

Trade in Danubian Shaft-Hole Axes and the Introduction of Neolithic Economy in Denmark

by ANDERS FISCHER

INTRODUCTION

There is general agreement among Danish archaeologists that the introduction of animal husbandry and grain cultivation were one of the most decisive events in the country's prehistory. On the other hand there is no agreed opinion as to how the new production forms came to the country in the first place (see e.g. Becker 1947 and 1955, Troels-Smith 1953 and 1967, Andersen 1973, Skaarup 1973 and 1975, Fischer 1974). Were they brought here by land-hungry and adventurous immigrants from the agricultural cultures further south, or did increasing population pressure and the development of a more complex social organization among the local hunting population make the change of economy attractive and possible? In this debate the recent find of a central European shaft-hole axe on a Late Mesolithic habitation site in Denmark opens new perspectives.

THE CULTURAL AND CHRONOLOGICAL POSITION OF THE DANUBIAN SHAFT-HOLE AXES

The new find (fig. 1) is made of a layered rock. Its present colour is grey-green with stripes of green-black. The dark parts – which unlike the rest of the surface are unweathered – show that the axe was originally very smoothly polished.

The form is that of the common Central European »Danubian shaft-hole axe«. With its unequally curved narrow sides it fits most closely to the variant »hohe durchlochte Schuhleistenkeil« though the flatness of the broad sides show some correspondence to the variant »Breitkeil« or »Axt« (c.f. Brandt 1967:9–12, Schwabedissen 1967:411). On the basis of some thin-section analyses it has been postulated that some

Danubian axes from the Rhineland and Schleswig-Holstein were made of amphibolite from Zobten (Sobotka) in SW Poland (Schietzel 1965:39, Meier-Arendt 1966:70–71, Schwabedissen 1967:411). No equivalent examination has yet been made of the new axe, but it has been shown by X-ray and refraction examination done by Niels Hald at the Geological Museum in Copenhagen to be made of amphibol-rich crystalline rock. A number of shaft-hole axes of the same shape and material are already known from various parts of Denmark (fig. 3). These axes are generally considered as imports from until now undetermined parts of Central Europe (see Glob 1939 and 1951, Lomborg 1963) – an assumption which is affirmed by the fact that the kind of rock used is not commonly seen as glacial erratic in Denmark.

The new find is a surface discovery from a recently ploughed-up settlement measuring about 20×20 m situated on the edge of a very low sand ridge in about the middle of the bog, Store Åmose, in western Zealand. The rest of the material from this clearly defined find concentration consisted – apart from simple flint flakes and cores – of 1 elongated flake scraper, 3 blade awls, 3 transversely retouched blades, 1 transverse arrowhead, 4 core axes (2 of which seem to have a »specialized« edge), 4 symmetrically flat-flaked axes, 1 amber pendant, and a sherd from a so-called blubber lamp (fig. 2). In addition there were a fragment of a smoothed shaft made of Red Deer antler, a spike of mammal bone, and a number of fragments of unworked bone, identified by Morten Meldgaard, Zoological Museum in Copenhagen, as of Red Deer, Roe Deer, Wild Pig, Otter, and Pike.

Apart from the shaft-hole axe the finds are exclusively of types which are common on sites from the later part of the Ertebølle Culture (EBK). Despite the small number of artifacts the industry can readily be

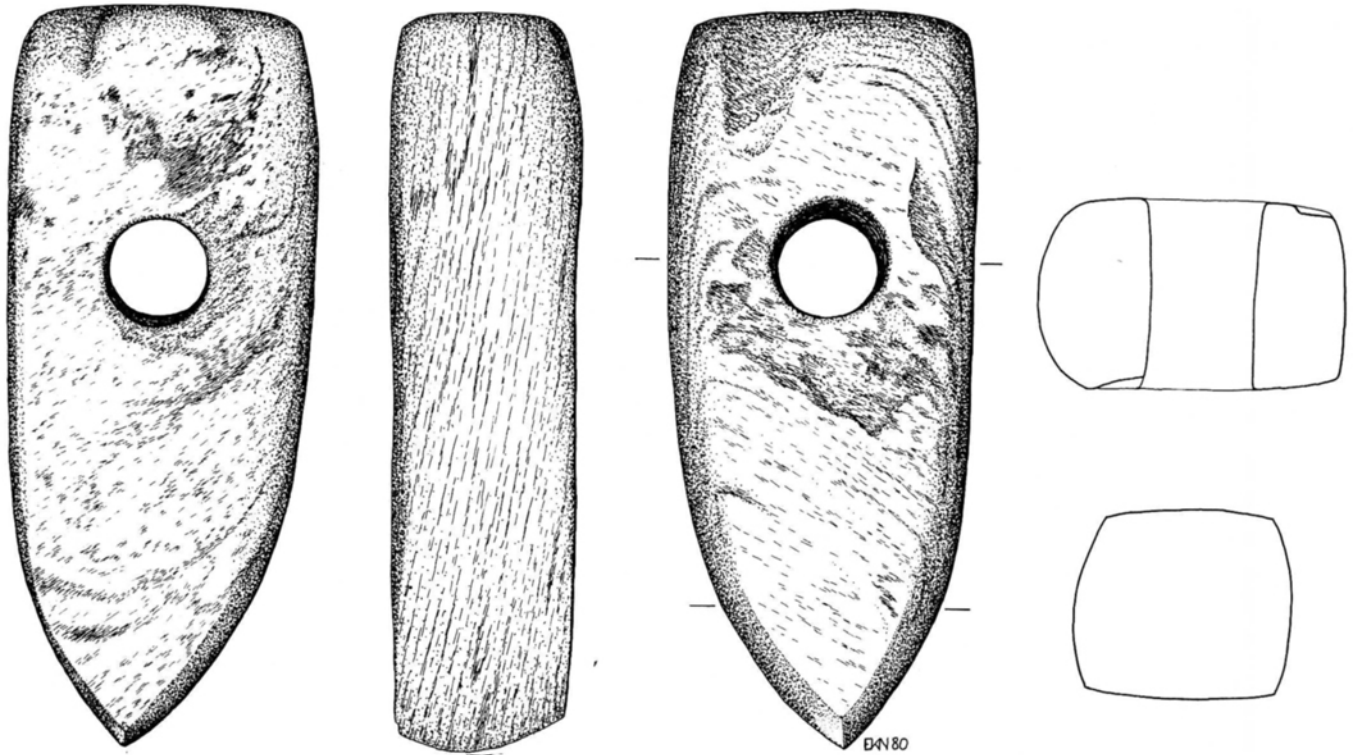


Fig. 1. Danubian shaft-hole axe from a recently found Ertebølle Culture settlement in Store Åmose, W-Zealand. 2:3. (Eva K. Nielsen, del).

paralleled with layers 8 and 9 at Vejlebro, ca. 3500 b.c. (Malmros 1975), Ølby Lyng, ca. 3300 b.c. (Petersen 1971), and Ringkloster's middle and upper layers, ca. 3300 b.c. (Andersen 1975) (1).

As all the finds were from the surface it cannot be proved that they were of the same age, but the limited extent of the find-bearing area and the apparent cultural homogeneity of the objects of flint and bone/antler argues that the site was only in use once, and it is therefore probable that the shaft-hole axe was deposited at the same time.

If we take into consideration the other finds of Danubian shaft-hole axes in Denmark we find support for this chronological and cultural placing. The existing literature already contains various indications that the axes belonged to the EBK. To begin with there is an old discovery from Vester Ulslev on Lolland (Glob 1939:132). According to the quite clear account of the finder this was found in an occupation layer that was sealed by peat. In the National Museum's subsequent excavation the layer was found to contain a rich material from the late EBK (Skaarup 1973, note 279).

There is also a newer find from Brændegård on SW Funen. Here a Danubian shaft-hole axe was found on a ploughed up late EBK settlement (Thorlacius-Ussing 1977). Furthermore a number of unpublished surface finds of Danubian shaft-hole axes derive from more extensive find concentrations, largely or exclusively of late EBK types (2).

Thus there are several indications in the present material that the Danubian shaft-hole axes from Denmark probably belonged to the EBK. This cultural attribution however conflicts with earlier opinions according to which the type was a plough-share and/or was attributed to the time of the Funnel Beaker Culture (TRB) (Glob 1951:82, Brøndsted 1957:174, Berg 1973:73).

If the attribution to the EBK is correct the interpretation as ploughshares must be abandoned. In the first place the extensive material from the Danish EBK gives nowhere any sure indication that agriculture was practised. Secondly – and no less important – the first agricultural indicators in the pollen diagrams (cereals, *plantago lanceolata*, etc.) first appear at about the time

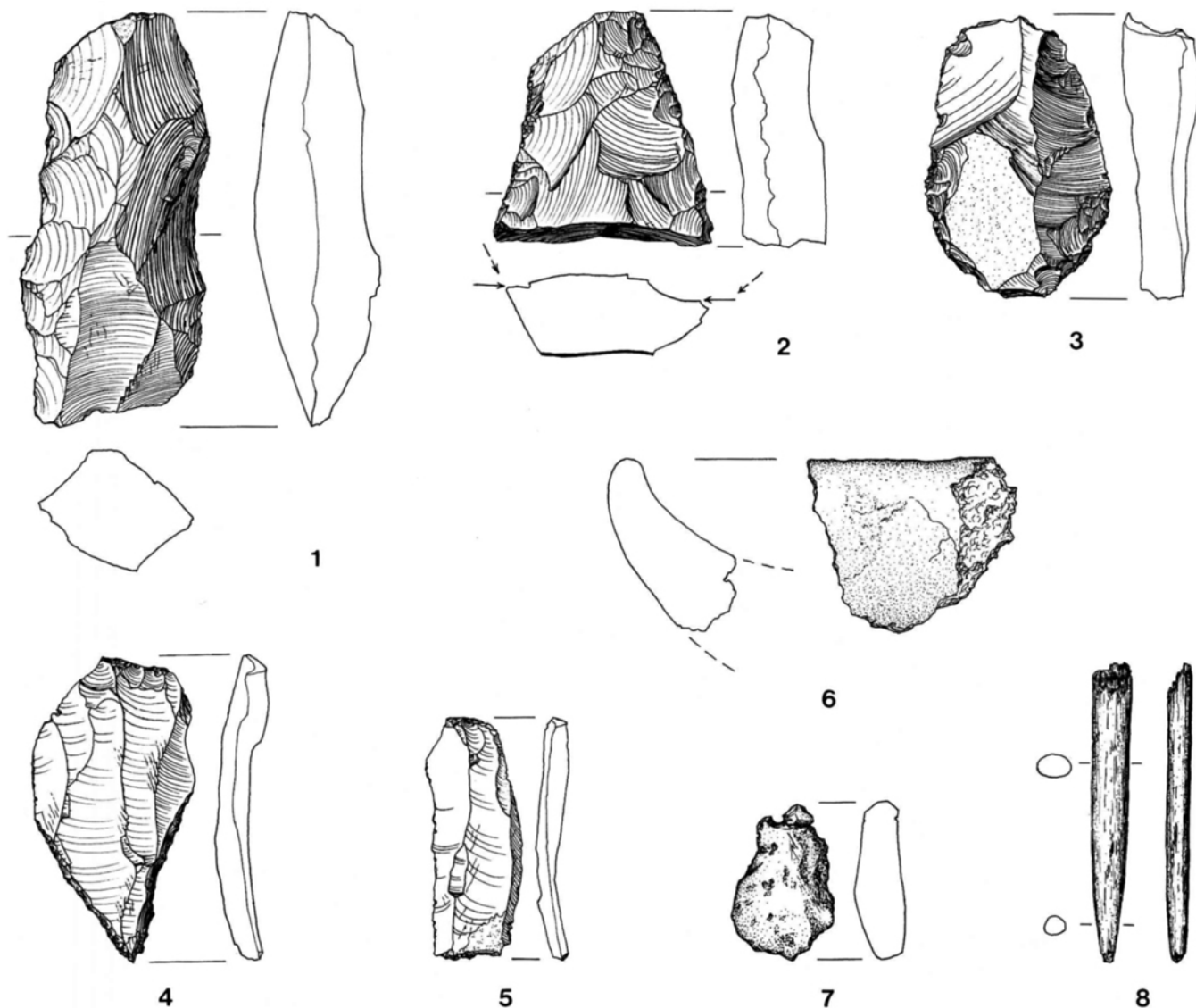


Fig. 2. Flint tools, bone point, potsherd, and amber pendant from the recently found Ertebølle Culture settlement in Store Åmose. 2:3 (Eva K. Nielsen, del.).

of the elm decline (Troels-Smith 1953:13, Iversen 1967:44). This took place at about 3100 b.c. (Nilsson 1964). As the EBK ended about 32–3100 b.c. (Andersen 1975:83) this culture cannot be responsible to the vegetational innovations. It is most reasonable to connect these agricultural indicators with the TRB, whose earliest C-14 dates in Denmark are from about 3100 b.c. (Skaarup 1975:205). It need give no great surprise if the earlier attribution of the Danubian shaft-hole axes from Denmark to the time of the TRB is mista-

ken. It was not based on find combinations containing TRB objects, but on the interpretation as ploughshares, and as well perhaps on an unstated supposition that a primitive hunting society could not have had trade connections with a distant farming society. As the present attribution to the EBK is not based on closed finds it would be reasonable to re-examine the cultural placing suggested here in the light of the far larger Central European material.

Danubian shaft-hole axes are known there from

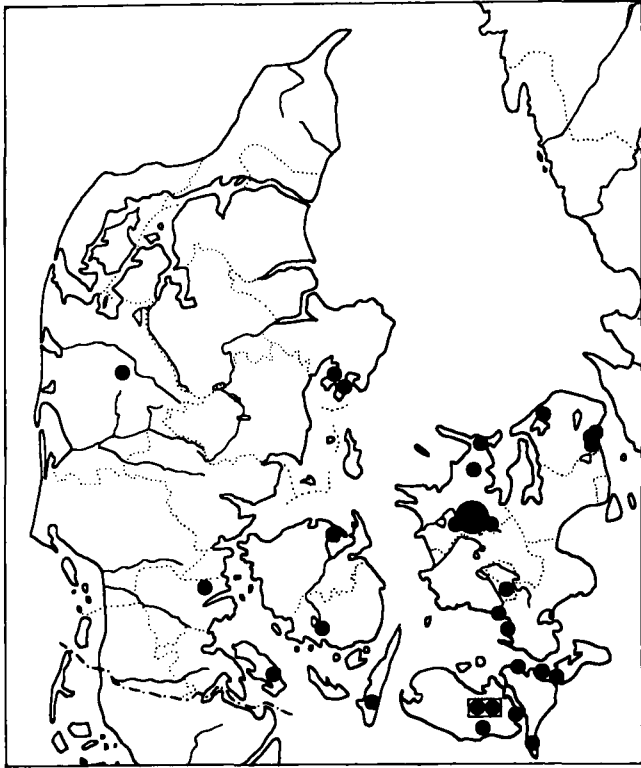


Fig. 3. The distribution of Danubian shaft-hole axes found in Denmark (unprecisely located finds excluded). The big dot indicate the axe recently found at a small Ertebølle culture site in Store Åmose. The dots surrounded by a rectangle indicate a possible grave from Udstolpe containing two Danubian shaft-hole axes.

many well-documented graves and settlements dated to the later part of the Danubian culture cycle – i.e. from the Stichband, Rössen, and Gatersleben cultures (see e.g. Brandt 1967, Schwabedissen 1967, Behrens 1973, and Lichardus 1976). Two C-14 dates of about 3400 b.c. (Behrens 1973) suggest that these cultures were contemporary with the Late EBK in Denmark. Typological considerations place these cultures earlier than the various local variants of the TRB, which have yielded no certain finds of Danubian shaft-hole axes. It is now established by a considerable number of C-14 dates that the Danish EBK preceded the appearance of the TRB groups of this region (see above). To judge from the available C-14 dates the TRB certainly cannot have made a later appearance in Central Europe than in Denmark (see e.g. Skaarup 1975:205). So from comparison with the situation in Central Europe it may be concluded that the axes came to Denmark

before the time of the local TRB culture, and that the import probably occurred during the later part of the EBK-epoch.

THE FUNCTION OF THE SHAFT-HOLE AXES

The Danubian axes have been interpreted earlier, both in Central Europe and in Denmark, as ploughshares. By now, however, the idea seems to have been abandoned by Central European archaeologists, and the objects are thought of rather as axe blades or related tools (Henning 1961, Schietzel 1965:35 ff., Modderman 1970:189), and it has been added that the way the Danubian shaft-hole axes were used as grave gifts implies a function corresponding to that of the later so-called battle axes (Zápotocký 1966:178 ff., Brandt 1967:8).

From the point of view of the Danish finds it is hard to see that the objects had any exclusively practical function. As axes they are unlikely to have been more durable than those of local rock (round butted axes and Limhamn axes), and they cannot have been as sharp as the native flint axes. Perhaps therefore their function in the EBK was partly symbolic – indicating social status. Analogies can be drawn with the New Guinea highlands, where certain kinds of stone axes were not merely of practical use, but served as status symbols and for payment of bride prices, compensations for slaying, etc. (Højlund 1979). Such a comparison is all the more attractive because the axes in the New Guinea highlands, like the Danubian axes, are distributed widely from a few centres of production. In view of the conspicuous material from which they were made and their shiny polished surface these shaft-hole axes of amphibolite must have been obvious status indicators and exchange objects for the Central European agricultural communities and the EBK's hunting tribes.

TRADE AND THE INTRODUCTION OF NEOLITHIC ECONOMY IN DENMARK

The trade system that has been shown to have existed between the Danubian cultures and the EBK is of interest not only as an example of trading contacts between different cultures, but more especially be-

cause the cultures had very different economic bases. The producers practised a broad spectrum agriculture, while the recipients lived exclusively from hunting, fishing and gathering.

Awareness of this trade reinforces the interpretation of certain EBK types as imitations of objects belonging to more southerly agricultural cultures of the same period (Andersen 1973:33 ff.). This concerns on the one hand a number of artifacts made of bone and antler (bone combs, bone rings, T-shaped antler axes) on the other hand it concerns the late EBK's pottery, on which there at certain sites in eastern Jutland can occur ornaments (Andersen 1975:62–64, see also Jennbert-Spång 1979:18) reminiscent of the Rössen culture's characteristic rows of double impressions.

It has long been clear (see e.g. Troels-Smith 1953:29, c.f. Becker 1955:154) that a number of flint tool types belonging to the early part of the Danish TRB culture continue a tradition from the preceding period's EBK. This has led to the hypothesis that the Danish TRB was borne by the same population as had earlier borne the EBK. However adherents of this theory have always found it difficult both to explain why the local EBK population introduced Neolithic economy and how it acquired knowledge of stock keeping and grain cultivation. Therefore many archaeologists have preferred to ascribe the introduction of domestic animals and plants to the immigration of agricultural societies from the south (thus leaving the problem of explanation to their colleagues further to the south). In this way it was considered easier to understand the existence of those early TRB artifact types and grave forms in Denmark that lacked clear antecedents in the EBK: the new cultural traits were thought to build on traditions from the south, while the obvious EBK traditions could be the result of assimilation by the agricultural communities of traditions and persons from the EBK.

The new knowledge of the EBK's trading connections with agricultural cultures supports the view that it did not necessarily have to be immigrant farming populations that brought the new agricultural technologies to Denmark. Through trade contacts it would have been possible for the EBK communities to acquire livestock and grain, and the knowledge necessary to start an independent agricultural production. Whe-

ther the possibility was in fact made use of is quite another question. If so it would have presupposed:

- 1) that the new forms of production were economically advantageous (at least to some individuals), and
- 2) that the local societies were at a stage of development (big-man society) that made it possible to organize the work and distribute the products in such a way that breeding-stock and seed-corn for future production were assured.

It is a task for future research to establish whether these preconditions were present. For the moment we must be content with a degree of reassurance that the second precondition was met. This reassurance comes from the Danubian shaft-hole axes (2) witnessing the existence of long-distance trade in objects of special status value.

Translated by D. Liversage

NOTES

1. All C-14 dates in this paper are given in conventional C-14 years, i.e. are based on a half-life of 5570 years and are uncalibrated.
2. A systematic enquiry after and registration of examples of the type in and near Denmark is being prepared. Information about such finds would be received with gratitude. Please apply to L. Pedersen and A. Fischer, First Department, National Museum, Frederiksholms Kanal 12, DK-1220 Copenhagen K.

REFERENCES

- ANDERSEN, S. H. 1973: Overgangen fra ældre til yngre stenalder i Sydsandinavien, set fra en mesolitisk synsvinkel. *Tromsø Museums Skrifter* Vol. XIV (Tromsø).
- 1975: Ringkloster, en jysk indlandsboplads med Ertebøllekultur (*Ringkloster. An inland Ertebølle settlement in Jutland*), KUML 1973-74 (Århus 1975).
- BECKER, C. J. 1947: Mosefundne lerkar fra yngre stenalder. Studier over tragt bægerkulturen i Danmark (*Neolithic pottery in Danish bogs*). *Aarb. for nordisk Oldkyndighed og Historie* (Copenhagen).
- 1955: Stenalderbebyggelsen ved Store Valby i Vestsjælland (*The Stone Age settlement at Store Valby, West Zealand*). *Aarb. for nordisk Oldkyndighed og Historie* 1954 (Copenhagen 1955).
- BEHRENS, H. 1973: Die Jungsteinzeit im Mittelbe-Saale-Gebiet. *Veröff. des Landesmuseum f. Vorgeschichte in Halle*, Bd. 25 (Berlin).

- BRANDT, K. H. 1967: Studien über steinerne Äxte und Beile der Jüngerer Steinzeit Nordwestdeutschlands. *Münster-sche Beiträge zur Vorgeschichtsforschung*, Bd. 2 (Hildesheim).
- BRØNDSTED, J. 1957: *Danmarks Oldtid*, Bd. 1, Stenalderen (Copenhagen).
- FISCHER, A. 1974: Introduktionen af korn og kvæg i Sydskandinavien, en befolkningspres-model. *Kontaktstencil* nr. 8 (Copenhagen).
- GLOB, P.V. 1939: Der Einfluss der vandkeramischen Kultur in Dänemark. *Acta Archaeologica*, Vol. X (Copenhagen).
- 1951: Ard og plov i Nordens oldtid. *Jysk arkæologisk selskabs skrifter*, Bd. 1 (Århus).
- HENNING, E. 1961: Untersuchungen über den Verwendungszweck urgeschichtlicher Schuhleistenkeile. *Alt-Thüringen*, Bd. V (Berlin).
- HØJLUND, F. 1979: Stenøkser i Ny Guineas højland. *Hikuin* nr. 5 (Århus).
- IVERSEN, J. 1967: Naturens udvikling siden sidste istid. *Danmarks Natur*, Bd. 1. (Copenhagen).
- JENNBERT-SPÅNG, K. 1979: Från jägare till bonde. En utställning om miljö- och levnadsförhållande hos fångstsamhälle och bondesamhälle. *Lunds Universitets Historiska Museum, Report Series No. 8* (Lund).
- LICHARDUS, J. 1976: Rössen-Gatersleben-Baalberge. Ein Beitrag zur Chronologie des mitteleuropäischen Neolithikums und zur Entstehung der Trichterbecherkulturen. *Saarbrücker Beiträge zur Altertumskunde*, Bd. 17 (Bonn).
- LOMBORG, E. 1963: Zur Frage der bandkeramischen Einflüsse in Südsandinavien. *Acta Archaeologica*, Vol. XXXIII (Copenhagen 1964).
- MALMROS, C. 1975: Vejlebro – en stenalderboplads ved Arrefjorden. *Nationalmuseets Arbejdsmark* (Copenhagen).
- MEIER-ARENDE, W. 1966: Die bandkeramische Kultur im Untermaingebiet. *Veröff. des Amtes für Bodendenkmalpflege im Regierungsbezirk Darmstadt*, Heft 3 (Bonn).
- MODDERMAN, P. 1970: Linearbandkeramik aus Elsloo und Stein. *Nederlandse Oudheden III* (Amersfoort).
- NILSSON, T. 1964: Standard Pollendiagramme und C-14 Datierung aus dem Ageröd Mosse im Mittleren Schonen. *Lunds Univ. Årsskrift*. N. F. Avd. 2, Bd. 59, Nr. 7 (Lund).
- PETERSEN, E. B. 1971: Ølby Lyng. En sjællandsk kystboplads med Ertebøllekultur. (*Ølby Lyng. An Ertebølle coastal settlement in eastern Sjælland*). *Aarb. for nordisk Oldkyndighed og Historie* 1970 (Copenhagen 1971).
- SCHIETZEL, K. 1965: Müddersheim. Eine Ansiedlung der jüngeren Bandkeramik im Rheinland. *Fundamenta*, Reihe A, Bd. 1 (Köln).
- SCHWABEDIENEN, H. 1967: Ein horizontierter »Breitkeil« aus Satrup und die mannigfachen Kulturverbindungen des beginnenden Neolithikums im Norden und Nordwesten. *Paleohistoria* Vol. XII (Groningen).
- SKAARUP, J. 1973: Hesselø – Sølager. Jagdstationen der südschandinavischen Trichterbecherkultur. *Arkæologiske Studier* Vol. 1 (Copenhagen).
- 1975: Stengade. Ein langelandischer Wohnplatz mit Hausresten aus der frühneolithischen Zeit. *Meddelelser fra Langelands Museum* (Rudkøbing).
- THORLACIUS-USSING, H. 1977: En udenlandsk økse i fynsk miljø. *Fynske Minder* 1976 (Odense 1977).
- TROELS-SMITH, J. 1953: Ertebøllekultur – Bondekultur. Resultater af de sidste 10 års undersøgelser i Aamosen, Vestsjælland (*Ertebølle Culture – farmer culture. Results of the past ten years' excavations in Aamosen Bog, West Zealand*). *Aarbøger for nordisk Oldkyndighed og Historie* (Copenhagen).
- 1967: The Ertebølle Culture and its Background. *Paleohistoria* Vol. XII (Groningen).
- ZÁPOTOCKÝ, M. 1966: Streitäxte und Streitaxtkulturen. *Palaeomythologie* LVII, 1 (Praha).