find material, thus placing the site in relation to the geological process, to changes in the land – sea constellation, and to the vegetation history of the environment. Birgitta Hulthén has contributed with a technical analysis of the ceramics, Jürgen Freundlich and Peter Breunig comment on the C 14 dates, Burghart Schmidt presents a year-ring analysis of wood not directly connected with the time of occupation, Günter Nobis deals with the faunal remains, Dirk Heinrich with the fish bones, and Dietrich König has made the diatom analysis.

By the pollen evidence the cultural deposit at Siggeneben-Süd is dated to the transition from the Atlantic to the Subboreal, coinciding with the elm-decline. It is noteworthy that in one of the diagrams pollen from cereals and from *plantago lanceolata* occur before the end of the Atlantic period.

The analysis of the find material is making the most of the formal properties of both the ceramics and the rich lithic inventory. The analysis forms a good basis for comparison with South Scandinavian material from Ertebölle and Early Neolithic sites. On the other hand the taxonomy is affected by the fact that there is a deplorable lack of analysis of comparable find complexes in North Germany. The composition of the lithic tool kit is within the variation of the Early Neolithic assemblages of the West Baltic area where strong traditions from the Ertebölle technology are detectable. At Siggeneben-Süd there is also a certain amount of genuine Ertebölle types.

Like at Rosenhof, Ertebölle 'Lampen' (blubber lamps) – but no other Ertebölle pottery – occur together with the Early Neolithic ceramics. We shall no more be surprised when this combination is seen once more in a similar context, though the case has not yet been demonstrated north of the Baltic. From the author's treatment of the Early Neolithic pottery from the site, and from the technical analysis, too, there appears to be no differentiation as to technique and to pottery style. Having enjoyed the opportunity of seeing some of the pottery from Siggeneben-Süd recently, I feel inclined, however, to distinguish between two main components of the pottery material, one in the form of funnel-beakers with a short neck and simple, stamped ornamentation below the rim, and another consisting of mostly undecorated funnel-beakers with a tall neck. The former element seems to be related to the Rosenhof pottery, while the latter comes closer to the Satrup style, although it is mostly without the fringed decoration characteristic of this. The author denies the presence of collared flasks at Siggeneben-Süd. When looking at the sherds of small flasks (Taf. 37:7,9 and Taf. 38:1) one gains the impression, though, that they can hardly belong to any other shape of vessel. In case this observation is right, the collared flasks are to be included in the later part of the pottery development at the site. The above suggestion is, of course, an arbitrary one and is biased by the view that the TRB A and B schemes are applicable to the North German Early Neolithic pottery, identifying the Rosenhof short-necked vessels as A-beakers.

In reality, the nature of the deposit at Siggeneben-Süd does not allow a separation of settlement phases. Although the author's conclusion is that the find material represents a simultaneous deposition, the possibility of a longer duration of settlement including separate phases: Ertebölle, Rosenhof (stage a and b), and the Satrup phase, cannot be rejected. Seen in this way, we may look upon Siggeneben-Süd as an accumulated find complex of which the main part is dated within the period c. 3300–3000 bc.

If we compare with coastal sites in Denmark and South Sweden it is a rule rather than an exception that the hunting and fishing stations were repeatedly used, often through greater parts of the late Mesolithic and the Early Neolithic. There is a predominantly wild fauna to be found at such stations. On this background it is remarkable that there is a slight dominance of domestic species at Siggeneben-Süd over wild species, notwithstanding the fish remains. In the upper levels at Rosenhof bones of domestic animals did not reach 10% of the total bone material. Inland settlements of a distinct agricultural character contemporary with the Rosenhof and Siggeneben stages in Schleswig-Holstein still await discovery and investigation.

The Dahmer Bucht and the Schleswig-Holstein region as a whole has become of primary importance for the study of the neolithisation of the West Baltic area, and we feel that the stage has just been set for future research. The next step will be to find smaller units of occupation in order to work out a finer chronology. In connection with a survey to determine the settlement pattern of the Early Neolithic groups this might give us a more thorough understanding of the processes through which hunter-gatherers became farmers in the borderland between the Continent and the North.

P.O. Nielsen

BOZENA WYSZOMIRSKA: *Figurplastik och gravskick hos Nord- och Nordösteuropas neolitiska fångstkulturer* (Figure Sculpture and burial Customs of North and North-East Europe's Neolithic Hunter-Gatherer Cultures). Acta Archaeologica Lundensia, Series in 4°. N° 18. Lund 1984. 303 pp., table I – XXXV.

The book, which is a doctoral dissertation, is written in Swedish, but the English summaries following each chapter are rather comprehensive.

As the title of the book suggests, one might get the impression that the theme was a rather limited one. This, however, is not the case, and the title turns out to be very modest, when looking at all the phenomena which are considered. Thus one is here faced with an archaeological material within a huge geographical area, covering most of Fennoscandia, northwestern Russia, the Baltic Republics and Poland; but even material outside this area is treated, a.o. within the "Circumpolar Stone Age". This means that one has here an opportunity to be acquainted with most interesting finds in "marginal" areas.

Most of the cultures in question have been studied rather intensively for generations but not least a considerable amount of ^{14}C datings from the last decades have made it possible to establish a reasonable chronological sequence. Many of these datings, especially within the Comb Ware Culture have been surprisingly "early" – a good example of what Renfrew might have termed "collapse of the traditional framework and of a diffusionistic point of view". On the other hand, the Finnish datings using shore line displacement have turned out to be nicely in accordance with the ^{14}C datings. On the whole the ^{14}C datings play a large role in the argumentation in this book, but the student is recommended to look most carefully at the background of each dating, since there are many things to consider before it is possible to compare the datings with each other. It is confusing f.i. that the half-life of 5568 is not always used, and it is inadequate in a chronological discussion to use designations which are valid only within the South Scandinavian Neolithic.

If some confusion is prevailing when talking about chronology, this is still worse with the terminology used throughout the book. Wyszomirska cannot, however, be blamed for this alone since she has inherited a long row of hopelessly inadequate conceptions used by Scandinavian scholars for generations. The discussion of the terminology and the new proposals put forward are not convincing, and the words of Mats P. Malmer that the Pitted Ware Culture of Scandinavia is the most difficult to define of all the Fennoscandian Neolithic cultures is still valid. With regard to the Comb Ware culture Wyszomirska calls it Neolithic or Neolithic Hunter-Gatherer culture despite of the fact that it is a Mesolithic culture exclusively.

Most of the book is a comprehensive examination of the figure sculptures and the burial customs, and this part of the book is valuable because one here gets a picture of an archaeological material, which has so far not been dealt with in detail. The reader is looking in vain, however, for a classification of the many sculptures made especially of clay but also those made of flint, bone, wood and amber. In the opinion of the present reviewer such a classification ought to have been the most important – and first thing – to do, but Wyszomirska declares that a "typological analysis falls outside the scope of the dissertation". Furthermore, the illustrations are of little help because most of them are simple drawings only giving a rough impression of the material. Thus one is not at all convinced when she compares figure sculptures from far and near, and the reader is constantly reminded of the fact that the study of convergence is a sadly neglected field within archaeology.

When such a large archaeological material is discussed, it is inevitable that many of the statements made are to be questioned, especially since Wyszomirska is often rather categorical in her mode of expression. Thus the present reviewer is quoted completely superficially or even for points of views that he has never put forward. To enter into details on these and several other highly disputable subjects lies outside the scope of this review, but it ought to be stressed that several works which could have given a more balanced understanding of the subject are not quoted.

In the conclusion Wyszomirska stresses the similarities between the Pitted Ware Culture and the Comb Ware Culture with regard to the figure sculptures and the burial customs. Also the Mesolithic heritage in general as well as the similar ecological conditions prevailing east and west of the Baltic are emphasized. These things, of course, have also been observed by other scholars, though it is the first time that such a comprehensive material is put forward. Yet, it should never be forgotten that there are several phenomena in the Pitted Ware Culture and the Comb Ware Culture which are different, and these must be considered when the two cultures are discussed.

Svend Nielsen

AXEL HARTMANN: *Prähistorische Goldfunde aus Europa II. Spektralanalytische Untersuchungen und deren Auswertung.* Studien zu den Anfängen der Metallurgie Bd. 5, Gebr. Mann Verlag, Berlin 1982, 155 pp, 9 diagrams 115 plates.

This volume presents 2400 analyses including a number from the Iberian peninsula which will be illustrated in SAM 6 (not yet published). The other finds are all illustrated photographically together with 107 drawings from other publications. According to the author the Iberian finds are the most important, apparently because of their number. As they form the author's starting point it is regrettable that these finds are not illustrated. For Danish readers it is important to know that 713 analyses of Danish gold objects are presented.

Six pages are devoted to Professor Junghans, one of the main forces behind SAM. 41 text pages supplement the 69 pages of analyses, 7 distribution maps, 9 diagrams and 115 plates, ordered geographically and chronologically.

The author uses the preface to counter some of the objections to the preceeding volume, SAM 3, which he regards as misunderstandings. The problem of the relationship between the natural occurrences of gold and the gold finds was not the main subject of this programme of analyses, that relationship only rarely being observable. The main goal was to establish trade routes, trade connections and cultural connections, their durability and changes plus information on the history of technology.

No mention is made of the planning, execution, timing or collaboration with museums or other institutions. It may therefore be relevant to insert some remarks on the development of the collaboration between the Danish authorities and SAM. They will also explain the somewhat scathing remarks p. 1.

It began with a letter from Stuttgart in 1967 declaring the intention to analyse the Danish gold finds. The National Museum replied that similar ideas existed locally and proposed a collaboration over future publications. In 1970 it was proposed that Klavs Randsborg and the reviewer should undertake the examination of the Danish archives while Dr. Hartmann should take the samples from the gold objects themselves. During October he took about 900 samples from the objects in the National Museum. The plan was to execute

the analyses in the following two years and a rather intensive archaeological commentary was wanted from the Danish side, while Dr. Hartmann did not like the idea of a possible delay of the printing for this reason. In 1971 he wrote that no application had been sent to the Deutsche Forschungsgemeinschaft. In October 1971 the lists of the Danish finds were finally sent to Stuttgart and it was agreed that a complete catalogue of the analyses should be presented to the National Museum before October 1972. In June 1972 this work was half completed, but since Dr. Hartmann could not obtain a satisfactory solution of the problems concerning the production of photographs for the publication and the nature of the collaborationship, further work was halted. This was partly due to the reviewer leaving the National Museum and thus being unable to produce his part of the archaeological commentary while Randsborg concentrated on other research. In October 1974 the National Museum proposed that the catalogue should be published without Danish authorship. Klavs Randsborg had withdrawn because he had been unable to obtain information from Stuttgart wanted for other studies. In 1976 Poul Otto Nielsen produced the references included in the present volume and since then no correspondence between Stuttgart and Copenhagen seems to have followed.

This is a story of frustrations, misunderstandings, and false reactions to omissions and prolonged silences, which is a poor example of international collaboration. It is quite clear that faults occurred on both sides.

This rather sad story is very relevant to the usefulness of the present volume. What we have now is a corpus of scientific information needlessly separated from the archaeological context. This becomes immediately apparent if we compare the present volume with the French and British works. Spectra like Eluère 1982 fig. 1 and fig. 179 illustrating the find-groups and the weight distribution of the gold finds present overall statistics in a nicely informative way. There is no indication of weight or contexts given in the present volume and I sorely miss both. Someone will have to produce a new volume combining scientific and archaeological information if the Danish Bronze Age gold is to be wholly exploited in studies of the distribution of wealth, regional changes in gold depositing, socio-economic structures or external relations.

What, then, have we got in the present volume? The analyses follow the usual Stuttgart scheme and are sorted into material groups according to the norms already established in volume one (Hartmann 1970). 19 pages are devoted to the Iberian peninsula compared to Central Europe and the British Isles, 8 pages treat the Danish material groups, 5½ pages describe the Aegean area, while the remaining 6½ pages are devoted to Bulgaria and the Balcans during the Aeneolithic (Varna etc). Each chapter is a closed entity, there is no final conclusion or discussion. Just as the geographical range is wide, so is the chronological range, starting with the Aeneolithic and ending in the Pre-Roman Iron Age.

From each gold object a sample was taken and given a sequential number preceded by Au. This sequence is used within the geographical and chronological subdivisions of the lists. For each sample the find spot, parish and county or similar administrative divisions plus an extremely short description, museum code and inventory number are given followed by the actual analyses concentrating on Ag, Cu, Cn with Bi, Ni, Pt, Pb, Sn, As, Sb, Hg, An as additional elements. Finally a reference to a previous publication is given, for Denmark mainly the catalogue of H.C. Broholm (1943–49).

The reader of the present volume will need to have the first gold analysis volume at his side to see which methods have been used. There has been no change in the analytic procedure described in SAM 3, 16 ff. (Hartmann 1970).

Hartmann obviously regrets the geographical disparity (p. 1), but sets the problem aside without further comments. This is, however, directly relevant to the conclusions of this study which are only possible "in grossen Zügen" (p. 1). It would have been a better service to the readers to account for the difficulties of access etc., e.g. preventing analyses of the Swedish finds, or the absence of analyses from the British Museum (Taylor 1980, 2).

Nowhere are we told when the manuscript was finished, but references later than 1977 are only given in two cases (not including Aner & Kersten 1977 & ff). This would seem to indicate a manuscript date around 1978, which would explain the absence of references to Taylor 1980 (written 1973) with its 188 Hartmann analyses. Miss Taylor has 45 Hartmann analyses which do not appear in his own volume and 143 analyses which are also published by him in the present volume. It is a bit curious that apart from the actual analyses no information seems to have been exchanged between Taylor and Hartmann. For anyone without a scientific background a discussion of other methods of gold analysis would have been interesting (e.g. Taylor 1980, 4 ff; Parish 1981; this discussion is only given in SAM 3, 16 ff).

Of the Danish analyses Au 1117 and 1119 are repeated from SAM 3, while Au 1139, 1132, 1133, 1118, 1129, 1131, 1158, 1159, 1162, 1187, 1189, 1196, 1221, 1421 and 1434 are only found in the first volume.

Outside the National Museum only Haderslev Museum seems to have been visited, a number of gold objects exist, however, in other local museums.

Joan Taylor (1980, 8, 10, 21, 71) regards the Stuttgart analyses as reliable but not so their statistical evaluation. She illustrates the groupings in another way which has been adapted by Christiane Eluère (1982). This makes comparisons much easier, (cp. Wessex gold Taylor 1980 fig. 16 with Eluère 1982 fig. 180). I do not intend to go into this problem, but for readers of the SAM volumes it would have been nice to have had the Taylor method illustrated too.

For me the crucial question is how the traditional typological grouping accords with the analysis groups and with the trend towards higher copper and tin contents in the later BA (Taylor 1980, 71; Eluère 1982, 203 f).

The lunulae are typical of this problem. Taylor (1980, 38 ff map 1) suggests that the Nordic specimens are not lunulae proper but in some way related. Hartmann places the lunulae in his groups B (*Tabelle* 2), S (*Tabelle* 4) L 1–2, Q 1–2 (*Tabelle* 6). The nordic "lunulae" are: Au 1118 now placed in group S – *Tabelle* 4 – (in SAM 3 it was put in group L, *Tabelle* 10), Au 1117 and 1119 (*Tabelle* 35 – in SAM 3, 37, *Tabelle* 14 put in *Restgruppe* in Mitteleuropa and interpreted as intentionally alloyed with

high silver content), now grouped with diverse lunulae, Wessex bronzes and East European early bronzes with added silver and higher copper contents. The Fredensborg fragments Au 1118 (Aner & Kersten 1973 no 198) are thus the only case still with some sort of internal relationship with the West European lunulae (cf. *Tabelle* 4 in the present vol.). In this case there is an acceptable accordance between the archaeological grouping and the scientific.

The gold vessels present another case: For many years the accepted truth has been that the vessels were imported, while the handles with horse head terminals were added in Denmark. Hartmann has analyzed both vessels and handles or handle attachements in 13 cases (*Tabelle* 25 covering per. IV, while some of the vessels may be per. V or even III). Some vessels differ from their handles e.g. in the presence of Ni og Sb, but the differences are insignificant. In some cases the handles have the additional elements, in other cases the vessels have them. The Ag content is larger on some handles, but not consistently so. There does not seem to have been any intentional alloying of the wire or of the stiffer handles (cp. p. 27). This does not get us much further than previously. The analyses leave open the possibility of vessel and handles having been made in separate workshops, even though Hartmann rejects it.

The decoration of the gold vessels is so elaborate, that pairs may be separated, pairs which must have been intended to be used as such. The goblets Au 3727–28, the bottles Au 3619–20 are the most obvious pairs but Au 3613–14; Au 3617/18 and 3624; Au 4317–18; 3621–22; 3634/3968 and 3862/3967; 3626 and 3629, are equally good examples. The composition of elements varies from one cup to its partner, but radically so only in one case. Cup no Au 3622 from Avernakø is quite normal, but its twin Au 3621 is placed apart in *Tabelle* 25 because of its platinum content (p. 27f). The gold for this vessel must have had another provenance than any other gold vessel.

Even if we include the other European gold vessels the Danish group conforms well (apart from Au 3621). There is no great difference from Rillaton to Gönnebek except that the French vessels from Avanton and Painpour (Eluère 1982 fig. 182 a and 184) have a much lower Ag content that any other gold vessel.

The Mycenaean connection remains ambiguous, some of the gold vessels from Greece have much larger Ag content, while others are rather similar to the Central and North European ones. (*Tabelle* 30–34).

The Danish gold finds are treated chronologically according to the Montelian system. Period I and II are put together, which is natural because of the paucity of period I gold finds. Period II gold belongs to Hartmann's groups L, Q 1–2, and M (p. 23f). These groups correspond with the contemporary Central and West European gold, while Hartmann leaves the possibility open that the M-group moved from Scandinavia to the British Isles and even as far as Portugal. This rather intriguing proposal had deserved a closer archaeological scrutiny.

A number of finds deviate from this picture of normality by containing platinum or an unusually large content of silver. One of the Late-Neolithic "Noppenringe" belongs to this group (Au 4968). It is interesting that the very early fibula prototype from Buddinge (Au 3257) is one of the deviating finds which Hartmann (p. 24) compares with gold group A3 from the Danubian region. Here the analyses correspond well with the archaeological interpretations. The four objects with platinum do not have much in common. Apart from the object from Hagendrup (Au 4236) they appear perfectly normal. The Hagendrup object is unique, its use never determined, but the decoration is within the variation-spectre of Scandinavian decoration. Again a further archaeological scrutiny is now needed if Hartmann's suggestion of a connection with the Mediteranean, read Mycenaean, area is to be corroborated.

A few gold objects apparently had copper added, (Hartmann's group N). They belong to periods II and III, and Hartmann connects them with the Urnfield Culture Area in Central Europe (p. 25). One of the objects with more copper than usual is the famous Trundholm sun-chariot (Au 3596) which marks the apogee of Nordic artistic independance, albeit with a strong southern inspiration. Are we to take Hartmann's interpretation as indicating a late date of the sun-chariot to a period contemporary with the urnfields? Again a more detailed study of chronological and cultural interrelationships is needed (Randsborg 1968; Hawkes 1981). During period III gold M and L are less in evidence than groups Q1/Q2.

Hartmann has placed the arm torques of period III in a special list (*Tab.* 24) characterized mainly as group Q2, but I don't quite see the point in listing them separately. Hartmann interprets these rings as manufactured in certain workshops which did not have a access to the total range of gold otherwise used in periods II–III, but I am not entirely convinced.

In period IV groups Q1/Q2 and M disappear while group N with the added copper takes over (p. 26 ff.). This gold apparently had scrap bronze with tin added (diagr. 8, p. 27), a process apparently more extensively used in central than in northern Europe.

The gold vessels which comprise more than half of the analyses from period IV do not separate themselves from the other material, but are equally varied; they will be mentioned later in this review. Hartmann suggests that the gold came from several different areas.

The oathrings traditionally dated to periods IV–VI have been listed separately (*Tab.* 27, p. 29). This was done because archaeologists have not agreed upon their datings of these rings. Hartmann compares the whole group to period V-gold thus giving an independant dating frame to the oathrings. It is true that the oathrings have a narrower range than the period IV-gold, but it is also narrower than period V-gold (cp. diagram VII) and as the range of the oathrings is contained in both periods IV and V, their composition is not alone sufficient to allow this interpretation. The oathrings repeat the pattern from period III, where the torsioned armrings had a narrower spectre than the contemporary gold finds. The interpretation of the manufacturing in specialized workshops with a more limited access to gold than the average goldworking workshops given for the period III-rings is however not repeated for the oathrings.

As both ring groups are male accessories and must be interpreted as eminent prestigeobjects it could be suggested that special conditions ruled the access to gold. I have in mind that

there may have been a special network used by the chiefs to obtain gold for precisely these objects.

Period V is characterized by the addition of more copper to the gold than previously (p. 28 f). This trend might be interpreted as an expression of a decline in the availability of good gold, adding more and more foreign material to the gold. It is therefore strange that the trend reverses in period VI (p. 29 f). It should be noted that it is not the Thraco-Cimmerian objects (Au 3597–3603) which affect the distribution (diagram 7). Hartmann compares the trend in Scandinavian period VI with the trend in Hallstatt D thus adding a new element to the international relations in the Late Bronze Age/Early Iron Age.

The period VI group – *Tabelle* 28 – is too large. It includes objects not belonging to this period. The group of wire rings with oar shaped, flat hammered ends makes 20 of the 41 analyses. There is little to go by, but what we have, points to an Early Bronze Age date. The Birchland fragment from Kent (Taylor 1980, 24, pl. 60) is given a Beaker date by reference to the Bennekom find from Holland (Au 2479 *Tabelle* 6) and is reminiscent of the basket shaped earrings too (Taylor 1980 pl. 3). Shorter and broader ends are found in the Armorican hoards of Kerivoa (Eluère 1982 132, fig. 194) (Au 2195 (photo reversed)) and St. Pere-en-Retz (Eluère fig. 145) with lunulae and copper axes – cp the Danish "lunulae" SAM 3 Au 1117 K& 1119 (Taylor 1980 pl 21–22) (The Søndersø rings have 4 Au numbers but Au 3737 and 3738 are not illustrated). I see no evidence for a LBA date and would prefer the early date. This does not amend the curious fact that the 20 analyses fall into two different groups, which Hartmann clearly points out in *Tabelle* 28. Au 3745 was found with Au 3742 and Au 3724 was found with Au 3737. In each case there is one ring from each composition group. This shows widely differing metal compositions used contemporarily and presumably even by the same goldsmith (cp. p. 146). If this is the case already in the earlier Bronze Age, the situation must have been pretty composite and confusing for us poor archaeologists. The four Søndersø analyses belong to the deviating group, but also exhibit internal differences e.g. regarding the presence of Sn and Bi.

The subtraction of the 20 rings from the per. VI spectrum (diagr. 7d) leaves it much more like the other LBA spectra (diagr. 7a–c). The 20 subtracted analyses on the other hand fit well into per. II (diagr. 6a).

The fragments Au 3899 were found in a grave, whose context is not beyond doubt, but with a likely per. V or VI-date. These ring fragments belong to a group with Au 3567, 3446, 3840, 3466, 3448 and in a slightly wider context the bands with constricted End Au 4112, 4078, 4351, 3449, 3445, 3447 and SAM 3 Au 1381–82. These rings are Per. II and in my opinion of Tumulus Culture origin or affinity. There are no significant deviations within this group, except Au 3899 which has a much higher Cu and Sn content plus Ni and Sp. The Sn content is only equalled in Au 3273 with platinum otherwise a comparison with per. V objects (*Tabelle* 26–27) seems quite reasonable.

This leaves a group of gold objects from the Råddenkjær bog area in Central Jutland described by Jørgen Jensen (1970): The button ended earrings Au3599–3602, the neck ring Au 3615, and the disc Au 3597 as well as the pin Au 3598 have been interpreted as Southeastern and would be expected to deviate from more western objects. They do not. Their composition resembles the Per V-objects, really a disappointment.

The solid armlets Au 3763–4, 3769, 3762, and 3770 are so simple that proper comparisons are none too easy. Au 3767 could however be compared with French LBA (Eluère fig. 173) Au 3769 with MBA (Eluère fig. 150, 153, 100) and with Au 2231, 2236, 2298, 2349–50 etc. pl. 22–23.

The 127 objects of *Tabelle* 29 are of very heterogeneous age. The grouping of finds of uncertain date with finds from the Iron Age is slightly curious. Most of the finds given an uncertain date are certainly Bronze Age, most likely per. II–III including most of the spiral wire rings. Several objects are closer datable. The important gold fingerrings from the Iron Age Langågraves (Albrectsen 1960, no. 57–58) have not been analysed. Three further analyses are found on page 150.

I have not been able to check all the finds of *Tab.* 29, but certain amendments may, however, be made: Au 3318–19 may be given a period I/II date (Aner & Kersten 1973 no. 451 I); Au 3372 was found with a period II dagger, Au 3503 was found with other objects in a container datable to period III; Au 3708 + 3710 were found with the oathring Au 3709 which looks period V to me; Au 4151 is dated to period III (Thrane 1967); Au 4237 belongs to a hoard from period III (Broholm 1943, M92; Aner & Kersten 1977 no. 2069); Au 4239–40 come from a period III hoard (Aner & Kersten 1977, no. 1745); Au 4310–11, 4320, 4323–25 come from period II graves (Aner & Kersten 1984, no. 3526, 3601, and 3389).

The ear rings Au 3572, 3574–76 pl. 98 still await dating, are they Iron Age? The fingerrings Au 3570–71 wouldn't surprise if they were found in Late Roman graves. – Au 4289 comes from an Early IA cemetery. – Au 4258 is of course Early IA.

The chronological distribution of the gold samples is rather uneven. Hartmann lists the analyses as shown in table 1. Also included in the table are the corrections suggested above. It is still open to further corrections.

Late Neolithic	I	II	III	IV	V	Oath-rings	VI	undated or Iron Age
3		75	208	113	50	52	31	127
+20	+2	+7	+6			+2	÷20	÷17
Nett:23	2	82	214	113	50	54	11	110

Table 1. The chronological distribution of gold samples by A. Hartmann (top) with the corrections suggested in the review.

It is interesting to look at the closed finds with several gold objects. There is no coherent pattern, some finds contain objects of very similar composition e.g. Au 3706–07, Au 3792–93, Au 3683 + 3701, Au 3795–98, Au 3909 + 3918, other finds have internal similarities, in that two objects are closely similar but do not compare well with the third or fourth from the same find (e.g. Au 3812–14, Au 3815 + 3817–19 + 3816 (oathring), Au 3847 + 3853 + 3854, Au 3849–51 + Au 3842, Au 3919 + 3921–24, Au 3641–43, Au 3786–88). Graves with two objects often contain completely different compositions or at least compositions with varying elements (e.g. Au 4062 + 4061, Au 3912 + 3915). Several explanations of this phenomenon are of course possible but a varied supply of gold is at least indicated. This could mean that gold was never available in large quantities or

that gold was aquired gradually even by the individuals which owned the gold.

It is always tedious to list printers errors, but I include some which may bewilder readers and supplement them with additional information which does not pertain to be complete.

P. 150: Au 1117 Skohøjerup should be Skovs Højrup; Au 3575 is from Skydstrup, Århus A; Au 4085 is from Mjøls, Rise Sn; Au 4237 is from Espe Højlod; Au 3849–51 and 3842 are not from Bohøj but from a mound near Bohøj; Au 3847 and 3853–54 come from Lusehøj (Thrane 1984); Au 3731 is from Skåne which is not only a peninsula but a major province in Sweden; Au 3899 is part of an armring or armlet like Au 4112; Au 4055 is from the famous Skallerup grave (Aner & Kersten 1977 no. 1269). Au 3911 sits on a miniature sword and so does Au 3912, Au 3923–24 are double buttons. Au 3790 is from Kostræde and is only one of two similar rings, the other ring does not appear to have been analysed and Kostræde does not appear in the findregister. Au 4296 comes from Ballermosen (NM 2–3/56) but is given a wrong number and locality in the text (Lomborg 1956). It is datable to period II. Whether the analysis Au 4296 was made on this piece or on NM 3/36 from Illerisgård as stated is of course uncertain. Au 3727 on pl. 1 should be Au 3627 (Au 3727 is found on pl. 90) Au 3604, 3611, 3621–22 & 3624 come from Munkø, Au 4061–2 from Egehøj, Au 3974–6 from Tjæreborg, Au 4234 from Nørlyng, Au 4298 from Brøndsted, Au 3595 from Vester Nykirke, Au 3747 from Hvidbjerg Sn. Au 3747 from Toftehøj, Au 4368 from Brøndhøj, Au 3261 from Vester Lem Sn., Au 3528–9 from Haderslev Amt, Au 3575 from Skødstrup, Århus Amt acc. to the inv. no., Au 3925–6 from Aldershvile, Au 4289 from Tudvad. Au 4325 I presume to be NM inv no $^{11}/_{56}$. There may be many others but they haven't been discovered.

I hope that the writer will agree with me that his book is more of a challenge than a final result to be accepted unreservedly. If I have pointed out some inconsistencies and drawbacks this does not mean that I don't find it a very useful book, but I would have been much happier with a volume integrating archaeology and science more closely.

Henrik Thrane

REFERENCES

ALBRECTSEN, E. 1960: *Fynske Guldfund.* Odense.

ANER, E. & KERSTEN, K. 1973: *Die Funde der älteren Bronzezeit des nordischen Kreises* I.

– 1977: *Die Funde der älteren Bronzezeit* III.

– 1984: *Die Funde der älteren Bronzezeit* VII.

BROHOLM, H. C. 1943–49: *Danmarks Bronzealder.* Copenhagen.

ELUÈRE, C. 1982: *Les ors Préhistoriques, l'age du bronze en France* 2. Paris.

HARTMANN, A. 1970: *Prähistorische Goldfunde aus Europa.* SAM 3. Stuttgart.

HAWKES, C. 1981: The Lansdown Sun-Disc. *Studien zur Bronzezeit.* Mainz.

JENSEN, J. 1970: Ein thrako-kimmerischer Goldfund aus Dänemark. *Acta Archaeologica* XL, 159–184.

– 1982: *Nordens guld.* Copenhagen.

LOMBORG, E. 1957: En højgruppe ved Ballermosen. *Aarbøger for nordisk Oldkyndighed og Historie*, 1956, 144–204.

PARISH, R. V. 1981: Gold and Mössbaurer Spectroscopy. *Gold Bulletin* 15, 51–63.

RANDSBORG, K. 1968: Von Periode II zu III. *Acta Archaeologica* 39, 1–142.

SAM 3 = HARTMANN 1970.

TAYLOR, J. J. 1980: *Bronze Age Goldwork of the British Isles.* Cambridge.

THRANE, H. 1967: Stenaldergrave under en broncealderhøj ved Gadbjerg. *Aarbøger for nordisk Oldkyndighed og Historie*, 1967, 27–90.

– 1984: *Lusehøj ved Voldtofte.* Fynske Studier XIII. Odense.

Foredrag ved det 1. nordiske bronsealder-symposium på Isegran, den 3.–6. oktober 1977. Edited by SVERRE MARSTRANDER. Varia 9. Oslo 1983.

Bronzealderbebyggelse i Norden. Beretning fra det 2. nordiske symposium for bronzealderforskning. Odense den 9.–11. april 1980. Edited by HENRIK THRANE. Skrifter fra historisk institut Odense universitet nr. 28. Odense 1980.

Struktur och förändring i bronsålderns samhälle. Rapport från det 3. nordiska symposiet för bronsåldersforskning i Lund 23.–25. april 1982. Edited by BERTA STJERNQUIST. University of Lund, institute of archaeology. Report series No. 17. Lund 1983.

Bronsåldersforskning – kring aktuella projekt. Edited by ÅKE HYENSTRAND. Arkæologiska rapporter och meddelanden från institutionen för arkeologi vid Stockholms universitet nr. 16. 1984.

Since 1977 Nordic Bronze Age researchers have gathered every second year to present and discuss their research. The reports from the three first meetings and a recent collection of articles from Sweden, serve as an interesting illustration of developments in Nordic Bronze Age research.

Participants in the first meeting were mainly older and established researchers. The problems delt with, however, reflected new trends in archaeology. Uno Saalo from Finland discussed the interpretation of the thousands of cairns along the Baltic coast. They were built during the same centuries as earthen round barrows in southern Scandinavia and their interpretation raises the old problem of central versus marginal areas. Henrik Thrane discussed economic and social structure on Fyn during the late Bronze Age based on the excavation of a chiefly barrow on South-West Fyn, situated in a center of rich depositions of bronze and gold. He sees the development of centers as relating to the distribution of bronze, a structure that collapsed by the end of the Bronze Age. Also Øystein Johansen discussed the question of middle man trade during the Bronze Age with reference to Southern Norway. Berta Stjernquist presented a critical review of recent hypotheses about Bronze Age social structure. She called for more in debt studies to support or reject the proposed chiefdom model. Also from Sweden Hille Janusson presented the important Hallunda settlement site and its ecological and economic framework. Two articles set themselves apart: Bo Gräslund in

a quite original way discusses the two religious concepts of humation and inhumation, and Sverre Marstrander in a very extensive article presents all Norwegian Bronze Age stone axes with a complete catalogue and distribution maps. On the last pages he also discusses their social significance in terms of a proposed chiefdom organization.

During the second seminar on Fyn in 1980 the major theme was Bronze Age settlement and the contributions are more descriptive than in the previous volume. Again the seminar was dominated by more established researchers. Sverre Marstrander presented new finds of rock-carvings, Øystein Johansen a new late Bronze Age settlement site and its implication for the nature of Bronze Age subsistance. Egil Bakka discussed problems of representativity in the Bronze Age of Western Norway, taking up the old problem of how to define a Bronze Age economy in the more marginal areas of Scandinavia. From Sweden Berta Stjernquist and Märta Strömberg presented a local Bronze Age settlement system in their respective research areas, whereas Sten Tesch discribed new important evidence of Bronze Age house-structures, resembling those from Western Denmark. Also from Denmark important new excavations of Bronze Age settlement sites and solid house-plans dated from the early, middle and late Bronze Age were presented by N.A. Boas, Ebbe Lomborg and C.J. Becker. Finally J. Luoto discussed the Finnish settlements of the Bronze Age. The only theoretical article is one by J. Poulsen dealing with various simulation models of land-use and economy in the Bronze Age. But also Henrik Thrane discusses the relationship between settlement structure on South-West Fyn and social and economic organization. Compared with the first conference it is interesting to note that so little is said about economy or social organization. Naturally this also reflects the state of the art. The material is still very scare and therefore difficult to relate to general models.

The conference in 1982 in Lund was different from the two previous ones in two important ways. First a new generation of young Bronze Age researchers made their appearance and secondly, new important methodological approaches were presented.

N.D. Broadbent again took up a critical discussion of the nature of Bronze Age society, criticizing the application of the chiefdom model. By taking a marginal view of Nordic Bronze Age society from Northern Sweden he suggests that South Scandinavian Bronze Age researchers have put to much emphasis on Bronze, which is absent in the North. He also suggests that regional variation is far too great to allow the application of a generel model. One of the new approaches presented by Dan Carlsson was the application of human geography in order to explain the nature of landscape, territory and social organization. Related to this was Stig Welinders presentation of the ecology of a Bronze Age landscape in central Sweden. Also from Sweden Hans Lundmark and Thomas Larsson presented an important contribution to understanding the change from Bronze Age to Iron Age, by applying new interesting methods of spatial analysis. Berta Stjernquist and Märta Strömberg took up the settlement pattern in Southern Sweden during the Bronze Age, whereas both Sverre Marstrander and Hans Persson dealt with respectively Norwegian and South Swedish bronze axes, basicly in a descriptive way. It is probably quite typical that the 4 Danish contributions, by the reviewer, H. Thrane, J. Jensen, and J. Poulsèn, all dealt with aspects of social and political organization based on an analysis of the rich Danish evidence of Bronze objects, whereas the Swedish and Norwegian contributions mainly were dealing with monuments and settlement sites. This reflects an important empirical and methodological disparity in Nordic Bronze Age research. Another new approach was finally presented by Elisabeth Herner, who had studied the technology of Bronze Age ornament style as reflected in the punching of stylistic design.

The last conference was held in 1984, again in Norway, and the report has not appeared yet. However, it was also characterized by new approaches and by many new researchers. This trend is also reflected in the recent Swedish collection of articles, edited by Åke Hyenstrand. They are dominated by discussions about the nature of settlements, cairns and other evidence of Bronze Age society. Most of the contributions are presentations of on-going research-programs and they testify the strength of the new generation of Bronze Age researchers in Sweden. The articles quite clearly demonstrate, once again, that our conception of the nature of Bronze Age society in Scandinavia has to be revised. I shall not refer all the individual articles. But it is characteristic that most of them deals with the total structure of the archaeological evidence within local areas. This gives important clues to regional and local variation that we have been badly missing in preceeding years.

As can be seen from this review, the four books give a quite good indication of the expanding scope of Nordic Bronze Age research. This follows after quite a long period with little innovation where research was dominated by a rather small group of established Bronze Age specialists, mainly dealing with classifying burials and bronze objects. In many ways this seems to reflect a general condition of European Bronze Age research, which throughout the fifties, sixties and seventies has been based on an established group of researchers, working within a rather traditional framework. A few innovators have turned up during the 1970'es, but they are still a minority group.

The new trend in Scandinavian Bronze Age research is rather parallelled in England (BAR no. 83). Hopefully we will see a more massive break-through of new approaches and ideas within European Bronze Age research in years to come.

Kristian Kristiansen

HANS NORTMANN: *Die vörromische Eisenzeit zwischen unterer Weser und Ems.* Ammerlandstudien I. Romisch-Germanische Forschungen Band 41. 211 pp., 31 figs., 85 plates with 1644 figures. Verlag Philipp v. Zabern, Mainz am Rhein, 1983.

In 1966 a major archaeological and historical research programme commenced in north-western Niedersachsen. In a broad-based endeavour to clarify the development of settlement in Kreis Ammerland from the pre-Roman Iron Age to present times a long series of major excavations of widely varying sites was undertaken in the years 1966–73. The present

work, which deals with the finds from the pre-Roman Iron Age, is the first volume in a series of monographs in which the results of this project are being published.

Kr. Ammerland lies north-west of Oldenburg in the *geest* area between the lower Weser and the Ems, covering an area of 700 sq.km. In comparison with the mass of material which the excavations in this area produced, the amount which can be dated to the pre-Roman Iron Age is very limited. No new grave-finds, no houses, but just 25 features, mostly largish pits, on six different sites. But the volume of material must be viewed in the light of the fact that settlement finds from this period were previously virtually unknown, a situation also inhering over the rest of the *geest* in western Niedersachsen.

Hans Nortmann places the finds from Kr. Ammerland in a broader context in this book by taking up the whole pre-Roman material, both settlement- and grave-finds, from the majority of the *geest* area between the lower Weser and the Ems for original treatment and publication. The new settlement finds from Kr. Ammerland have a key place in this context, as a chronological framework for the whole area included is based upon an analysis of the pottery from here. The central material comprises the finds from 13 of the richest and best-documented pits, most of which are from the major excavations at Gristede. Taking into consideration the sandy natural soil, in which no cutting can stand open for long before erosion and collapse happens, it is certainly right to consider, as the author does, the features dealt with as closed find-contexts. Through a simple seriation, based on the presence or absence of various leading types, these find-contexts are divided into 5 chronological phases. From phase 1, which is chronologically placed through typological affinity to grave-inventories of the early Iron Age corresponding to Montelius' period VI and Schwante's Wessenstedt phase, the series runs upto an early stage of the late pre-Roman Iron Age, with phase 5 scarcely later than Hachmann's *frühe Mittelphase*. The latest part of the pre-Roman Iron Age is not dealt with in this discussion, but will be taken up in connection with the publication of finds from the early Roman Period in volume II of the series.

The author's emphasis of the significance of a chronology built upon local material is obviously correct, and although the background material for the pottery analysis is not particularly comprehensive, the results certainly look like a convincing step in the right direction.

In the publication of the pre-Roman material from the *geest* between the lower Weser and the Ems the book follows a traditional pattern in going through the individual artefact-types, first the pottery, then the metalobjects, with a description of formal variation, distribution, and a discussion of the type's chronological position. It is no surprise that this study shows that the particular area under study, apart from particular local forms, also shows a considerable series of features in common with the Weser-Aller area and the Jastorf group in north-eastern Niedersachsen. Amongst the pottery for instance, the important jar-forms of the Dötlingen and Gristede types from phases 1 and 2 respectively are closely linked in this way to the Nienburg jars in the Weser-aller area, and the general development of the pottery also shows features repeated within the Jastorf area. Amongst the metalwork, the belt-hooks and various pinforms also show a close association with the Jastorf area. With the appearance of fibulae of early La-Tène form and contemporary neck- and arm-rings made in Celtic style, features appear which at this time are not known in Jastorf contexts, but which together with similar finds in the Weser-Aller area show an early connection with the Celtic world. The marked concentration of imported metal vessels of the late Hallstatt/early La-Tene, such as situlae of Rhine/Tessin type and *ciste a cordoni*, along the lower Weser underlines the importance of the Weser area as a major communication route from south to north.

Besides the discussion of the finds, a survey of the burial practice in the research area takes an important place in Nortmann's work. After a characterisation of grave-forms in the early Iron Age, Montelius' period VI, the pre-Roman graves are described in detail. While cremations, placed secondarily in barrows, were dominant in the early Iron Age, this burial form is abandoned entirely in the transition to the pre-Roman Iron Age; primary barrows are raised instead over the funeral pyre itself. When, occasionally, charred remains of grave goods are found they are often buried in a pit below the barrow. The graves are found in larger or smaller groups and sometimes occur in barrow cemeteries which also include earlier barrows of the early Iron Age. Although the majority of the dated graves produce finds of an advanced stage in the pre-Roman Iron Age, there is, according to Nortmann, little doubt that the marked shift in burial practice happens at the transition from the early Iron Age to the early pre-Roman Iron Age. The new grave types, which are still in use in the beginning of the late pre-Roman Iron Age before being replaced by cremation pits under the normal ground surface, are derived from the ring-grave area, where the closest parallels are found in north-eastern Holland. The author associates this western connection with the appearance within the Zeijner culture of Ruinen wommels I pottery, which is closely connected with jars of the Gristede type in western Niedersachsen and Nienburg jars in the Weser-Aller area.

A score of relatively richly-furnished graves take a special place amongst the pre-Roman finds, all including nails, ring-bolts or other iron artefacts which the author believes could only have been used in connection with wagons. This interpretation is supported by the finding of a linchpin together with a number of nails in a grave from Pestruper Heide, Kr. Oldenburg. Linchpins of identical make are known from Celtic areas, and were used to keep the hub of the wheel in place. Because of the fragmentary condition of the finds, the author refrains from commenting on the construction of these vehicles, which could equally well have been two- or four-wheeled. Nortmann's argument that consideration of the other contents of these graves makes it probable that they are women's graves is however important. The evidence is the occurence of belt-hooks, neck-rings and other jewellery in a number of the graves. Since osteological analyses were not used to corroborate this interpretation the possibility must remain open that some of the less expensively furnished graves were men's burials. This applies to those finds which apart from nails, ring-bolts etc., only contain pottery or pins. The wagon graves are dated to the second half of the earlier, and the beginning of the later pre-

Roman Iron Age, and stand quite alone amongst the north-west German material; no particular connection with the Celtic or the north-German/Danish wagon burials is evident.

Through his thorough publication and treatment of the pre-Roman finds from the *geest* between the lower Weser and the Ems, Hans Nortmann has taken research into the pre-Roman Iron Age of north-western Germany a good step forward. As the author himself indicates, the frequently very scanty source-material has set limits on which topics could profitably be pursued. However within these limits the book stands as a solid example of what is best in the German research-tradition. The most comprehensive catalogue with corresponding plates with drawings of all the important finds which have not previously been published also contributes to making the book especially useful. [Translated by John Hines]

Jens-Henrik Bech

JOHN HINES: *The Scandinavian Character of Anglian England in the pre-Viking Period.* – BAR, British Series No. 124, 1984.

The period we are dealing with is the 400 years from the withdrawal of the last Roman legion from England in 406 A.D. to the first Norse Viking attacks on Dorset and Lindisfarne in 787 A.D. and 793 A.D., respectively. During these four centuries England was drastically changed as to the ethnic composition of its population and the political and religious structure of its society. During the 5th century A.D. Angles, Saxons, and Jutes, and possibly also other tribes of continental origin, invade the English south and east coasts and establish themselves in minor kingdoms. Their internal strifes do not calm down until the 8th cent. When Offa of Mercia (757–796) is the first king who can rightly use the title of *Rex totius Anglorum Patriae*. At the same time the Christian mission is so much intensified that during the 7th century the Anglo-Saxon landholds are incorporated into the universal organisation of the Roman Catholic Church. The written and material sources from this period supply and verify each other, and the archaeological finds have also generally confirmed what Beda said in 730 concerning the tribes involved and their areas of settlement on the continent and in England.

All this forms the basis of the present studies, which are introduced by a summary but instructive presentation of the literature from Tacitus to the present, which has light on the history of these four centuries. However, the theme of the book is not the Anglo-Saxon invasion and settlement in England, but the evidence – especially found in the area settled by Angles – of close and early contacts with the Norse or Scandinavian peoples whence the Vikings' devastation and conquests later originated. Thus the title of the book calls these four eventful centuries "the pre-Viking Period".

More than two-thirds of the present work deal with detailed studies of types of artefacts connecting Scandinavia (including Jutland and the Danish islands) with Anglian England during the 5th and 6th centuries. The artefacts include: clasps mainly used in the female dress for gathering a slit sleeve round the wrist, bracteates, shield-shaped pendants, and various types of fibulae: square-headed-, cruciform-, anglian equal-armed-, and annular brooches. Shetelig, Åberg, Leeds, and not least Vierck have earlier dealt with these types and the English-Scandinavian relations they reflect, but Hines' presentation of the material is much more comprehensive, and his analyses and interpretations are of much greater insight than were those of his predecessors. The big find categories, clasps and square-headed brooches are classified according to new principles that seem to facilitate an unambiguous and essential characterization of each separate find. The classification of the rest of the material also includes many critical and independent observations, which lend credence to the comprehensive survey of the distribution of the types.

The studies do not lead to any single, simple, and comprehensive explanation to the parallel phenomena, and no historical sources tell us how to interpretate the material. During the last quarter of the 5th. century wrist-clasps, equal-armed brooches, and certain shield-shaped pendants are introduced into the Anglian area. The closest parallels are found concentrated in western Norway, but as the clasps are part of a female dress that did not exist in England, this phenomenon is best explained as a result of a migration from these coastal regions in Norway to England. It may have been a limited migration, but if so, it must have been a migration of influential people, for the fashion soon spreads all over the Anglian area. Other types in common can best be explained as articles of export from south-east Norway and Denmark, recalling the spread of Scandinavian jewellery on the continent that takes place at the same time. In some instances the Scandinavian influence in the Anglian area seems to have come via Kent, but in other cases Anglian England must be regarded as a station en route for the spreading of Scandinavian types to Kent as well as the continent. Furthermore, finds in Norway and Denmark give evidence of an influence in the opposite direction, i.e. from England to Scandinavia. So during the 5th and 6th centuries the North Sea must have been intersected by numerous lines of communication along which goods, craftsmen, and sometimes whole tribes travelled from shore to shore.

The two next centuries are disposed of in only one chapter. This is probably justifiable, for the relevant source material is quite limited, but it may also reflect certain limitations in the author's interests and his knowledge of the material. But that is only human. Among the sparse evidence of continued Anglo-Scandinavian relations during the 7th and 8th centuries the Sutton Hoo find looms large. However, it is no longer maintained that it reflects direct contact between royal families in East Anglia and Uppland, as recent research has raised doubts as to the Scandinavian origin of several of the artefacts. Likewise the boat-grave may equally well have been inspired by Norwegian as central-Swedish burial customs, but the very close correspondance to Scandinavian material still carries a lot of weight. The English style II-ornamentation so copiously represented at Sutton Hoo, undoubtedly has its roots in Scandinavian ornamental art. Furthermore, it is noticable that this influence even leaves its mark on Anglo-Irish illumination. What is even more important, and which the author does not mention, is that the Anglo-Irish clerical art with its peculiar mixture of Celtic, Oriental, and Germanic elements of style

has clearly influenced the stylistic development in Scandinavia from the beginning of the 7th century and throughout the 8th century.

The poems Beowulf and Widsith, whose subjects derive from Scandinavia, and partly from the period before the Anglian invasion of England, also bear witness to the cultural relations between Scandinavia and England. Hines gives a thorough account of their contents and deals with the problems concerning their interpretation and dating. The very wide span of years for their dating, the end of the 7th century to the beginning of the 9th century, is, however, only given with reserve.

The thesis of the book is that close and manifold relations have existed between Anglian England and Scandinavia prior to the Viking Age, and the thesis seems to be fully documented. Close-reading Alucuin's letter to King Ethelred of Northumbria, which reflects the writer's immediate reaction to the Lindisfarne disaster, Hines is able to show that the attackers were by no means unknown to Alcuin and his contemporaries – it was their changed and violent behaviour that shocked them. What actually happened in 787 and 793 can be put quite succinctly, "What was new was that the Scandinavians were no longer traders but raiders." [Translated by Ul S. Jørgensen]

Mogens Ørsnes

Kolloquien zur allgemeinen und Vergleichenden Archäologie (AVA-Kolloquien) and *Materialien zur Allgemeinen und Vergleichenden Archäologie (AVA-Materialien)*. Edited by H. Müller-Karpe, Kommission für Allgemeine und Vergleichende Archäologie des Deutschen Archäologischen Instituts, Bonn. München (C.H. Bech). 1981–.

On the occasion of the 150th anniversary of the *Deutsches Archäologisches Institut* in 1979 a new section of the Institute was created: The *Kommission für Allgemeine und Vergleichende Archäologie* under the direction of H. Müller-Karpe. The first volume of the *AVA-Kolloquien, Allgemeine und Vergleichende Archäologie als Forschungsgegenstand* (1981), presents summaries of papers by students and scholars from 15 German universities and by professor Müller-Karpe himself, given at an initial conference in 1981. This volume contains the manifesto of the commission which calls for documentation and systematization of archaeological sources within seven main disciplines: settlement archaeology, the archaeology of economy, trade, and crafts (*Wirtschaftsarchäologie*), the archaeology of art, social archaeology, the archaeology of religion, chronological archaeology, and the archaeology of cultural contacts.

This is perhaps the most capacious research programme ever presented in the world of archaeology, and indeed the following 20 works published by the commission show the diversity of research sponsored by it. That the programme is set out by Müller-Karpe is only a logical consequence of the impressive work he has done over the last 20 years in order to gather and summarize archaeological sources on a global basis (e.g. *Handbuch der Vorgeschichte* I–IV, 1966–1980. – *Prähistorische Bronzefunde*, 132 vols. and being continued. 1969–.). Müller-Karpe has become the German archaeologist most devoted to the universality of the German Archaeological Institute already adopted at its foundation in 1829. From the very beginning the Institute established satelite institutes in those parts of the Mediterranean and the Near East where research was being done in the archaeology of the Ancient World. The new commission has been given the task to support studies primarily in those fields that are not within the scope of the regional branches of the Institute.

The two series under review are complementary in the sense that while the *AVA-Materialien* deal with very dispersed themes, the *AVA-Kolloquien* contain contributions to general issues. Besides the introductory volume of the *Kolloquien* mentioned above, the following titles have appeared: 2. *Zur geschichtlichen Bedeutung der frühen Seefahrt* (1982). – 3. *Archäologie und Geschichtsbewusstsein* (1982). – 4. *Zur frühen Mensch – Tier – Symbiose* (1983).

From the first volumes of the *AVA-Materialien* we list the following: 1. H. Müller-Karpe: *Neolithische Siedlungen der Yangshao-Kultur in Nordchina* (1982). – 2. T.O. Höllmann: *Neolithische Gräber der Dawenkou-Kultur in Ostchina* (1983). – 3. R. Kenk: *Früh- und hochmittelalterliche Gräber von Kudyrg im Altai*. – 4. R. Kenk: *Frühmittelalterliche Gräber aus West-Tuva* (nos. 3 and 4 in one volume, 1982). – 5. G. Hecker & W. Hecker: *Pacatnamú. Vorspanische Stadt in Nordperu* (1982). – 6. E.F. Mayer: *Chanchán. Vorspanische Stadt in Nordperu* (1982). – 7. P. Kaulicke: *Gräber von Ancón, Peru* (1983). – 8. O Rönneseth: *Gräber im nordwestlichen Tibesti (Tschad)* (1982). – 9. P. Yule: *Lothal. Stadt der Harappa-Kultur in Nordwestindien* (1982). – 10. H. Müller-Karpe: *Neolithische Siedlungen der Džejtun-Kultur in Süd-Turkmenistan* (1982). – 13. H. Todorova: *Kupferzeitliche Siedlungen in Nordostbulgarien* (1982). – 14. P. Yule: *Tepe Hissar. Neolithische und kupferzeitliche Siedlung in Nordostiran* (1982). – 15. J. Říhovský: *Lovčičky. Jungbronzezeitliche Siedlung in Mähren* (1982). – 18. G. Kutscher: *Nordperuanische Gefässmalereien des Moche-Stils* (1983). – 19. G. Fussman: *Surkh Kotal. Tempel der Kuschan-Zeit in Baktrien* (1983). – 20. H. Müller-Karpe: *Jungbronzezeitlich-früheisenzeitliche Gräberfelder der Swat-Kultur in Nord-Pakistan* (1983). – 21. M. Dohrn-Ihmig: *Neolithische Siedlungen der Rössener Kultur in der Niederrheinischen Bucht* (1983).

Ten out of these eighteen works are source-collections in that they gather information from published or unpublished, written sources about major find complexes or monuments of central importance (nos. 1–4, 6, 7, 9, 10, 14, 20). In three of the volumes Müller-Karpe has collected documentary evidence about sites in Central Asia and China. Other volumes (nos. 13, 14, 15, 21) are single monographic publications of recently excavated sites or new surveys of related sites and materials.

In contrast to other German publications, like e.g. those of the *Römisch-Germanische Kommission*, the new series of *AVA-Kolloquien* and *-Materialien* look modest and are all in octavo, mostly in soft binding. The quality of printing, however, is blameless, although some of the illustrations tend to be rather uniform and schematic, being in the style known from other publications by Müller-Karpe. This technique is possibly the most rational way to cope with a vast material. In most of the volumes the graphic and photographic presentation is of a standard that proves that even high quality archaeological reports can be produced at a moderate cost.

Also published by the *Kommission für Allgemeine und Vergleichende Archäologie* are the *Beiträge zur allgemeinen und Vergleichenden Archäologie* and the *Forschungen zur Allgemeinen und Vergleichenden Archäologie* (both by C.H. Beck, München).

P.O. Nielsen

Geofyzika a Archeologie – Geophysics and Archeology. 4th meeting of geophysicists and archeologists in Liblice, Czechoslovakia, 1–4. November 1982. Ed. by E. PLESLOVA-STIKOVA. Interni tisk n.p. Geofyzika Brno a Archeologickeho ustavn CSAV Praha. Praha 1983.

This volume is a result of a four days symposium in Liblice, in November 1982, where about 50 archeologists and 15 geophysicists, geologists and engineers participated to report on the progress in the application on geophysical methods in archeology in Czechoslovakia. In addition, a few of the papers deal with investigations in Egypt and with reviews of methods and results from Poland, GRD (East Germany) and Austria.

For one not familiar with Czechoslovakian language it is very difficult to extract useful informations from this book as from the about 30 scientific papers presented, 27 are given in Czechoslovakian, the remaining three in German, English and Polish.

For all the papers a few lines of introduction, short figure captions and in many cases not very informative summaries are given in English. As the reviewer, like probably most of the readers of this journal, cannot understand Czechoslovakian, this review is based only on summaries and the figures presented, which of course does not give justice to the papers scientific value and standard.

The volume is organized in three sections. The first section, and by far the largest, deals with geophysical methodology, prospection and archeological verification during the years 1979 to 1982 in Bohemia (110 pages), Moravia (30 pages), Slovakia (15 pages), and Egypt, GRD, and Poland (30 pages). The second section consists of one paper about archeomagnetic dating (21 pages) and the third section gives summaries on experiences with air photography and remote sensing in Czechoslovakia and Austria (12 pages).

From the geophysical prospecting methods used, magnetometry was by far the most popular one, with resistivity methods on second place and thermal, electromagnetic, gravimetric, and seismic methods therafter, about in that order. Most spectacular appeared to be magnetic results from Bohemia presented by F. Marek and E. Pleslova-Stikova. Detailed on 1 × 1 m grid based magnetometer readings revealed double ditch circular structures of prehistoric age at Lochenice and Bylany with diameters of 70 and 100 m respectively. In addition long linear magnetic and further isomagnetic features could be identified. On another side, Makotrasy, a large square enclosure, ca. 1200 m long, of the Funnel Beaker culture, was magnetically outlined and a multitude of smaller anomalies related to individual settlement objects have been indicated. At the site Mzecke Zehrovice, Central Bohemia, a well known Celtic sanctuary and La Tène settlement, magnetic anomalies are related to metallurgical waste, hearths, hut structures, ditches etc. In all, 20 ha area has thus been surveyed in detail in Bohemia during the last couple of years. Similar magnetic prospection was reported from Moravia (V. Hasek *et al.*) and Slovakia where the method was also applied to outline fortifications of the Middle Ages.

The other geophysical methods mostly serve as supplementary tools, as integrated geophysical studies can greatly improve interpretation: Almost all archeological structures and objects exhibit magnetic anomalies, but not every magnetite anomaly is necessarily related to archeology. There may be geological "noise" or metallic objects from recent times.

A few cases are reported on the application of resistivity method for outlining subsurface masonry at sites from the Middle Ages, in churches, as well as in Egypt (Memphis). Elektromagnetic prospection, potentially much faster than resistivity surveys, was reported only once as a test for the application of an equipment operating in the 100 MHz frequency range. Although the survey apparently was successful, from the summary alone it is impossible to gain a clear picture of the method and the results.

Two reports on thermic measurements in churches are also presented and are of special interest as such surveys are relatively scarce and results may be useful in planning of remote sensing surveys. Using instruments that measure infrared radiation, temperature differences of up to a few degrees have been found. To enhance temperature gradients, the time of measurements is important due to variable heat capacity and conductivity in the underground. Tests therefore have been conducted under non equilibrium conditions, when strong frosts began to set in.

A thorough analysis of archeomagnetic dating investigations using the method of Thellier to determine paleointensities was reported by O. Orlicky and J. Tirpak. Ages from 5000 B.C. to 900 A.D. have been found. The accuracy of the method has been improved greatly during the last decade due to modification in the techniques and development of standard curves, and we can expect from this method important results in the future, particularly when combined with inclination and evt. declination records.

In summary, this volume presents an overview of the geophysical methods presently applied in Czechoslovakia, with the results obtained from 1979 to 1982. The heterogenity of the papers, demonstrated by the highly variable value of the English summaries indicates, that almost no editorial effort has been spent in producing this volume. In conclusion, it is advisable to consult a dictionary on Czechoslovakian language to retrieve the information about geophysical prospection of the important sites presented.

G. Schoenharting