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The Mesolithic background for the Neolithisation process

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ABSTRACT – *Most researchers today agree that the Early Neolithic is clearly related to the late Mesolithic and cannot be understood without its Mesolithic predecessors. Immigration is thus hardly an issue in the question of Neolithisation any longer.*

IZVLEČEK – *Večina znanstvenikov danes soglaša, da je zgodnji neolitik očitno povezan s poznim mezolitikom in ga ne moremo razumeti brez njegovih mezolitskih predhodnikov. Migracija v kontekstu neolitizacije je težko še naprej predmet razprave.*

KEY WORDS – *Mesolithic; Early Neolithic; Neolithisation; Switzerland; far distance contacts; palynology; fauna*

The transition from the Early to the Late Mesolithic

The transition from the early to the late Mesolithic seems to be one of the clearest breaks in the Stone Age of Central Europe. Only little evidence of continuity can be established. Although the radiocarbon evidence is rather scarce, the beginning of the late Mesolithic must be dated to around 6800 calBC, though (*Nielsen 2009*). According to assemblages containing early as well as late Mesolithic artefacts, it is hard do decide whether they are contemporary, or if more periods are represented. In the Abri Freymond (*Pignat and Winiger 1998*) in western Switzerland, layer 4d1 has delivered an early Mesolithic assemblage which can be dated by two radiocarbon dates to around 7200 calBC. Apart from the typical microliths of the late part of the early Mesolithic, a few atypical trapezes and notched blades are present. These trapezes are not comparable to the narrow trapezes of the older early Mesolithic, which anyway not are found in western Switzerland at all. It is, of course, not possible to exclude a late Mesolithic intrusion, but as the trapezes are not really comparable to the late Mesolithic forms, an early Mediterranean influence could be possible.

Layer 7 in the south-west German 'Jägerhaushöhle' cave delivered a late Mesolithic assemblage, including an antler harpoon, and was dated by one radiocarbon dating to around 6800 calBC. Further dating of the early Mesolithic of south-western Germany seems to be no younger than 6900 calBC (*Nielsen 2009*).

The conclusion must be that there was a remarkably swift transition from the early to the late Mesolithic. The notched blades found in the Swiss late Mesolithic shows connections with the area south of the Alps, although trapezes of Mediterranean type are lacking in the area. No artefacts made of chert of southern origin could so far be established. We are thus evidently facing an intense cultural influence, but see no evidence of immigration.

The Late Mesolithic

On the shore of the former lake of Wauwil – today, a mire intensively used for agriculture purposes – more than a hundred pre-Neolithic sites have been

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found. Some 38 sites could be dated to the early, and 25 to the late, Mesolithic (*Nielsen 2009*). Thus there is no evidence of a rising population through the Mesolithic period.

The well-known Schötz 7 site (*Wyss 1979; Nielsen 2009*) was excavated 1965, and delivered a large number of animal bones. As the excavation technique was rather rough, the value of the assemblage must be considered rather limited. Radiocarbon analysis suggests a dating shortly after 6000 calBC, but this might be a bit too young. Important finds are adzes, axes, and a harpoon made of antler and bone. More than 90% of the bones are from red deer; no evidence of domesticated animals was found. Interestingly, the size of the red deer population was remarkably small. This could indicate that they were intensely hunted during the late Mesolithic.

A typologically later assemblage excavated in 1970 is the Abri of Liesbergmühle VI. Apart from the typical late Mesolithic notched blades and trapezes, microliths with the so-called 'retouche inverse plate', including points which can be considered as a development of the trapezes, were found (*Nielsen 2009*). There is a remarkable number of antler harpoons. The fauna is dominated by red deer and wild boar. No domesticated animals were present in the assemblage. Fish bones constitute approximately 20% of the animal bones, which explains the high number of harpoons at the site.

As there are only a few well-excavated sites with good conditions for the preservation of animal bones, it is hard to tell if a change in the economy took place up to Neolithisation. However, the small size of the red deer found in Schötz and the tendency to intensify the hunting of small animals and fishing in the late Mesolithic might indicate a certain change.

Of great importance to late Mesolithic research and understanding Neolithisation in southern central Europe is the ongoing excavation of the rock shelter at Arconciel-La Souche in western Switzerland conducted by Michel Mauvilly (*Mauvilly 2008*).

A sequence containing the Late Mesolithic and probably the earliest Neolithic is being excavated. As the excavation and the analysis still are incomplete, no final conclusions can be drawn. At the moment, the most interesting object is a so-called 'Pintadera', a small stamp made of clay. Due to its stratigraphic position, the piece can be dated to around 6200 calBC, and thus to the middle of the late Mesolithic period. As such objects can normally be found in south-east Europe, Mauvilly's find from western Switzerland shows unexpected and extremely important evidence of long-range contacts during the late Mesolithic.

Early Neolithic

This period is not very well established in the Swiss area. In the Jurassic mountains, there are a number of sites with Danubian (Bandkeramik) finds, and also such which can be attributed to the so called La Hoguette-Group. Asymmetric arrow-points, 'Bavans-points', and closely related artefacts, are found in more or less the entire area north of the Alps (*Stöckli 1995; Nielsen 2009*). We thus anticipate that the whole area was settled by Neolithic communities at around 5500 to 5400 calBC. This anticipation is supported by the palyonological off-site evidence from numerous analyses made in recent years. The cave of Le Locle Col-des-Roches in western Switzerland was excavated between 1927 and 1933 (*Cupillard 1984*). Layer III yielded an assemblage with trapezes, triangular points ('Bavans-points') and notched blades. Apart from game, the fauna included cattle, pig and goat and/or sheep.

Comparable material was excavated in the already mentioned cave of Baulmes Abri de la Cure in the 1960ies. In the upper part of the layer, potsherds of La-Hoguette type were found. As this important site remains unpublished, it is still unclear if animal bones were preserved.

Comparable assemblages can be found across most of the entire Swiss plateau, but only as surface finds, regrettably (*Nielsen 2009*).

Palyonological research

Switzerland has been subject to intense palyonological and palaeoclimatic research over several decades. The chronological framework is thus undisputed (*Ammann 1989; Lotter 1988*).

In the last few years, a discussion concerning the evidence for early agriculture in southern central Europe between 'believers' and 'non-believers' has been rather lively (*Erny-Rodmann et al. 1997; Tinner et al. 2007 and 2008; Behre 2008*). The main argument of the latter – primarily German botanists – is that, although hundreds of late Mesolithic sites are known, there are no on-site finds of cereals. The first group of researchers, mainly Swiss botanists, ar-

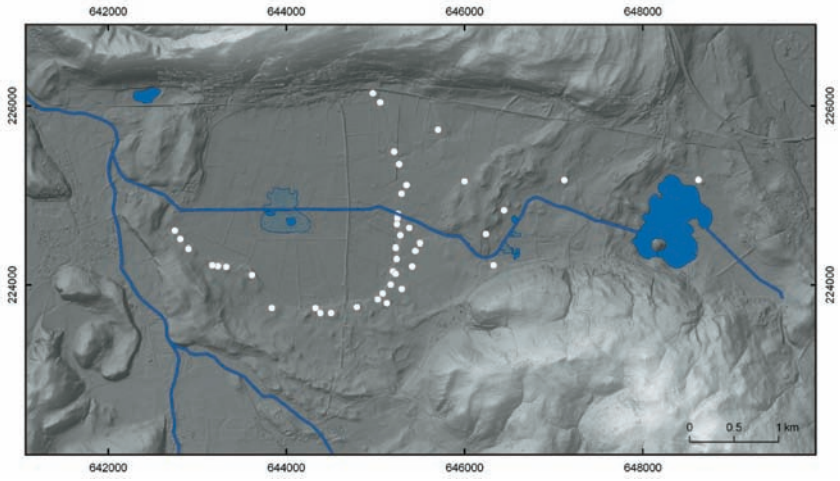

Fig. 3. Wauwilermoos (CH). Early Mesolithic sites distribution.

gue that the evidence from the off-site cores is consistent. Further, we hardly have well excavated sites with good conditions for the preservation of botanical material, anyway.

Abri de la Cure in western Switzerland is so far the only on-site find of Mesolithic evidence for early agriculture (*Egoff 1967; Leroi-Gourhan and Girare 1971*). Beneath a layer containing finds from the early Neolithic La Hoguette-group, a late Mesolithic layer could be established. Regrettably, only some early Neolithic artefacts, as well as the palyonological results have been published. The values of cereals in the late Mesolithic layer exceeded 1% (*Tinner et al. 2007*), which must be considered rather good evidence for agriculture.

The well-dated core from Wallisellen-Langachermoos in eastern Switzerland yielded pollen of Triticum (combined with Plantago lanceolata) at around 6400 and 5800 calBC (*Haas 1996; Tinner et al. 2007*). Very important is one seed (!) of Linum usitatissimum at 6500 calBC. As there is no further evidence of pollution of this part of the core with younger material, the find has to be recognized.

The cores from the Lake Soppensee in central Switzerland are dated by a large number of radiocarbon datings, as well as laminated sediments (*Lotter 1999*). Evidence of several episodes of agriculture during the late Mesolithic could be established. Most of the cereal pollen could be identified as Triticum and Avena. If the thesis of early agriculture is accepted, it must have occurred on a very modest scale, as forest clearences was not confirmed by palaeobotany. It is remarkable that the occurrence of cereals is very clear during the earlier part of the Neolithic (*c.* 5400–4800 calBC), a period only known in the central Swiss plain from a few stray finds ('Bavans-points') (*Nielsen 2009*).

Conclusions

The question is – as hardly anybody believes in the immigration thesis any more – whether Neolithisation came as a package, or whether Mesolithic societies slowly adjusted to the new way of life. Some researchers even consider the Mesolithic of the area as a kind of pre-pottery Neolithic (*Stöckli 2009*). However, as there is no evidence of stock breeding, of a sedentary way of life, or of the production of ceramics – as seen in the Ertebølle Culture of southern Scandinavia – this definition seem slightly exaggerated. Still, we probably have to abandon the clear boundary between the late Mesolithic and the early Neolithic.

To prove the thesis of Mesolithic agriculture once and for all, grains of cereals in Mesolithic cultural layers need to be found. The off-site find of a late Mesolithic Linum seed in Wallisellen has to be born in mind. Although several late Mesolithic sites have been excavated, there are almost none with good

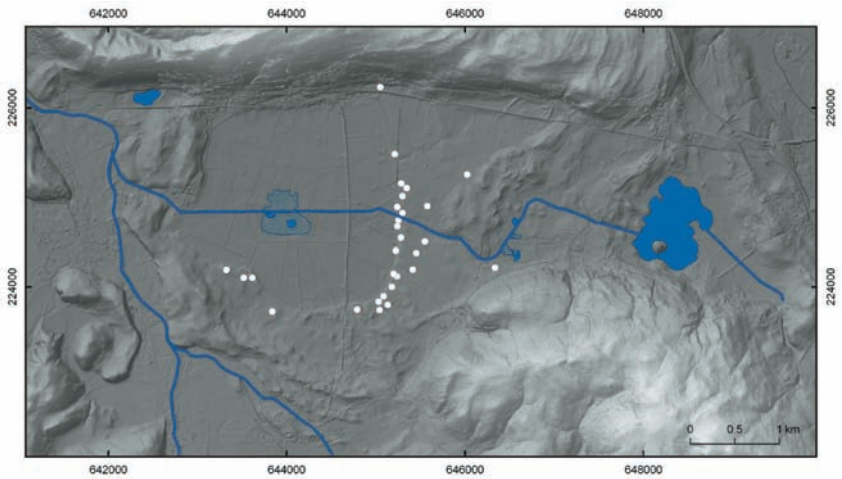

Fig. 4. Wauwilermoos (CH). Late Mesolithic sites distribution.

conditions for the preservation of botanical material. In terms of technology, it would of course have been no problem for the local population to have exercised a simple kind of agriculture or horticulture during the Mesolithic.

During the Preneolithic and the Neolithic of southern central Europe, contact with Mediterranean cultures has been established through finds of shells used as pendants. Contacts with the Mediterranean and other parts of central Europe throughout the Mesolithic have been known for a long period, due to finds of Columbella rustica and various fossil shells (*Rähle 1978; Jagher 1989*). Thus, the import of cereals during the Mesolithic is theoretically possible. A number of field projects conducted by the universities of Berne and Basel are at present focussed on this possibility, and new evidence – positive or negative – can thus be expected in the years to come. Typologically, the late Mesolithic of Switzerland is closely related to adjoining parts of eastern France and shows clear differences from neighbouring southern Germany (*Nielsen 2009*). This can also be established for the earliest part of the Neolithic, as the Danubian Culture only reaches the north eastern fringe of Switzerland. It thus seems that the already established late Mesolithic cultural groups still existed in the earliest Neolithic. This also indicates continuity between the last hunter-gather cultures and the first farmers.

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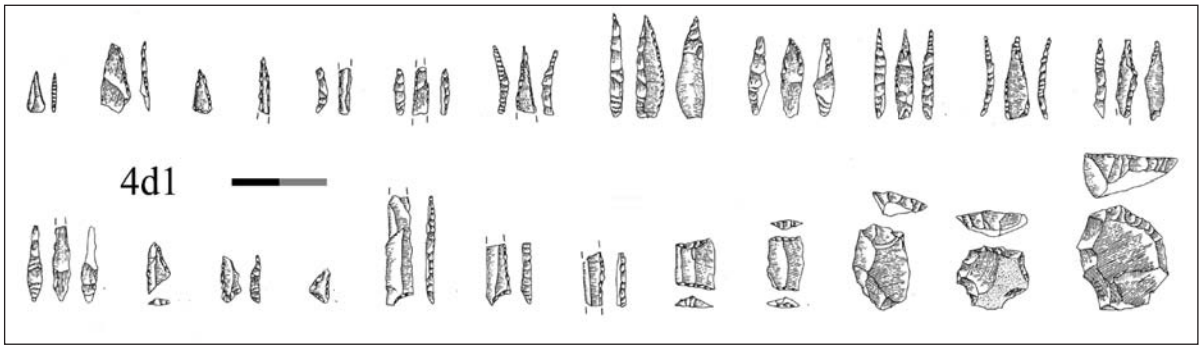

Fig. 1. Mollendruz (CH), Abri Freymond layer 4d1. Early Mesolithic assemblage (from* Pignat and Winiger 1998*).

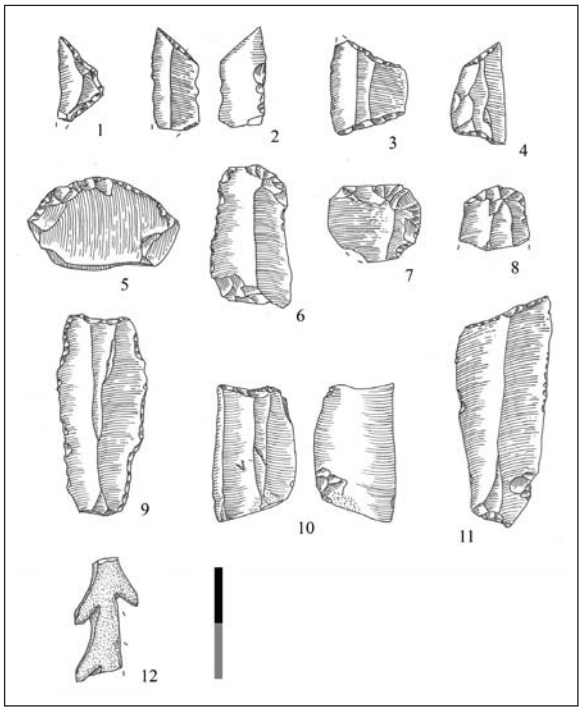

Fig. 2. Jägerhaushöhle (D), layer 7. Late Mesolithic assemblage (from* Nielsen 2009*).

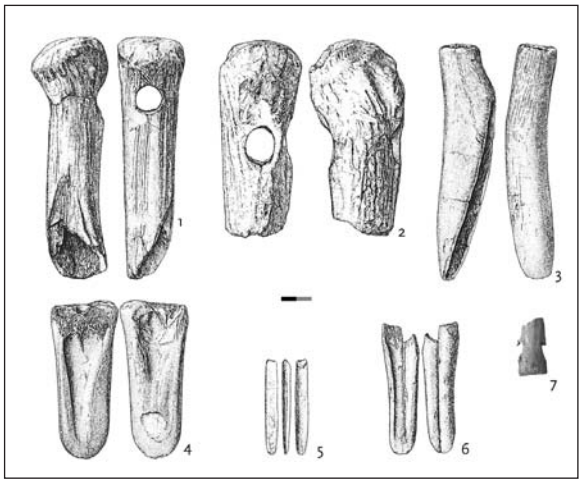

Fig. 5. Schötz (CH), Rorbelmoos site 7. Late Mesolithic antler and bone tools (from* Wyss 1979*).

Schötz "Rorbelmoos" site 7. Fauna		
Deer	2198	92% (without antler)
Roe deer	72	3%
Elk	3	<1%
Wild boar	50	2%
Auerochs	36	2%
Bear	1	<1%
Wolf	3	<1%
Badger	3	<1%
Marten	1	<1%
Beaver	4	<1%
Birds	3	<1%
Frogs	12	<1%
	2386	
Deer antler	774	

Fig. 6. Schötz (CH), Rorbelmoos site 7. Late Mesolithic fauna.

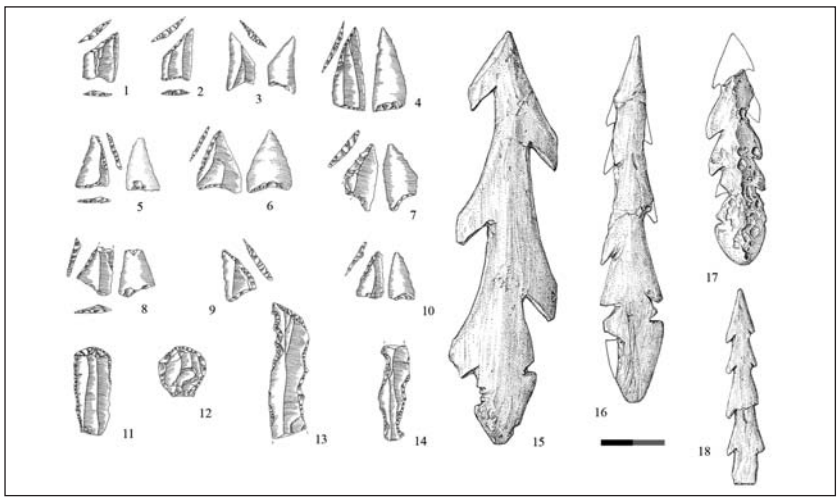

Fig. 7. Liesberg (CH), Liesbergmühle site VI. Late Mesolithic artefacts assemblage (from* Nielsen 2009; Wyss 1979*).

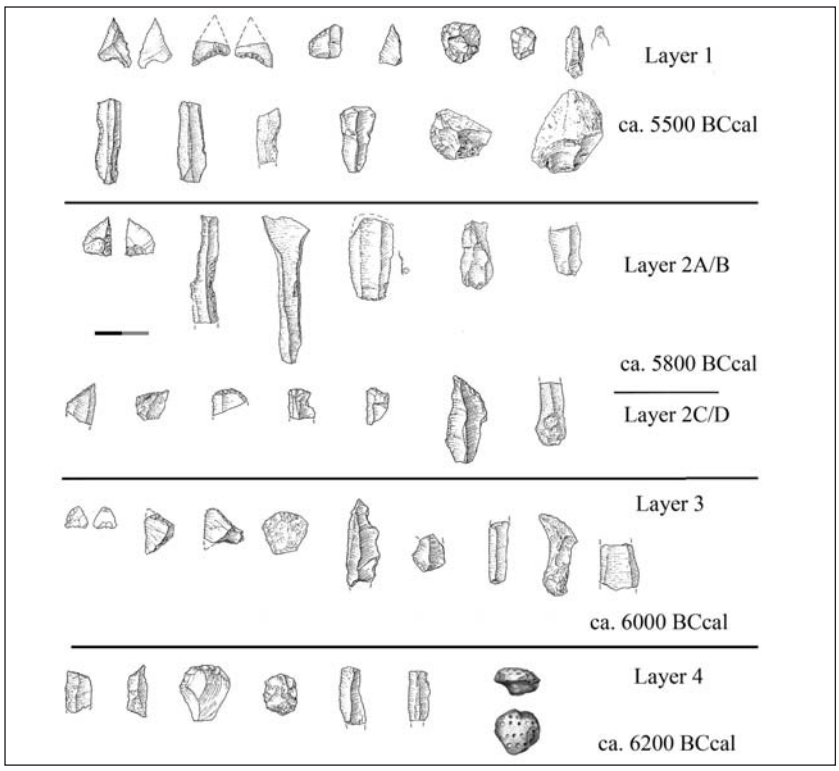

Fig. 8. Arconciel (CH), La Souche. Late Mesolithic sequence (from* Mauvilly 2008*).

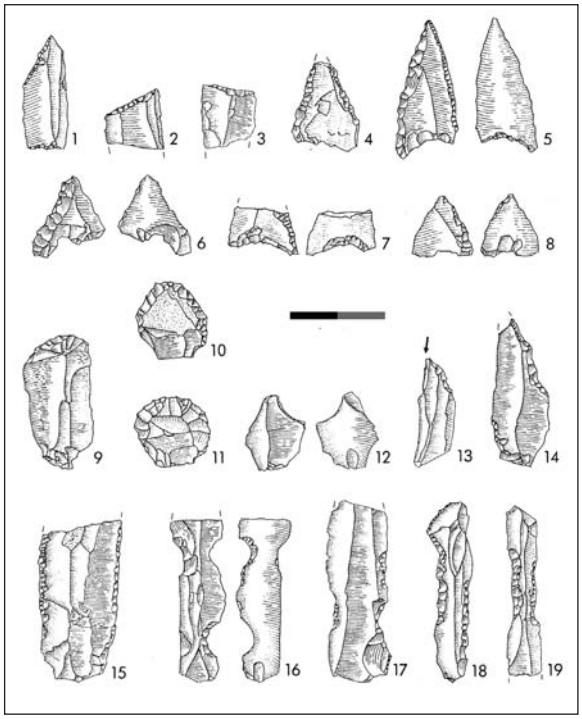

Fig. 9. Le Locle (CH), Col des Roches. Early Neolithic stone tool assemblage. (from Cuppilard 1994*).*

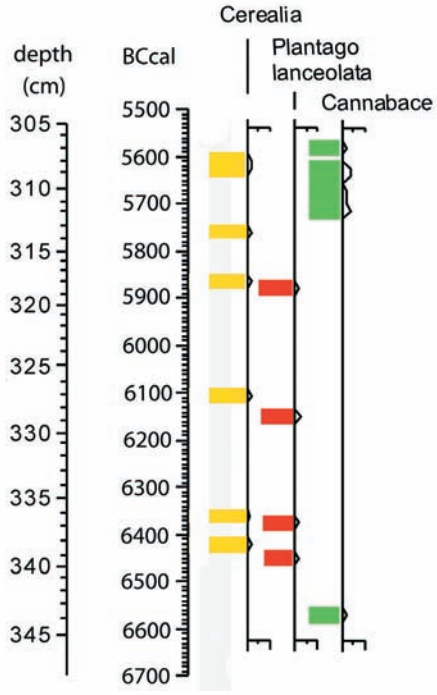

Fig. 13. Soppensee (CH). Pollen profile 6700–5500 calBC with human impact (from Tinner et al. 2007*).*

Cattle	8	3%
Sheep/goat	11	4%
Domest. pig	34	13%
Deer	145	53%
Elk	1	<1%
Wildpig	2	1%
Bear	17	6%
Wolf	1	<1%
Fox	2	1%
Badger	1	<1%
Frog	50	18%
	272	

Fig. 10. Le Locle (CH), Col des Roches. Early Neolithic fauna.

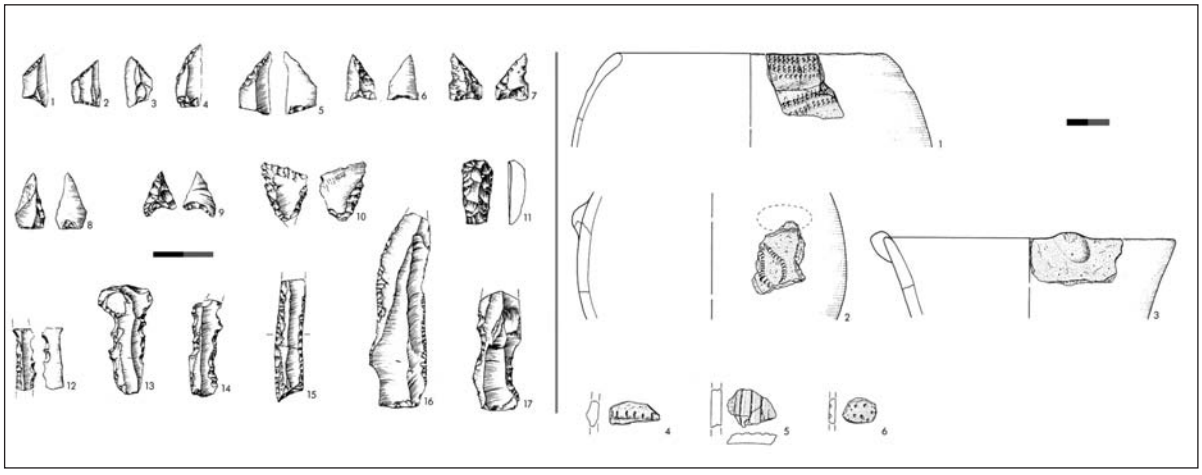

Fig. 11. Baulmes (CH), Abri de la Cure. Early Neolithic stone tools and pottery (from Egloff 1967*).*

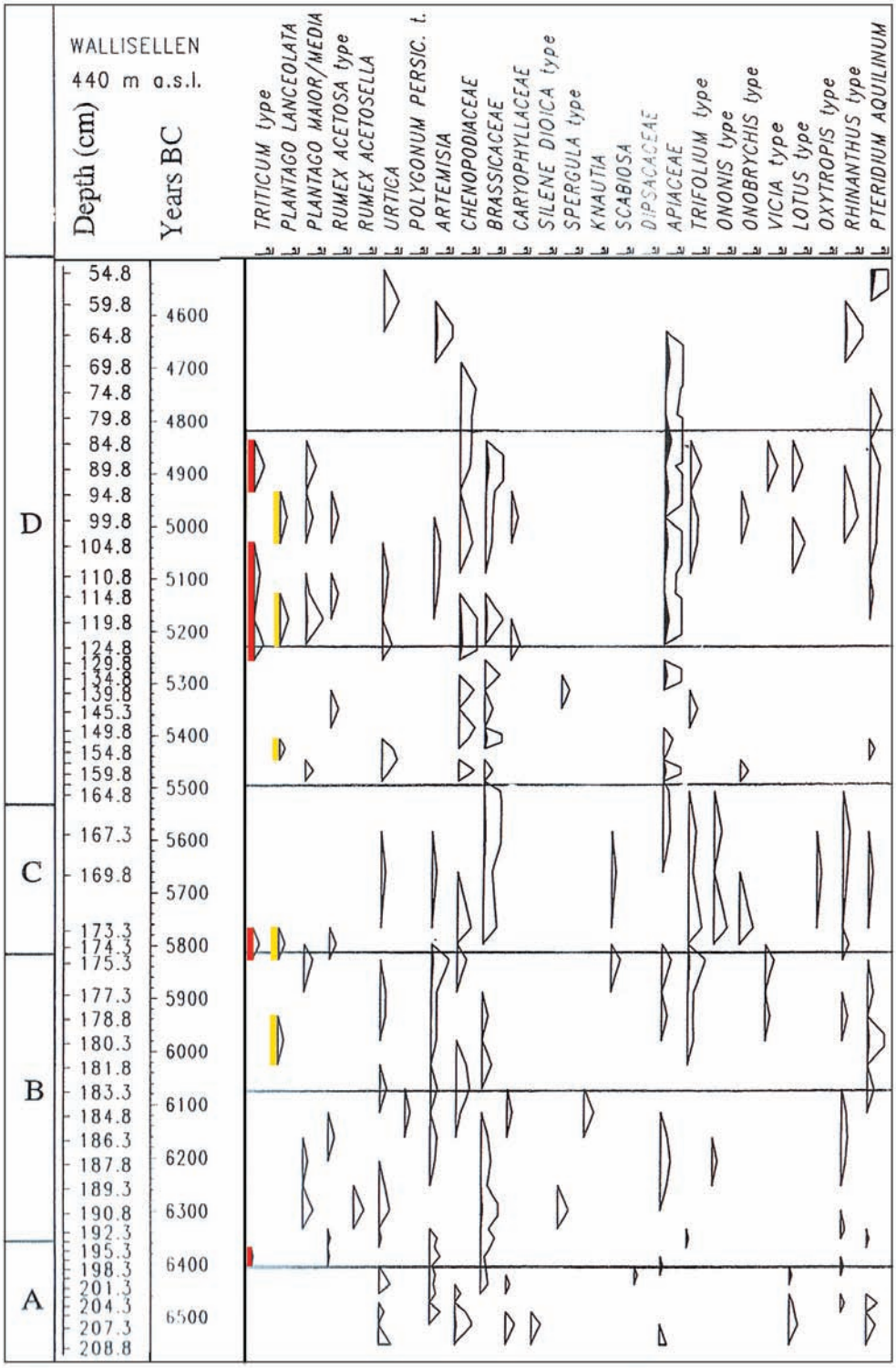

Fig. 12. Wallisellen (CH) Langachermoos. Pollen profile 6500–4600 calBC with human impact (from* Erny-Rodmann et al. 1997*).