# The Late Weichselian freshwater beds at Nørre Lyngby. C-14 dates and pollen diagram

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An additional layer sequence below the well known stratigraphical succession in the central part of the Late Weichselian freshwater basin at Nørre Lyngby, Jylland, has given rise to a new pollen diagram and a series of C-14 datings from the pollen profile and from the allochthonous peat layer in the southern part of the section. The stratigraphical position of the peat layer should be below the layers of the pollen profile. The C-14 dates from the peat layer span from late Bølling into early Allerød, and accordingly the layers in the pollen profile are younger than early Allerød. The C-14 dates from the pollen profile indicate that most of the dated material has been redeposited from the peat. The pollen diagram is divided in stages A, B and C. A and B are referred to the Allerød, C possibly to Younger Dryas. In Iversen's 1942 pollen diagram his zones Ic and II are correlated with B, and III with C in the present diagram.

The freshwater layers at Nørre Lyngby, near the northern tip of Jylland, have played an important role in the literature on Danish Quaternary geology during the last 100 years because of the finds made there. Already 1877 was found a lower jaw of European suslik, *Spermophilus rufescens,* and this find gave rise to the very much debated theory of a steppe period in Denmark after the last glaciation. Several other plant and animal remains have been found in the freshwater sediments, latest a cranium of desman, *Desmana moschata* (Bondesen & Lykke-Andersen 1976), but the bulk was found by an extensive investigation in 1913–14 which formed the main basis for a monographic work on the site (Jessen & Nordmann 1915). By this investigation was further found an arrowhead of flint which for several years represented the oldest geologically dated implement within the Danish-Scandinavian area. The 1915 paper (with a rather copious English summary) is still valid as a source to general information and description of the site, but the dating, as to which opinions have alternated during the years, was not satisfactorily solved until Johs. Iversen in 1942 (l.c.) based on a pollen diagram from the site definitely proved the freshwater series to be of Late Weichselian age.

In 1971 it was decided to collect material for entomological studies from Danish Late Weichselian sediments by a joint British–Danish operation initiated by Prof. F. W. Shotton and guided by Dr. Johs. Iversen. One of the sites studied was Nr. Lyngby which should be well suited for the purpose: an easily accessible cliff section of freshwater sediments with well dated and easily recognizable stratigraphical boundaries. By our visit in 1971 the lowermost part of the cliff section was exposed by means of a bulldozer, and the known sequence was supplemented by a stratigraphical succession not formerly known. Hence, it was necessary to prepare a new pollen diagram from the site in order to get a better idea of the chronology of this part of the section. The new pollen diagram and a series of C-14 dates from the site are presented in this paper.

The freshwater layers appear in the sea cliff as a section through a dish shaped basin filling situated in Late Weichselian marine sand and clay deposits. The first impression is that extent and appearance of the section has changed little since the description by Jessen & Nordmann (1915). The present extent is abt. 160 m compared to formerly abt. 180 m, and the general stratigraphical succession as described 1915 is still found. A marker horizon is a prominent layer of dark clay rich in mollusc shells. On top of this follows first a zone of alternate clay and sand layers and then several metres of pure sand. Below the clay layer the sequence consists mostly of sand. In the lateral southern part occurs only a thin layer of freshwater sand with one or occasionally two thin peat layers irregularly embedded, which corresponds with the 1915 description. In the central part a succession of dark bands in the sand appeared by the present investigation.

Fig. 1 shows the southern part of the present basin section in the sea cliff. The principal features of the stratigraphical succession in the lowermost part, i.e. from the clay downwards have been stressed, whereas details in the stratigraphical sequence above the clay have been neglected. In fig. 2 is seen a photograph from the left-hand part of the section in fig. 1.

Units a and b in fig. 1 are the sandy top series and the clay layer. The dark bands below the clay dip downwards towards the centre of the basin. They are divided naturally into 3 groups (c, d, and e in fig.'s 1 and 2). The uppermost group (c) dips and spreads fanshaped towards the basin centre, in the opposite direction it condensates and ultimately coalesces with the clay layer. The dark bands in this unit are very sandy -silty, partly rich in organic material, in the upper part occasionally with many twigs of *Salix,* in the lower part rich in fine-grained, partly peat-like, organic material. Shells of *Anodonta* are common in the upper part as they are in the clay layer above. The coalescence of this unit with the clay layer above has not been traced in detail but it may be noticed, that its uppermost part gradually changed to a

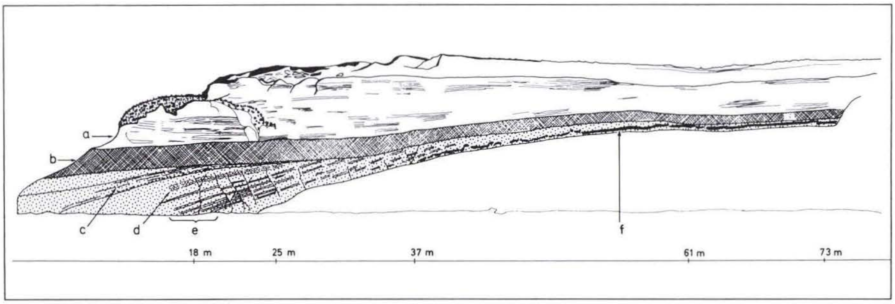


Fig. 1. Stratigraphical succession in the southern part of the basin section. Scale below marks distance in metres S of the basin centre. Horizontal and vertical scales are identical, but stratigraphic measures are not exact. For further explanation see text.

clay similar to that above it. Below group c and parallel with its lower border follows group d, a zone with a series of irregular thin and faint bands, stained dark by a small content of mainly fine-grained organic material. The layers are contorted and during the field investigation we thought their disturbance caused by cryoturbation or more probably by slumping down the slope of the basin. These layers were referred to as the "contorted zone". The lowermost group of dark bands, e, is a series of laminae of very silty clay, partly very thin. They are generally poor in organic material, but layers relatively rich in

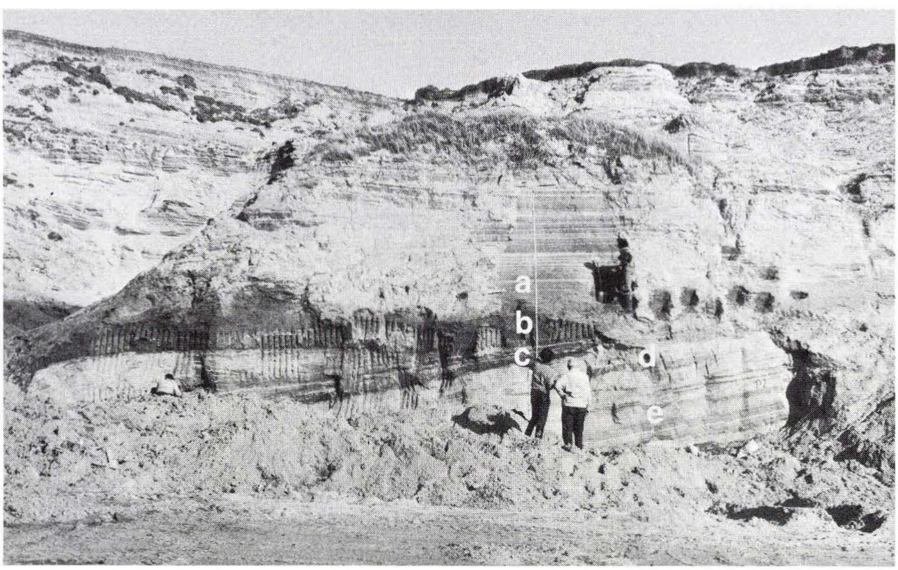


Fig. 2. Photograph from the central part of the basin, corresponding to the left-hand part of fig.1. The rule at the left one of the two standing persons marks the pollen profile at 18 m, "P 2" in the lower right-hand part of the section wall marks the pollen profile at 25 m.

coarse organic material occur occasionally. Small mollusc shells (*Pisidium* or *Sphaerium* sp.) occur only sparsely. Slidings and vertical dislocations occur increasingly towards the lateral parts. The lateral parts of d and e have been removed by erosion, and it can be seen in the profile that the clay layer (b) cuts the strata discordantly.

In the southern part of the profile was seen a peat band (f) in the freshwater sand immediately above the marine deposits. The stratigraphical boundaries were not traced between these two areas and this resulted in doubt as to the stratigraphical position of the peat layer compared to the succession in the central part of the basin section. During later visits to the site I have attempted to solve this problem. Fig. 3 shows the area at 73 m where samples from the peat layer and adjoining layers were taken in 1971. The rule (1 m high) is crossed by two black peat bands which are very irregular and only partly coherent. The lower band can only be seen in this part of the profile and only over very short distances, but the upper band can be traced towards the basin centre to abt. 37 m as indicated on fig. 1, in the lowermost part as very irregularly situated and not coherent layer fragments. The position of the peat stratigraphically is below the group of bands marked e, and accordingly the peat layer is the lowermost – and oldest – organic layer in the fresh-water series. Fig. 4 shows in more detail an area of the peat bands from where a series of pollen samples were taken, abt. 0.5 m to the left of the rule in fig. 3.

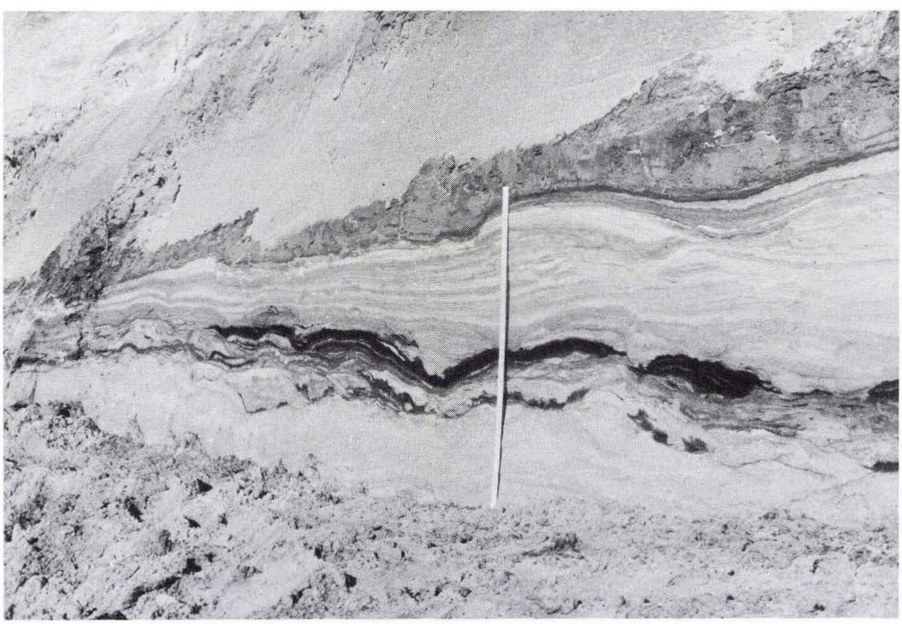

Fig. 3. Peat layers at abt. 73 m in the section.

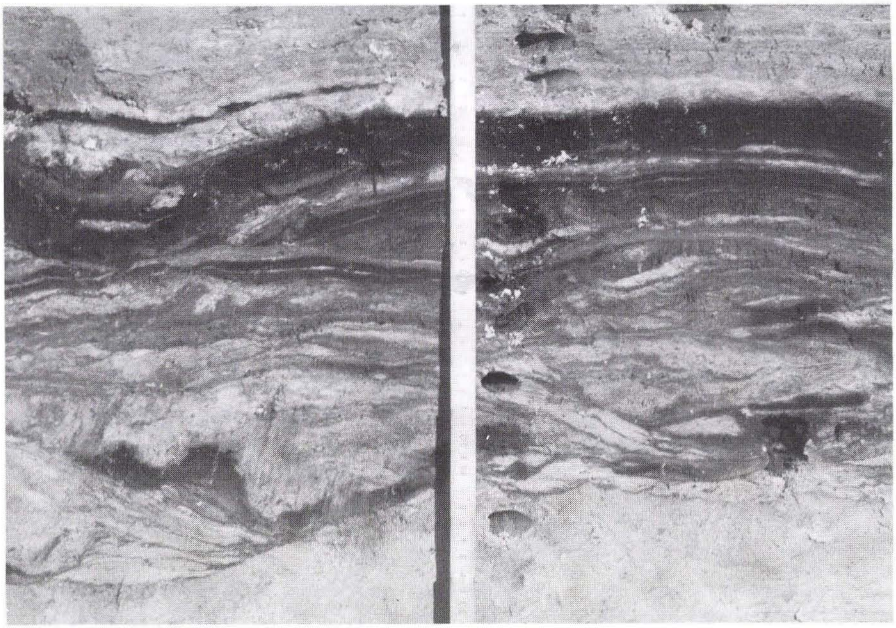

Fig. 4. Peat stratigraphy abt. 0.5 m to the left of the rule in fig. 3.

The confused layering seen on the photographs fig.'s 3 and 4 clearly indicates that the peat bands are allochthonous in this area.

## C-14 datings

During the field investigation in 1971 both the British and Danish members collected material for C-14 dating and got a series of samples which were apparently fitted for the purpose. They were taken from different layers below the dark clay in the central part of the basin and from the peat layer at abt. 73 m. I have later made further samplings from the peat layer, at abt. 61 m where it looked undisturbed, and at abt. 37 m which was as far as the peat layer could be traced towards the basin centre. All datings are listed in table 1 and their position in the section is indicated on fig. 5. In the pollen diagram, fig. 7, are further shown those dates which come from or can be easily equated with the pollen profile. Those sampled some distance away but equated with the pollen profile are marked cp. in table 1. The list includes two of the British dates (BIRM 281 and 282) which are the only Bitish dates considered unaffected by hard-water error (Shotton 1972, Shotton and Williams 1973). K-962 and 963 are two formerly dated samples from the peat

Table 1. C-14 dates. Age calculations are based on a half-life for radiocarbon of 5570 years and dates are expressed in conventional C-14 years.

| Number | Years B.P. | Material | Location |
|---|---|---|---|
| K-1989 | 11,810 ± 170 | *Salix* branch | cp. diagram, 516–517 cm |
| K-1988 | 11,770 ± 120 | twigs | cp. diagram, 516–517 cm |
| BIRM 281 | 11,330 ± 150 | twigs | cp. diagram, 516–517 cm |
| K-1938 | 12,120 ± 140 | twigs | diagram, 518–523 cm |
| K-1990 | 12,090 ± 180 | twigs | diagram, 523–530 cm |
| K-1942 | 12,110 ± 130 | twigs, mainly without bark | diagram, 722 cm |
| K-1943 | 12,010 ± 150 | twigs, mainly with bark | diagram, 722 cm |
| K-2111 | 12,560 ± 130 | lens of sedge peat | cp. diagram, 800 cm |
| K-2110 | 11,540 ± 130 | sedge peat, unsieved, humates not extracted | peat layer, 37 m |
| K-2109 | 11,580 ± 170 | sedge peat, sieved | peat layer, 37 m |
| K-2113 | 8,360 ± 130 | sedge peat with twigs, sieve fraction 0.25–1 mm | peat layer, 61 m |
| K-2114 | 12,010 ± 120 | same sample and sieve fraction as K-2113, humates not extracted | peat layer, 61 m |
| K-2112 | 12,370 ± 160 | same sample as K-2113, fraction >1 mm | peat layer, 61 m |
| K-1941 | 11,560 ± 130 | twigs, humates not extracted | peat layer, 73 m |
| K-1939 | 11,670 ± 140 | *Salix* branch | 73 m, same layer as K-1941 |
| K-1940 | 11,830 ± 180 | twigs | 73 m, same layer as K-1941 |
| BIRM 282 | 12,050 ± 160 | twigs | peat layer, near 73 m |
| K-962 | 11,680 ± 140 | moss sedge peat with twigs | uppermost part of upper peat layer, near 75 m |
| K-963 | 11,780 ± 180 | peat with twigs | lowermost part of upper peat layer, near 75 m |

layer (Tauber 1966). The samples collected 1971 and later were treated with KOH or NaOH for extraction of possible secondary content of humates except, for comparison purposes, 3 samples marked in the list. The twigs which constitute the main part of the dated material are supposed to be exclusively *Salix* spp. as several specimens examined were all determined to *Salix*. An exception was a small piece of *Picea* wood, found at 516–517 cm in the pollen profile, which macroscopically clearly differed from the *Salix* twigs.

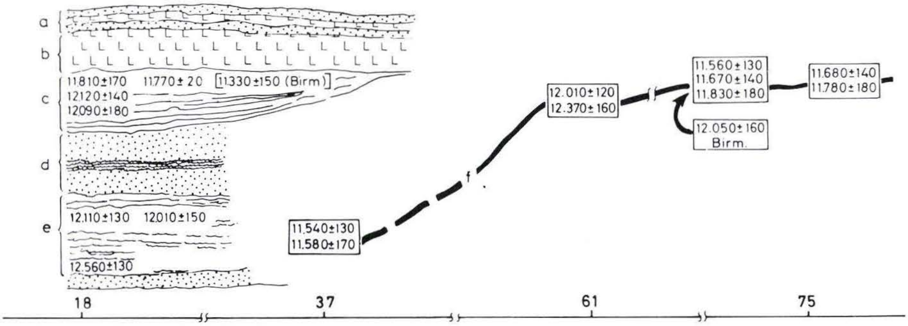


Fig. 5. Stratigraphic positions of the C-14 datings.

All samples except one are noncalcareous. K-2111, a lens of sedge peat from lowermost in the pollen profile, could not be sufficiently cleaned from the surrounding calcareous clay and the date 12,560 ± 130 may for this reason be too high. The date K-2113 is unexpectedly and unexplainably low (8,360 ± 130). It is one out of three from fractions of the same peat sample (at 61 m), but the fractioning does not explain the extremely low age which must be wrong. All other dates are considered reliable in the sense that they are supposed to give principally true radiocarbon ages of the samples dated.

The age variation within the dates from the peat layer is considerable. The peat is mostly or exclusively in a secondary position and may be composed by layer units of different origin which may explain the age variation. The spread of the dates from 12,370 ± 160 (K-2112) to 11,540 ± 130 (K-2110) covers the time span from the end of Bølling into early Allerød. Hence, all the layers above the peat, including the units a–e in the central part, must be younger than the early Allerød.

Within the pollen profile one date, BIRM 281, 11,330 ± 150 belongs to the middle Allerød. All the other dates are grouped rather close on both sides of 12,000 and do not conclusively show difference in age from top to bottom. The dates from the peat layer are not higher but show almost exactly the same variation. The only reasonable explanation of this identity in age of the two groups of samples is a common origin of the dated material, in other words, the material dated in the pollen profile has been redeposited to stratigraphically higher situated layers in the pollen profile.

## Pollen analysis

Iversen's dating 1942 was based on a pollen diagram from a sample series covering the clay layer and the layers immediately above and below it. The

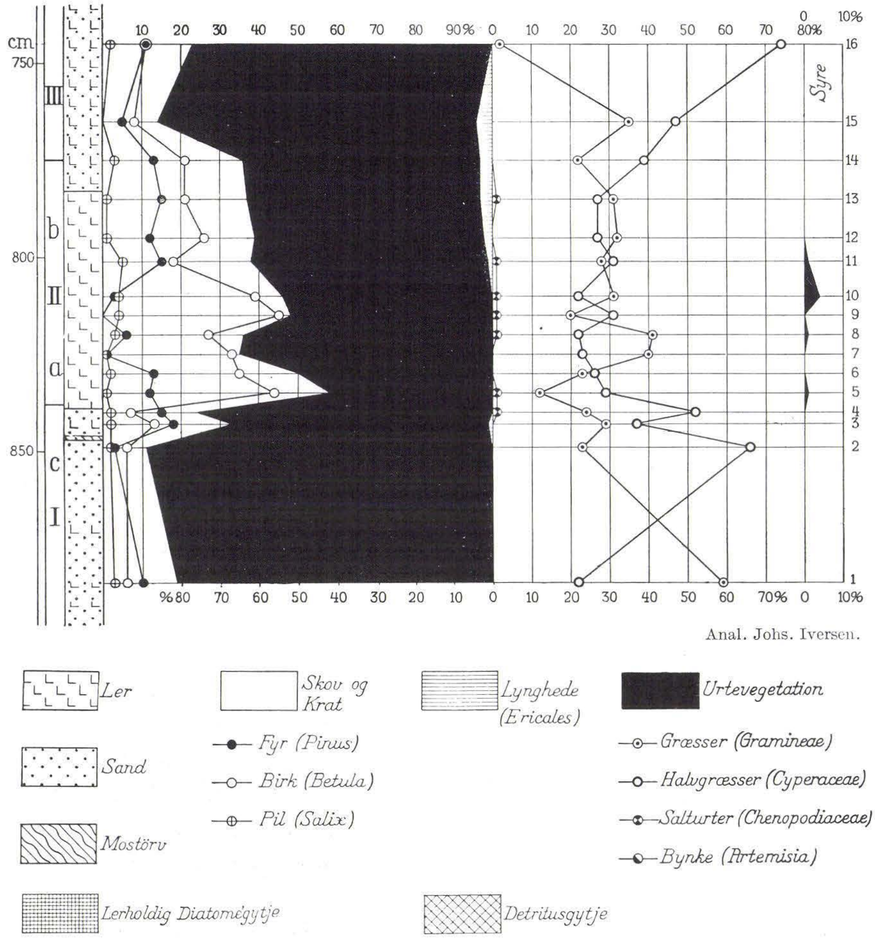


Fig. 6. Iversen's pollen diagram (1942) from Nr. Lyngby.
Syre = *Rumex* + *Oxyria*.

diagram is reproduced here in fig. 6. The series was taken "a little S of the basin centre – approximately where the peat layer stops" (Iversen 1942, p. 132, translated) which might be at 35–37 m in the present section (fig. 1). Iversen's description of the layer below the clay layer (57 cm of freshwater sand, in parts somewhat clayey and with peaty bands) also fits with this location. Iversen correlated the clay layer with pollen zone II, the sandy series above with zone III, and the sand below with zone I c.

It should be noticed that a peat layer is not indicated in Iversen's description of the lower sand, but in the lithological column of the pollen diagram a peat layer, 1 cm thick, is indicated 7–8 cm below the clay layer. Iversen equated this thin peat layer with the more or less coherent peat layer situated lowermost in the southern part of the section (f in fig. 1), and accordingly the peat layer was dated at the end of zone I c. This age conception was later corroborated by the two C-14 dates of samples from the peat layer (Tauber 1966), collected by me 1949.

The present pollen diagram (fig. 7) has been composed by two sample series, an upper one covering the layers marked a–d, and a lower one covering the bands marked e on fig. 1. The upper series is taken at 18 m and the lower series at 25 m on fig. 1. The limit between the two series is found at 640 cm on the pollen diagram and is indicated by not fully drawn curves.

The lithology of the composite series may be summarized as follows (a–d correspond to fig. 1). The 0-level is arbitrary.

Upper series, 18 m.

| | | |
|---|---|---|
| a | ?–407 cm | Alternating layers of silty sand and silty clay. |
| b | 407–505 | Black silty clay, rich in gyttja, many molluscs (*Pisidium, Sphaerium, Anondonta*). |
| $c_1$ | 505–530 | Clayey-silty-sandy bands rich in coarse organic material, partly with many twigs of *Salix*. |
| $c_2$ | 530–557 | Bands of sandy-silty gyttja, with fragments of sedge peat. |
| | 557–585 | Sand. |
| d | 585–631 | Sand with irregular thin and faint gyttja bands. |
| | 631–646 | Sand. |

Lower series, 25 m.

| | | |
|---|---|---|
| e | 646–803 | Sand with numerous, partly very thin, laminae of very silty clay, generally poor in organic material, but layers relatively rich in coarse organic material (moss, twigs) occur occasionally. Small mollusc shells (*Pisidium* or *Sphaerium*) occur very sparsely. |
| | 803–? | Sand. Limit between fresh water and marine sand not determined. |

A serious difficulty and possible source of error for the pollen analysis of this series of highly minerogenic sediments is the great content of rebedded pollen. A correction method was demonstrated earlier by Iversen (1936, 1938), and in his Nr. Lyngby paper (1942) the correction of all pollen spectra in his diagram is shown in detail. The method is based on the assumption that the percentual composition of rebedded pollen is constant throughout the series because the argillaceous sediments of the basin – and their original pollen content – have been washed in from well mixed sediments in the

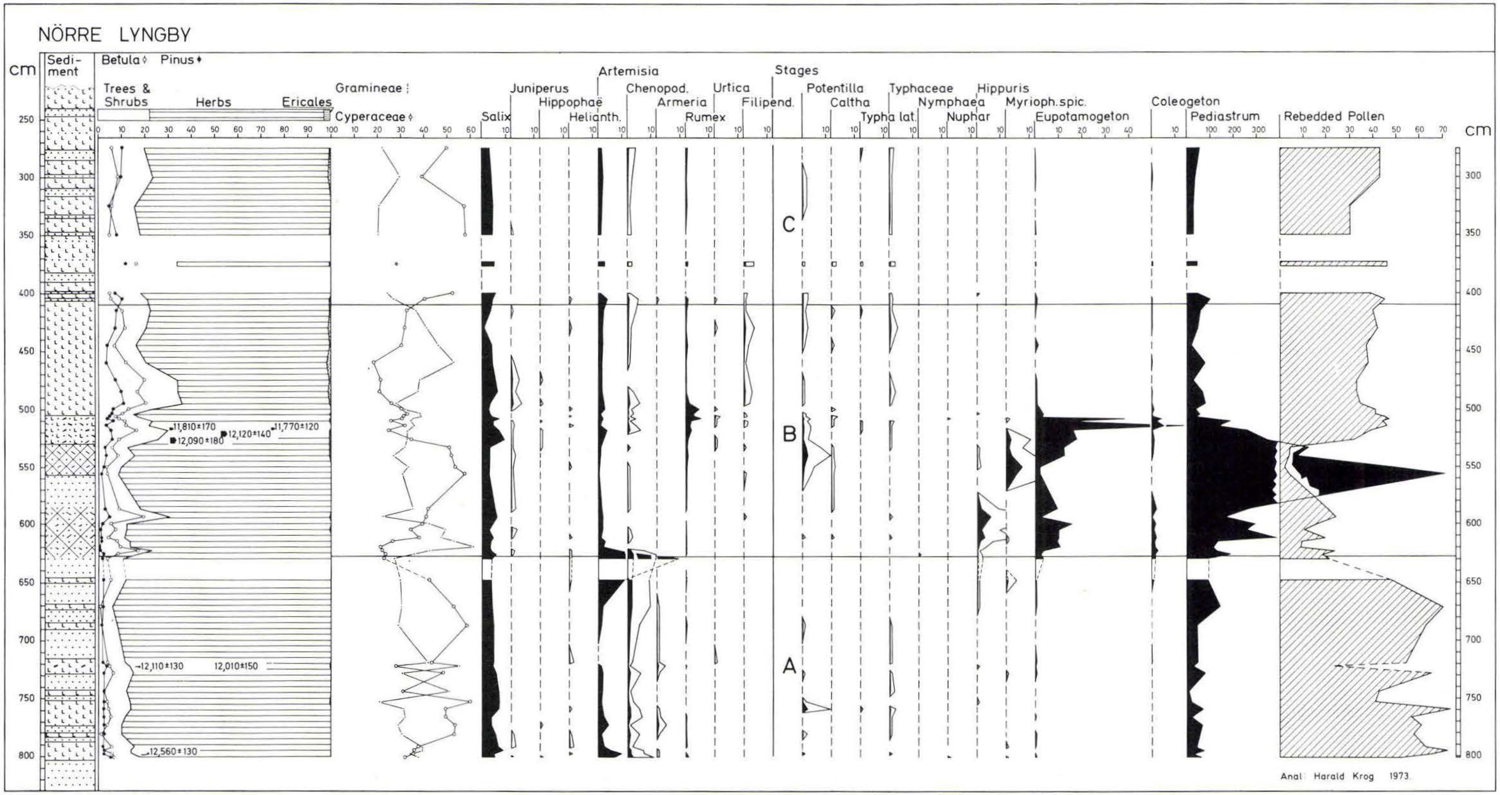


Fig. 7. Pollen diagram composed of sample series from 18 m and 25 m in fig. 1. Calculation basis is the total of tree pollen and non tree pollen exclusive aquatics, in a minimum of 500 per sample. All curves except the *Pediastrum* curve are drawn to the same scale, in addition some silhouettes representing low values, e.g. *Juniperus*, are drawn to a scale 5 × 1. The sediment symbols are in accordance with Troels-Smith (1955). C-14 datings (yr B.P.) of samples which fit into the stratigraphical sequence of the pollen profile are shown at appropriate levels in the diagram within the silhouette "Herbs".

surroundings (marine clay). If the percentage composition of pollen in the source sediments is known it should therefore be possible to subtract the rebedded, or secondary, part from the pollen spectra with mixed primary and secondary pollen.

I have used the method in the following way. As supposed source material was used a sample from "Late Glacial Yoldia clay" which is in part substratum for the freshwater beds and is widely distributed in the area. The pollen count of the sample was divided in two groups, A consisting of grains (1223) definitely pre-Late Weichselian in origin, and B in which the grains (357) might as well be of Late Weichselian age, including i.a. *Betula* and *Pinus*. In similar way the pollen spectrum of each diagram sample was divided in an A and a B group. From the B group was subtracted a fraction of supposed rebedded pollen grains, with the same composition as the B group from the Yoldia clay sample, and determined by the ratio between the A groups in the diagram sample and the Yoldia clay sample. The curve for rebedded pollen in the diagram (fig. 7) includes the A group and the part subtracted from the B group, and the percentage calculation for this curve is based on the sum of the A and the B groups.

For all diagram samples the percentage composition of pollen in the A group has been compared mutually and with the composition of the A group of the Yoldia clay, and in general there was found agreement, which confirms the assumption of constant percentage composition throughout the section, and which is a basic demand for the applicability of the method. A serious disagreement was found in only one case, at 722 cm, marked in the curve for rebedded pollen by a not fully drawn line. In this sample was found overrepresentation of *Alnus* which was normalized with the other samples before the subtraction calculation was made.

The correction method used cannot be exact in every detail but it is my conviction that it has worked satisfactorily so that pre-Late Weichselian pollen no longer influences the trend of the pollen curves or the interpretation of the diagram seriously.

A list of pollen grains omitted in the diagram is shown in table 2.

The pollen diagram has been divided into 3 stages, A, B and C. Important for the distinction is the *Betula* curve which is here a collective curve including more than one species. Morphologically distinguishable *Betula nana* grains were observed through the whole sequence, but percentage estimations were not attempted.

Within stage A the values of the *Betula* curve are extremely low, from 1 to 7%. Generally the values of the *Salix* curve surpass the *Betula* values slightly. The stage is fully dominated by NAP pollen, in particular by *Cyperaceae* and *Gramineae*. There is a distinct *Artemisia* maximum (34%) at the very end of the stage. An *Artemisia* maximum of this magnitude is not known from other Danish pollen diagrams. The trend of the *Chenopodiaceae* curve is similar to that of *Artemisia*. *Armeria* is relatively common in stage A and is almost restricted to this stage.

Compared with stage A stage B is characterized by higher *Betula* frequencies and by the occurrence of relatively thermophilous taxa such as *Juniperus, Urtica, Filipendula* and *Typha latifolia*. The beginning of stage B is placed at the first rise of the *Betula* curve and the decrease of *Artemisia*. The border is further marked by an increase of aquatics (*Hippuris, Potamogeton, Pediastrum*) and a decrease of rebedded pollen. The end of the stage is placed at the level where *Betula* again decreases to low values.

Stage C again has very low *Betula* frequencies (5–9%) and is fully dominated by NAP pollen. The sample at 375 cm seems out of place and has not been connected with the curves. I would fit better in stage B at abt. 495 cm.

The stages A and B in the present pollen diagram must belong to the Allerød, and it is possible that stage C belongs to the Younger Dryas. The low *Betula* curve in Allerød time may be due partly to local overrepresentation of herbs and partly to rebedded Late Weichselian pollen. It still appears that the vegetation in northern Jylland was more open than in southern Denmark. As mentioned above distinctly thermophilous elements are present in stage B in the present diagram, which may correspond to the upper *Betula* maximum in zone II in southern Denmark. The presence of *Hippophaë, Helianthemum* and *Dryas octopetala* (table 2) and the low *Empetrum* frequencies suggest that the soil had undergone no leaching.

*Koenigia islandica* is represented by one pollen grain from stage C (table 2). The species has not formerly been found in Danish Late Weichselian deposits (cp. Danielsen 1970).

One pollen grain of *Ambrosia* (table 2) must have been transported over a long distance from North America, and two grains of *Ephedra strobilacea* type (table 2) are considered to have a distant origin too, in accordance with the view held by Danielsen (1970).

The lower part of Iversen's pollen diagram (1942) referred by him to zone Ic belongs in the present interpretation to stage B. The present diagram can be correlated fairly exactly with Iversen's based on a peak of *Myriophyllum spicatum* (7%) in sample 2 (850 cm) in Iversen's diagram (Iversen 1942, Tabel IV), which occurs at 550 cm in the present diagram, and the two *Betula* maxima at 810–840 cm in Iversen's diagram, which correspond to the maxima at 470–520 cm in the present diagram. Iversen's zone boundary II/III is placed at the top of the dark clay and corresponds to the boundary B/C in the present diagram.

According to the above correlation the peat layer in Iversen's profile at 843

Table 2. List of pollen and spore types which are omitted in the pollen diagram.

| Stages | A | B | B | C |
|---|---|---|---|---|
| Stratigraphic units | e | d | b + c | a |
| Total number of pollen grains counted after deduction of secondary pollen | 9367 | 5927 | 13055 | 4028 |
| *Asteraceae*, sect. *Liguliflorae* | 28 | 88 | 80 | 40 |
| – , sect. *Tubuliflorae* | 36 | 27 | 128 | 25 |
| *Astragalus alpinus* | 3 | 1 | 2 | – |
| *Caryophyllaceae* | 40 | 8 | 83 | 18 |
| *Chamaenerion angustifolium* | – | – | 1 | – |
| *Cruciferae* | 4 | – | 9 | – |
| *Dryas octopetala* | 17 | 14 | 9 | 2 |
| *Epilobium* | 1 | – | 1 | 1 |
| *Galium* | 7 | 12 | 23 | 3 |
| *Koenigia islandica* | – | – | – | 1 |
| *Labiatae* | – | 2 | 1 | – |
| *Leguminosae* | – | 2 | 1 | 1 |
| *Liliaceae* | 1 | – | 1 | – |
| *Menyanthes trifoliata* | – | – | 1 | – |
| *Parnassia palustris* | 6 | 18 | 8 | 2 |
| *Plantago maritima* | 5 | 6 | 9 | – |
| – *media* | 6 | 5 | 2 | 1 |
| *Polygonum aviculare* | 1 | 3 | 2 | 1 |
| – *Bistorta/viviparum* | 4 | 1 | 4 | 1 |
| *Ranunculaceae* | 10 | 13 | 18 | 4 |
| cf. *Rubus chamaemorus* | 7 | 2 | – | 1 |
| *Sanguisorba officinalis* | – | – | 1 | – |
| *Saxifraga aizoides* | – | – | 2 | – |
| – cf. *hirculus* | – | – | 1 | – |
| – *oppositifolia* type | 3 | – | 2 | 1 |
| *Scrophulariaceae* | 1 | 1 | 1 | – |
| *Sedum* | 1 | – | – | 1 |
| *Swertia* | 1 | 2 | 1 | 1 |
| *Thalictrum* | 50 | 16 | 36 | 13 |
| *Tofieldia* | 7 | 8 | 2 | 1 |
| *Umbelliferae* | 16 | 19 | 25 | 17 |
| *Valeriana* | – | 1 | – | 1 |
| *Botrychium* | 9 | 4 | 18 | 6 |
| *Equisetum* | 30 | 162 | 95 | 8 |
| *Gymnocarpium dryopteris* | 17 | 2 | 5 | 4 |
| *Huperzia selago* | 3 | – | 1 | – |
| *Lycopodium alpinum* type | 6 | 1 | 8 | 3 |
| – *annotinum* | 5 | 2 | 8 | 6 |
| – *clavatum* type | 1 | – | 1 | 1 |
| *Selaginella selaginoides* | 11 | 5 | 67 | 14 |
| *Ambrosia* | – | – | 1 | – |
| *Ephedra strobilacea* type | 2 | – | – | – |

cm clearly corresponds to the layer 530–557 cm in the present profile. It cannot be correlated with the peat layer f in fig. 1, as done by Iversen, and the peat f must be older than any layers represented in the two pollen diagrams. Further pollen analytical investigation showed that the layers just above the peat at 73–75 m in fig. 1 might be correlated with the level 500–550 cm in the pollen diagram fig. 7 (layer c in fig. 1), which means that a time gap exists between the peat and the layers above it. The pollen spectra from the peat were normally strongly dominated by *Cyperaceae,* like those shown by Iversen (1942, Tabel IV), and gave no basis for stratigraphic or climatic correlation. Nowhere else in the section I have found a place which looked more promising for pollen dating of the peat layer.

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## Dansk sammendrag

Det blev i 1971 konstateret, at de kendte senglaciale ferskvandslag ved Nørre Lyngby i Vendsyssel omfatter en hidtil ukendt lagserie nederst i den centrale del af bassinet. Dette forhold gav anledning til udarbejdelsen af et nyt pollendiagram og til en række C-14 dateringer, som fremlægges her. Den nye lagserie forekommer under lerlaget b og omfatter lagene c, d og e, se fig. 1 og 2. Det fra bassinets sydlige del velkendte allochtone tørvelag, f i fig. 1, samt fig. 3 og 4, kan følges mod bassinets midte til et sted markeret v. 37 m i fig. 1, og det fremgår at lagets stratigrafiske beliggenhed, hvis det fortsatte til bassinets midte, måtte blive nederst i lagserien, under e. C-14 dateringerne fra tørvelaget, fig. 5, table 1, grupperer sig omkring 12.000 før 1950 og omfatter et tidsinterval fra slutningen af Bølling over Ældre Dryas ind i tidlig Allerød. Følgelig er lagserien i bassinets centrale del, som er omfattet af pollendiagrammet fig. 7, yngre end begyndelsen af Allerød. C-14 dateringerne fra pollenprofilet, fig. 7, fig. 5, table 1, viser næsten samme tidsmæssige spredning som dateringerne fra tørvelaget, og det må antages, at det meste af det daterede materiale er omlejret fra tørvelaget, således at disse dateringer ikke kan støtte den pollenanalytiske datering.

Pollendiagrammet er delt i afsnittene A, B og C, af hvilke A og B henregnes til Allerød, C antagelig til Yngre Dryas. Iversens pollendiagram fra 1942, her vist i fig. 6, kan korreleres med det nye diagram, således at Iversens zoner Ic og II svarer til B, og III til C i det nye diagram. Den tynde tørvestribe ved ca. 843 cm i Iversens diagram, som af Iversen blev antaget for at være identisk med tørvelaget f i fig. 1, kan med fuld sikkerhed korreleres med laget 530–557 cm i det nye diagram.

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