Spread of Agriculture in the North European Periphery

Analogous problems emerge in the Northern Hemisphere wherever food production advanced into the taiga.

Carl-Axel Moberg

Postwar research has considerably increased our knowledge of the spread of food production with the establishment of village communities in the Old World, from the beginnings of this spread in the Near East to its maximum marginal extension as a major historical event (*1*). This research has given us considerably more knowledge of the stages of the distribution and of its mechanics, especially in the nuclear area but also in central Europe and in parts of western Europe. Northern Europe is concerned with this development because it was reached by early continental forms of food production, and North European research has contributed not a little to the general European picture.

As such, early food production was introduced only in the southern parts of the Scandinavian peninsula. The consequent spread northward has to be studied on the basis of rather different material. It took place over long periods, and our present knowledge is still somewhat diffuse, the research situation being rather complicated. This article is intended to give a brief survey of the later acts in the drama of the history of food production in the marginal, but wide, North European areas.

The time span for the spread of food production from the Near East to Scandinavia seems to be at least 3000 years. By 3000 B.C. there are clear indications of early agriculture in Denmark. About 4000 years later, around A.D. 1400, agriculture had undoubtedly been established around the northernmost edge of the Bothnian Gulf of the Baltic. There it met the entirely different complex of reindeer breeding—a profoundly different form of food production—among the Lapps (the Samelats or Same). Details of this expansion can be studied only by the simultaneous use of different kinds of sources—archeological, botanical-zoological, and literary.

The author is Director of Göteborgs Arkeologiska Museum and Professor in Northern European and Comparative Archeology at Göteborgs Universitet, Göteborg, Sweden.

The Starting Point

The starting point in the south is marked by the establishment in Denmark and southern Sweden of the Continental Funnel Beaker Culture. Here, botanical and zoological evidence for agriculture and cattle breeding is available as far north as the Mälar Region (60°N) in Sweden, where the main sites of Vrå and Mogetorp in Södermanland have yielded botanical and zoological evidence.

This early food production was—by way of immigration or in other ways—introduced in regions where, during earlier periods, only food-collecting communities of various Mesolithic types are known. The details of this background are outside the scope of this article.

The Result

At the other chronological and geographical extreme, the evidence is literary in character. Historical sources indicate that contact was established in the 15th century between the northernmost ends (66°N) of the agricultural areas expanding northward along both shores of the Bothnian Gulf, in Sweden and Finland; at the same time, the Lapps were breeding reindeer in the adjoining inland areas of Sweden and Finland, and at the Varanger coast of northernmost Norway 70° to 71°N (*2*).

On the Atlantic and Arctic Ocean side of Scandinavia, in Norway, the limit of food production is farther north.

When and how did food production expand so far north, from the initial positions described?

Direct and Indirect Evidence; Archeological Inference

There is little or no possibility of answering this question by direct evidence—that is, by either archeological indications, such as preserved agricultural equipment, traces of fields, and so on, or biological evidence (botanical or zoological).

Botanical evidence may take the form of pollen of cultivated plants, other palynological indications of human manipulation of the plant cover, imprints of grains in pottery, or macroscopic remains of cultivated plants—charred grains and so on. Direct zoological evidence of the presence of domesticated animals consists of their preserved bones.

Undoubtedly such direct evidence ceases to be available far south of the actual northernmost area of distribution of food production. Any attempt to tell the story of food production in this peripheral area solely on the basis of direct evidence would give misleading results.

For all this remaining area, the problem has to be tackled with the help of indirect evidence—that is, by way of archeological inference. To do this one works backward chronologically, beginning with the medieval historical situation and proceeding toward the beginning, in a kind of historical approach.

In the same areas where food production was introduced by the Funnel Beaker Culture there developed, toward the beginning of our era, cultural complexes characterized by local adaptations based on a common continental culture. Their presence is predominantly indicated by graves in groups or in fields, whereas clear traces of settlements are left only in some of the sub-areas, probably those abandoned for one reason or another. In these special areas the importance of food production is clear. Thus, the extension of such complexes can be

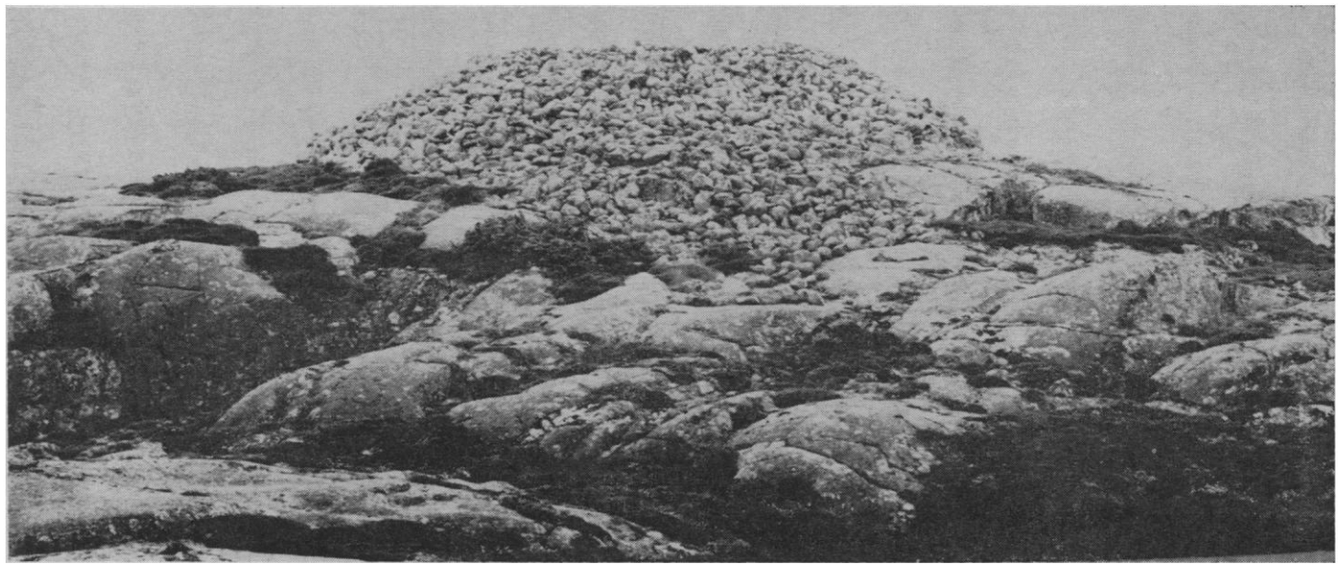

Fig. 1. Cairn on Valön Island, off the west coast of Sweden.

followed mainly by the distribution of graves. Indirectly this distribution indicates a considerable expansion of food production northward. However, this expansion seems not to have been continuous. Rather, it has to be seen as composed of a number of impulses, separated by interruptions in the movement or even by withdrawals.

The Final Establishment

The last and decisive drive northward took place during the 1st millennium A.D. Along the Norwegian coast it reached its northernmost limit of 69°N about A.D. 400 (*3*). On the east side of the peninsula it did not reach as far as that, but stopped at about 63°N, at about A.D. 400 (*4*). Between these two coastal extensions, a Norwegian-Swedish cross-connection at 63°N was established about A.D. 400. At this time a corresponding coastal arm along the east coast of the Bothnian Gulf had reached 64°N in Finland (*5*).

This expansion along the three coasts of Norway, Sweden, and Finland undoubtedly formed the direct basis for subsequent medieval agricultural settlement in northern Scandinavia.

Preceding Drives

However, during the more than 2000 years before this final drive, but after the initial establishment of the Funnel Beaker "basis" in the south, several earlier impulses may have occurred, and this possibility has to be considered. These are all rather hypothetical, owing to the nearly complete absence of direct traces of food production in the archeological record. In chronological order they are as follows.

1) *Scandinavian Western Pitted Ware*. One of the generally accepted main cultural groups in southern Scandinavia during the Middle Neolithic periods is the Western Pitted Ware Culture (*6*). It is often, in a generalizing way, labeled a hunting-fishing culture. This it may have been, since evidence of fishing and hunting of land and sea mammals is very strong in these finds, compared with finds belonging to the Funnel Beaker Culture and the Battle Axe Cultures. However, there are also substantial indications of pig breeding, and there are signs of agriculture. Thus, the Western Pitted Ware Culture must, in this connection, be regarded as food-producing. This is of interest in two specific areas. One of these is the east coast of Sweden, because Western Pitted Ware sites are known up to 60°30′N, which is north of the northernmost uncontroversial indications for the other roughly contemporary food-producing groups. But it must be emphasized that direct evidence of food production has not been afforded by the northernmost Western Pitted Ware sites. The second area where food production might have been introduced by Pitted Ware Culture is the Åland archipelago of Finland.

2) *European Battle Axe Cultures*. At about 2000 B.C., different groups of the European Battle Axe Cultures (*7*) in southern Scandinavia certainly had food production as their economic basis. In its typical form, with characteristic graves, this culture is distributed northward to 64°N in Norway, 60°N in Sweden, and 63°N in Finland. This distribution is generally interpreted as evidence for the spread of food production this far north.

The northern limit in Sweden is especially controversial. Corresponding to the Middle Neolithic of southern Scandinavia, there occur in Swedish Västerbotten, at 65°N, a number of hoards of tools of South Scandinavian types and material (flint). Malmer (*7*) has interpreted these finds as indications of an attempted establishment of food production by settlers belonging to the Swedish Battle Axe Culture. This interpretation—as well as the assignment of the group—has caused considerable controversy. Personally, I regard Malmer's conclusions as logical, but the evidence is still too weak to allow a positive evaluation (*8*).

What happened to food production in the northernmost areas after the disappearance of the Battle Axe Culture? The answer must be that, if the evidence for this northernmost Middle Neolithic food production is weak, the indications for its continuation are virtually nonexistent.

3) *Late Neolithic Dagger Culture*. At about 1700 B.C. there existed in the "basis area" in the south a Dagger Culture (*9*) with stone cists, belonging to a Late Neolithic period. It is generally assumed that this culture

is based on food production, even though, as Becker has quite correctly pointed out, the actual evidence as to the proportion of the food production within a possibly mixed economy is weak. The flint forms of this group have a distribution reaching far northward on the Scandinavian peninsula, but not in Finland. Such forms have been reported in Norway as far north as 63°. Theoretically, these finds might justify some inferences concerning a spread northward also of some form of food production. A hypothesis in this direction has been advanced by Hinsch and others. However, the distribution of these forms—mainly daggers, of which the material, flint, if not the tools themselves, is undoubtedly of southern Scandinavian origin—might be explained as a result of trade between food collectors in the north and semi-peasants in the south.

4) *Bronze Age Cairn Builders and Rock Artists.* The evidence from various periods of the next millennium which correspond to the South Scandinavian Bronze Age is more substantial, but the distributional problems are complicated. In its typical form, with characteristic graves concentrated, indicating settled regions, the so-called Northern Bronze Age of the textbooks is limited to the southernmost edge of southern Scandinavia and a few isolated spots slightly farther north. Outside these nuclear regions, occasional graves and hoards occur within peripheral zones. In some of these zones there are finds of other types, which might possibly be interpreted as indications of the contemporaneous presence of people belonging to other groups, thus hinting at a more complex cultural-geographical situation. To these zones belong the majority of two especially important types of monuments: the rock carvings of so-called southern or agricultural type and the coastal stone barrows, or cairns.

The cairns are among the most spectacular prehistoric grave monuments in our part of the world (Fig. 1). They usually occur isolated or in small groups on hilltops or mountaintops and contain central cists with burials or cremations within constructions that can often be proved to have been considerably more sophisticated originally than is immediately obvious in their present, usually badly damaged, condition. They exist by the thousands along the coasts of Norway, Sweden, and Finland, to latitudes, respectively, of 69°, 65°, and 65°N. The dating of these monuments presents difficulties, since only a very few of them have yielded finds that can be accurately dated, and these finds cover periods of different length in different areas. In the south most of them obviously belong to the Bronze Age (about 1500 to 500 B.C.), but some are clearly as early as the Late Neolithic period (about 1700 B.C.); in the north, at least in Norway and Finland, they continue down in time for at least several centuries after Christ.

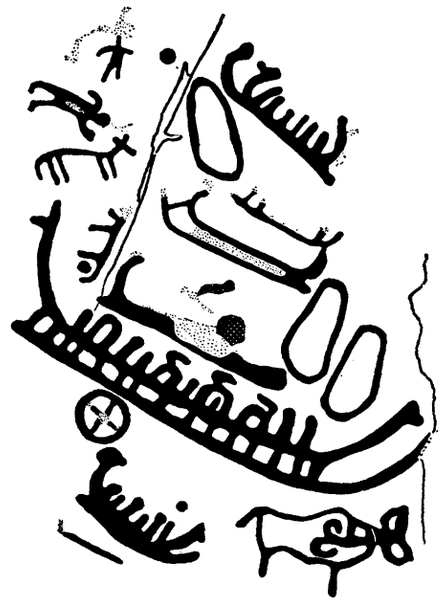

Fig. 2. Rock carvings with ship symbols, at Hovås, on the west coast of Sweden.

It has not been formally established that the stone barrows belong to one, continuously coherent, group. However, it is assumed here that they do. As to their origin, it is conventionally thought that they are a mere translation into stone of the soil-covered barrow of the Northern Bronze Age in the south. But Stenberger, among others, has argued for their independence and the possibility that their architectural form reflects influences from the British Isles (*10*). If the conventional view is the correct one, it is tempting to consider the distribution northward of the stone barrows an indication of an enormous drive northward of food production. The second view must lead to an attempt to find out what the economic situation of the cairn builders was. However, there is at present little real evidence of the nature of this situation. The geographical picture, especially the coastal distribution of the majority of the cairns, might be an important clue, hinting at a marine economy with much fishing and hunting of sea mammals. But this might be an erroneous interpretation; the graves may have been placed far from the settlements of the living for some religious reason. Actually, the settlements are not yet sufficiently known for this question to be resolved.

The rock carvings of the type in question are usually characterized (*11*) (Fig. 2) by ship symbols, foot-like signs, and cup-marks (small cupshaped cavities; see Fig. 2, top center); in addition, there are, in some areas, representations of people and animals, though in smaller numbers. This difference in numbers ought to be pointed out, since publication and interest have

Table 1. Evaluations of the time span of sites with lithic artifacts in the inlands of northern Sweden. Such evaluations differ considerably. This table attempts, in a generalizing way, to summarize some of the controversial opinions.

Archeologist	1500 B.C.	400 B.C.		A.D. 0	A.D. 400	A.D. 1000	A.D. 1500
	Stone Age	Bronze Age	Iron Age	Iron Age	Iron Age	Middle Ages	Modern times
B. Almgren, 1965	+	?					
M. Biörnstad, 1965	+	+	+	+			
M. Stenberger, 1962	+	+	+	(+)			
M. Stenberger, 1964	+	+	+	(+)	(+)		
S. Janson, 1965	+	+	+	+	+	?	
S. Janson, 1960	+	+	+	+	+	+	(+)

Table 2. Drives northward of various cultural groups.

Group	Period	Northermost latitude reached		
		Norway	Sweden	Finland
Western Pitted Ware Culture	~2000 B.C.	60°30′	60°30′	60°30′
Battle Axe Culture	~2000 B.C.	64°	60°(65°?)	63°
Dagger Culture	~1700 B.C.	63° ?	60°	
Cairn builders	1500–500(?) B.C.	69°	65°	65°

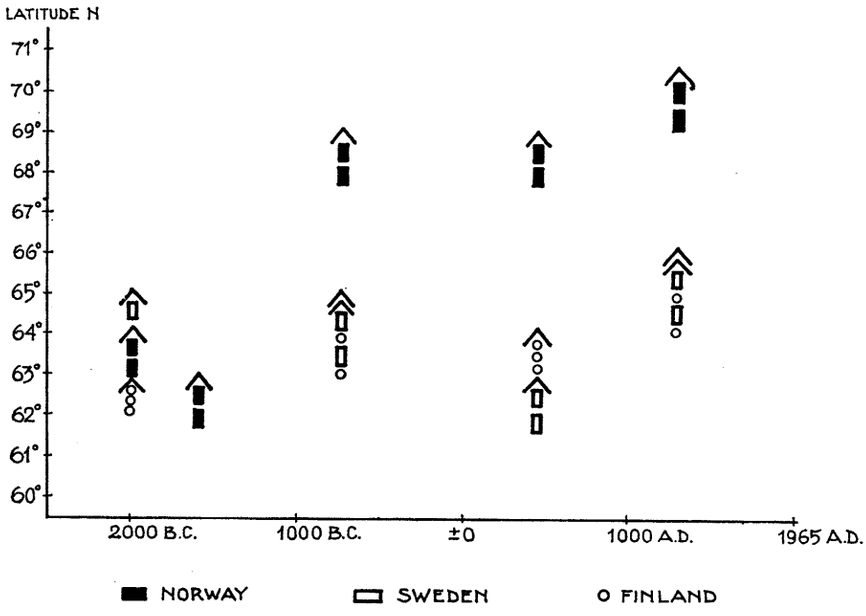

Fig. 3. The northern periphery of the area of food production. Arrows indicate hypothetical maximum northward distributions, as summarized in Table 2 and in the text.

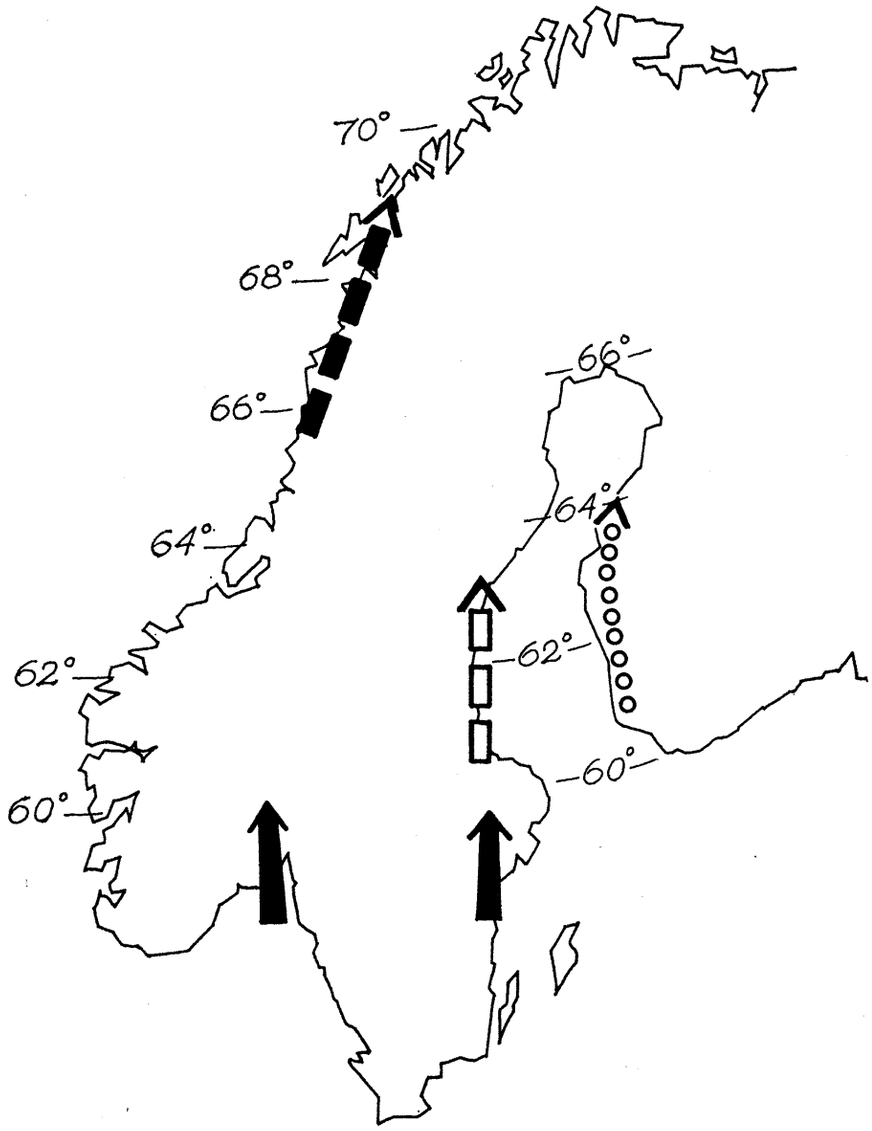

Fig. 4 (left). Limits of early food production in Scandinavia. (Solid arrows) Northernmost expansion of the continental food-producing Funnel Beaker Culture during the 3rd millennium B.C.; (broken arrows) northernmost limits of the establishment of food production in Norway, Sweden, and Finland at about A.D. 400 (see Table 2).

been concentrated on this minority, thus creating the erroneous impression that these petroglyphs are the prevailing ones. The generally accepted interpretation of the entire group as reflecting fertility ceremonies is based on observations in themselves probably valid for this minority. The case is similar with respect to datings to different parts of the Bronze Age. The distribution of the rock carvings is somewhat analogous to that of the cairns, though the two do not coincide in detail. Thus, the rock carvings are, in the south, firmly anchored within the nuclear area of the South Scandinavian Bronze Age group—the Northern Bronze Age Culture. But the majority belong to the much more extended coastal regions outside, even very far north of, this nuclear area; in Norway they occur to 68°; in Sweden, to 60°, in pure forms, and, mixed with other types of petroglyphs, to 63°N, at least.

If one accepts the generally accepted view that, in the south, the rock carvings have to be explained as traces of a fertility cult or the practice of magic among peasants, then their distribution in the north must inevitably be interpreted as an indication of the possible existence there of food production.

Among the controversial attitudes toward this problem one can find the more-or-less outspoken belief in the existence of some degree of food production very far north during this period (*3*, *12*). Thus Sjövold concluded that there must have been a "Norwegian" activity from the south as far north as 69°N during the Bronze Age, and that this activity must to some extent have had the character of permanent settlement, obviously with some food production, at least in the form of stockbreeding. But, as he rightly states, this settlement might have been discontinued. In my opinion, the question of the dating and of the subsistence basis of the people who built the stone barrows and used the rock carvings is one of the major unsolved problems of North European prehistory.

Late Survival of Food Collection in Inland Areas

In wide areas and over a considerable period, food collectors seem to have survived side by side with food producers in the same or adjacent areas (*13*). Opinions on the extent of such survival, especially on how late it can be traced in some inland areas, are still very controversial.

In the inlands of Northern Sweden, at about 64° to 67°N, hundreds of sites have been discovered and to some extent excavated, due to the large-scale salvage work organized by Riksantikvarieämbetet, the central office for antiquities in Sweden. The artifact material belongs to different groups. Typologically, earlier parts of the lithic material reveal contacts with Middle or Late Neolithic groups in southern Scandinavia at about 2000 to 1500 B.C. Later parts of the artifact material—lithic with some bronze metallurgy, and asbestos-tempered pottery—reflect contacts with the East European-Siberian Bronze Age shortly before the birth of Christ.

The possibly prolonged existence of the latter group is debated. There is some weak historical evidence. Some archeological and radiocarbon determinations are for this late period.

Evaluations of these data differ (Table 1). One theory is that the people belonged to the food-producing groups outside the area. The second is that the people were surviving nonproducers. If this is correct, there are again two theories. One is that the people belonged archeologically and ethnically to some group we have not yet been able to identify—an "*X*-group." The second is that they represent a prolongation of the "Eastern Bronze" group. Here the methodological difficulties are considerable, owing to the reutilization of sites, the lack of stratigraphy, the comparative scarcity of chronologically diagnostic artifacts, and the scarcity of radiocarbon determinations, those that have been made being often from samples of dubious cultural context.

The eastern Swedish part of the adjacent Southern Inland has been studied less intensively, but from the Norwegian part of the Southern Inland there are archeological indications—and radiocarbon determinations—pointing to research problems similar to those in the north.

However, these culture-survival questions have only limited, direct consequences for the evaluation of the positive expansion of food production.

Summary

During the 3rd millennium B.C., food production was established in bridgeheads north of the Baltic Sea and the Gulf of Finland. Within these first-reached regions of Norway and Sweden there is no conclusive evidence for unmixed food collection later, but there is considerable indication of different forms of mixed economy. In the peripheral areas outside these North European nuclear regions of food production, one or more impulses of expansion of food production may have occurred during prehistory. Final establishment of food production in the far north occurred only in historical times, after A.D. 1100. After A.D. 1600 there seems to have been no unmixed food collecting except in the small area occupied by the coastal Lapps on the shores of the Arctic Ocean, where it continued for some time. These drives northward have been discussed for the periods and areas indicated in Table 2. (See also Figs. 3 and 4.)

Apart from their interest for local regional history the importance of these processes is twofold.

1) The history of the fluctuations in peripheral distributions can be related to the history of climate, thus providing an opportunity for advancing the knowledge of human ecology.

2) The situation in northern Europe may have been related to corresponding situations in other areas around the northern Hemisphere where food production was advancing into, or even beyond, the forest zone, in Europe, Asia, and America. The same types of archeological questions arise for all these frontier areas. This is neither Old World nor New World archeology, but an anthropologically orientated One World archeology.

References and Notes

1. R. J. Braidwood and G. R. Willey, Eds., *Courses Toward Urban Life* (Aldine, Chicago, 1962); C. A. Moberg, *Kgl. Skogs Lantbruksakad. Tidskr.* **104**, 416 (1965).
2. H. Tegengren, *Acta Acad. Aboensis Humaniora* **19**, No. 4 (1952); B. Steckzén, in *Kgl. Vitt. Hist. Ant. Akad. Handlingar* (Hist. Ser. No. 9) (Stockholm, 1964); P. Simonsen, in *Norway North of 65 (Tromsö Museet Skrifter No. 7)* (Univ. of Oslo Press, Oslo, 1960); ———, *Viking* (1962), p. 179.
3. T. Sjövold, *The Iron Age Settlement of Arctic Norway* (*Tromsö Museet Skrifter No. 10*) (Univ. of Oslo Press, Oslo, 1962), vol. 1.
4. M. Stenberger, *Det Forntida Sverige* (Almqvist and Wiksell, Uppsala, 1964), p. 430; pp. 558 ff.
5. E. Kivikoski, *Finlands Förhistoria* (Holger Schildt, Helsingfors, 1964), p. 164.
6. C. J. Becker, A. Hagen, L. Kaelas, *Fynd, Göteborgs och Bohusläns Fornminnesförenings Tidskrift* (Wettergren and Kerber, Göteborg, 1963), p. 106.
7. M. P. Malmer, *Jungneolithische Studien* (Habelt, Bonn, 1962).
8. Recently, H. Christiansson has carried out field research in the find areas. According to preliminary information, it appears that the results may add something to our present knowledge of this find group, but final publication should be awaited.
9. C. J. Becker and L. Kaelas, *TOR, Medd. Inst. Nordisk Fornkunskap Uppsala Univ.* **10**, 121 (1964).
10. M. Stenberger, *Sweden* (Thames and Hudson, London, 1962), p. 79.
11. S. Marstrander, *Østfolds Jordbruksristninger* (Universitets-forlaget, Oslo, 1963).
12. H. E. Lund, *Norsk Tidsskr. Sprogvidenskap* **20**, 315 (1965).
13. For references, see C. A. Moberg, in *Proc. Intern. Conf. Radiocarbon Tritium Dating, 6th*, R. M. Chatters and E. A. Olson, Eds. (*U.S. At. Energy Comm. Publ.*) (1965).