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PALYNOLOGICAL AND RADIOMETRIC EVIDENCE FOR AN EARLY START OF THE NEOLITHICUM IN THE BELGIAN CAMPINE

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1. Introduction.

In 1961, De Ploey published a pollendiagram from the site Wortel wherein he could demonstrate early Subboreal agricultural activities. He mentioned (l.c. p. 83) that prehistoric colonization began earlier at Wortel than at other localities.

Further research in the Campine at the sites Postel (Mullenders, Coremans, 1964), Diepenbeek (Gullentops, Mullenders, Coremans, 1966) and Testelt (Munaut, 1967) also revealed Late Atlantic landoccupation. In this context, the results obtained by my research in the basin of the Mark river (Beyens, 1982) have not yielded supplementary information, but inadvertently created another problem, namely that of the dating of the older landnam phases in the Campine.

2. Landnam activities in the basin of the Mark river.

In the pollendiagrams from the basin of the Mark river the author was able to identify the following Pre-Roman landoccupations (Fig. 1) : Bronze Age colonization at the sites Strijbeek and Zondereigen, and both Neolithic (Early Subboreal) and Iron Age landnam phases at Grote Gammel.

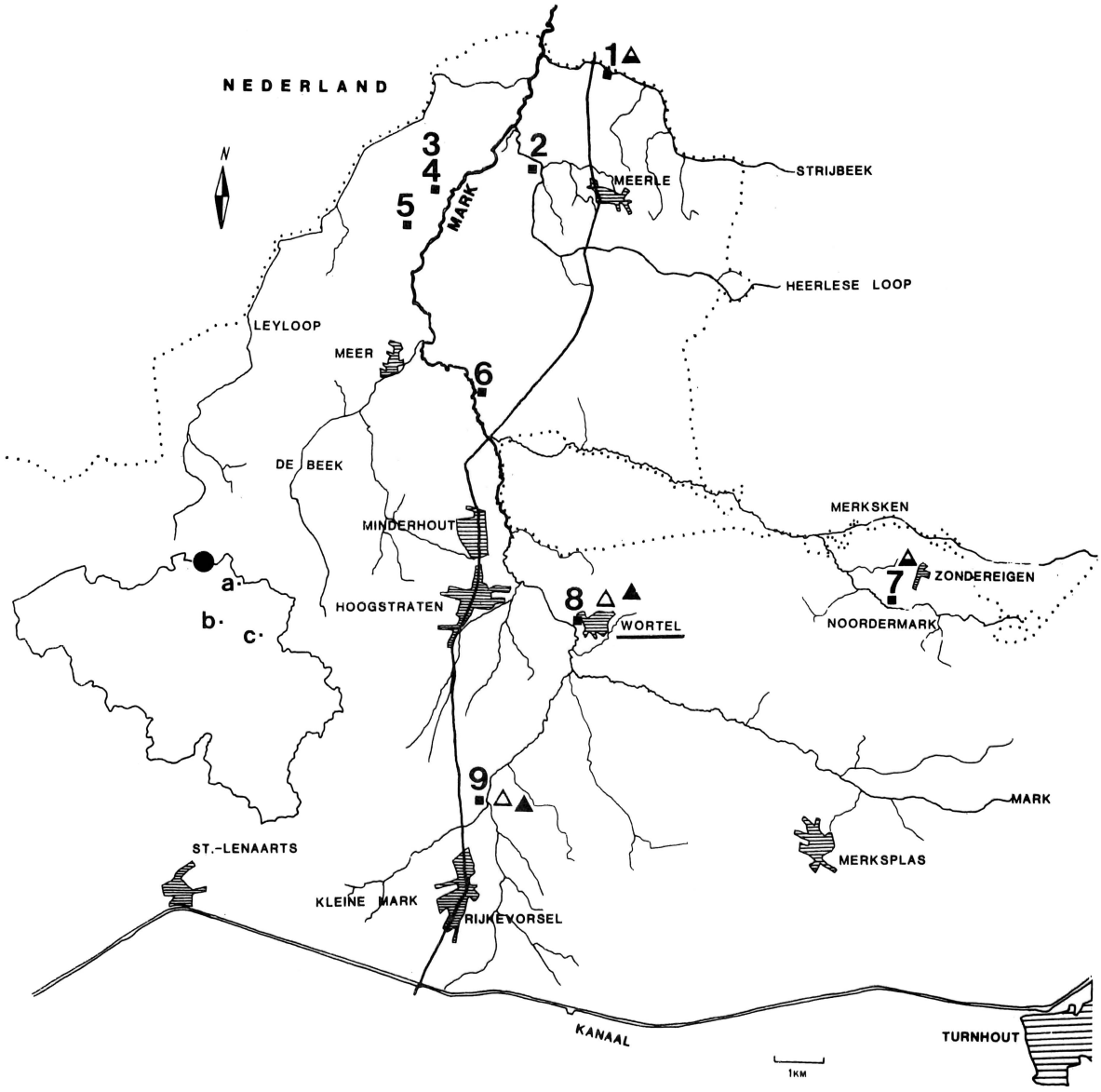

Fig. 1 : Location of the different sites.

The inset of Belgium shows the location to the basin of the Mark river (black spot), and the palynological sites described by earlier authors (a = Postel, b = Testelt, c = Diepenbeek). The map of the basin of the Mark river indicates the core sites (1-9) studied. The following Pre-Roman landoccupations were detected by means of pollen analysis : Bronze Age (▲) at Strijbeek (1) and Zondereigen (7), both Iron Age (△) and Neolithic(▲) at Wortel (8) and Grote Gammel (9).

The most interesting locality seemed to be Wortel : we observed not only Iron Age and Early Subboreal landnam phases, but also some Atlantic ones. The age of the oldest landnam will be discussed here.

3. Methods and description of the site Wortel.

The core was taken in a pasture in the alluvial plain, immediately to the southwest of the village Wortel. One obvious geomorphological phenomenon is the escarpment between the drainage basis and the higher land. These are mainly composed of sandy soils, but in the immediate neighbourhood fertile loamy soils, very suitable for agriculture are present.

Sampling was done with corer equipped with PVC-tubes 10 cm in diameter. The peat sequence was 410 cm thick. Every 5 cm a pollen-analysis was carried out. Moreover, a study was made of the diatom-flora, which revealed the periods during which the valley was flooded.

4. The Atlantic landnam phases.

Fig. 2. shows us a selection of pollencurves from the Atlantic part of the sequence with a thickness of 170 cm (from - 310 cm to - 140 cm); the Early Atlantic is lacking (Beyens, 1982).

At three depths, a landnam consisting of the following phenomena can be observed. First, *Cereal*-grains of the wheat-type and *Plantago lanceolata* put in an appearance. The low percentages of *Plantago lanceolata* are, according to Troels-Smith (1960), characteristic for an agricultural landnam, where the cattle were kept in byres so that little or no pasture was required. These cattle were fed on the foliage of *Ulmus*, which explains why the percentages of *Ulmus* decline during each landnam. The repeated maxima of *Betula* supports the idea that the forest had been cleared. In the Atlantic Quercetum mixtum forest, this pioneer tree can mostly only regenerate in open places. The light demanding herbs *Artemisia* and the *Chenopodiaceae* are also observed.

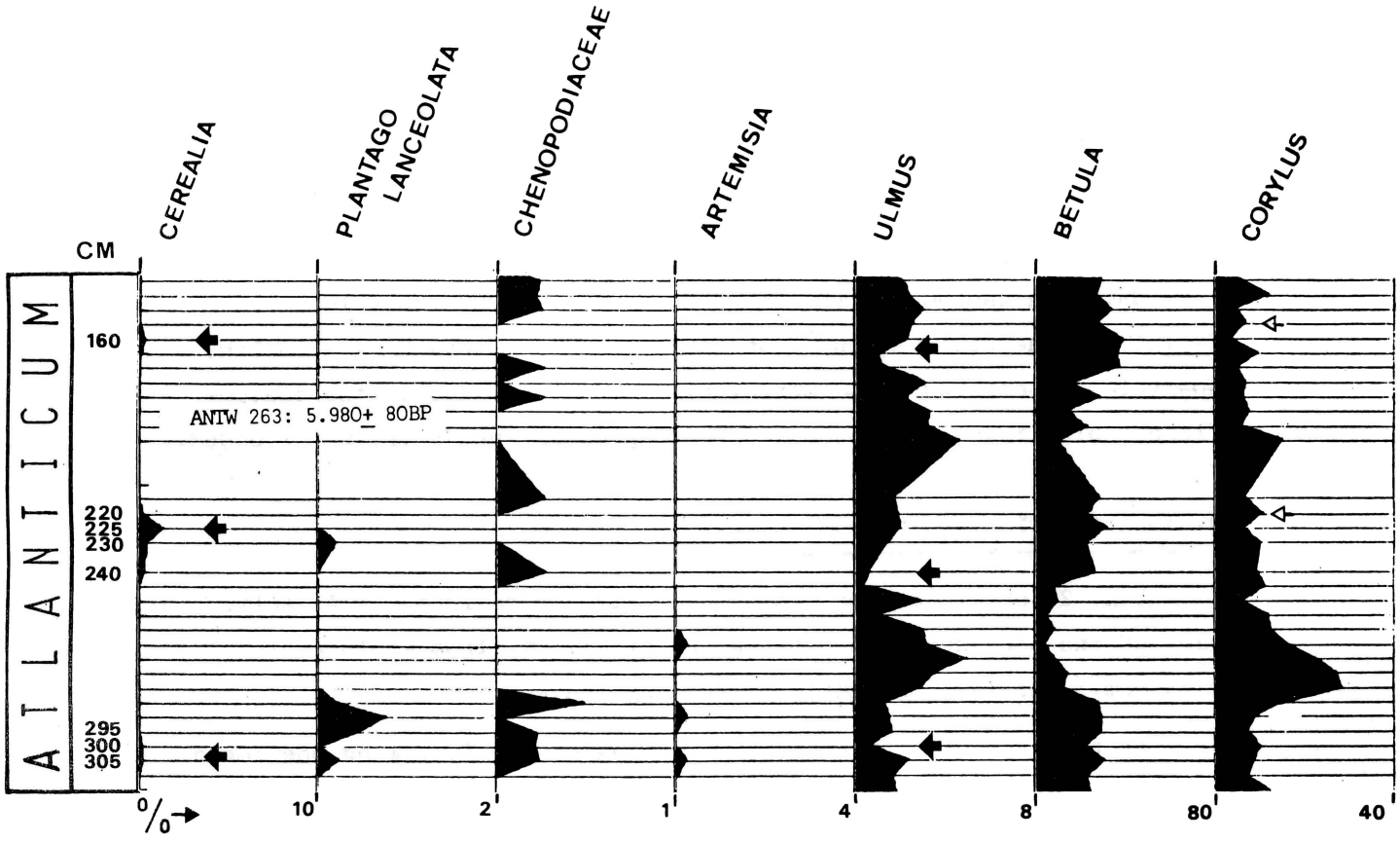

Fig. 2 : The relevant pollencurves indicating the Atlantic landnam phases at Wortel.

Three different landnam phases can be observed, characterized by the appearence of *Cerealia* and low percentages of *Plantago lanceolata*, together with the light-demanding herbs *Artemisia* and *Chenopodiaceae*. The percentage of *Ulmus* declines during each landnam. The repeated maxima of *Betula* supports the idea that forest has been cleared.

Once the cultivated grounds were abandoned, they were colonized by *Corylus*, but only after the first landnam do we observe a distinct maximum of this tree. *Ulmus* also regenerated, since the gathering of its leaves did not affect the *Ulmus* population, but only led to a diminution of the pollen production. Observations in Nepal, where this practice is still in vogue demonstrate that it takes 7 years for such trees to flower again (Ten Hove, 1968).

We can conclude that we are dealing with landnam phases of the type described by Troels-Smith, (1960).

5. Dating of these landnam phases.

Palynological criteria place these cultures in Atlantic times; the end of the Atlantic could be dated around 4680 ± 75 B.P. (Beyens, 1982).

The Late-Atlantic landnam prior to the ultimate *Ulmus* fall presumably corresponds to the cultures observed by Munaut at Testelt, and by Mullenders and Coremans at Postel.Around this time the Michelsberggroup arrived in the region.

The two other landnam phases are older than 5.980 ± 80 B.P. = 500 years. This yields a peatgrowth rate of 23,5 cm per 100 year for this rather minerotropic fenland peat. Moore (1972) gives a mean peatgrowth rate in raised bogs of 8 cm / 100 years for the last 5000 years in Wales. Overbeck (1975) remarks that 18,5 cm/ 100 years can be considered as fast, while 25 cm/100 years is mentioned by Turner, (1965, cited in Lamb, 1977). The peatgrowth rate should thus normally be lower, meaning that the first landnam could be older, and certainly not younger than 6.400 B.P.

The radiocarbon date could be wrong, but we have no reason to believe it is. The palynological data do not demonstrate a disturbance of the sequence and this C-14 dating fits in very well with the series of dates obtained from the whole sequence (Beyens 1982; Vanhoorne, Van Strijdonck and Dubois, 1978).
A faulty dating in peat would tend to be too young, except when e.g allochtonous material is supplied by flooding. However, diatom ana-

lysis did not indicate any inundation at the level of the C-14 sample. So, it seems likely that this date is, in fact, correct.

6. Conclusion.

The palynological and radiometric data suggest that the earliest observed landnam is older than 6.400 B.P. The site is attractive/ well-suited to colonists : there are fertile loamy soils, and from the higher grounds one has a good view over the alluvial plain. New research will be necessary to affirm or to reject this hypothesis.

7. Note : translation of the Latin botanical names.

Artemisia : wormwood, bijvoet, armoise.

Betula : birch, berk, bouleau.

Cerealia : cereals, graangewassen, céréales.

Chenopodiaceae : goose-foot family, ganzevoetfamilie, chénopodiacées.

Corylus : hazel, hazelaar, coudrier.

Plantage lanceolata : ribwort platain, smalle weegbree, plantain lancéolé.

Triticum-t : wheat-type, tarwe-type, froment-type.

Ulmus : elm, olm, orme.

8. Literature.

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