BUDS FROM WILSFORD SHAFT Carole A. Keepax

The buds were initially studied as part of an undergraduate dissertation (Attwater, 1972). This work has been re-examined in the light of a further paper on identification (Tomlinson (1985). In order to facilitate comparison, the descriptions have been re-organised to follow the scheme laid down in the more recent work, and Tomlinson's terminology has been adopted.

Origin of samples

The samples available were 'tank sludge'. This had already been partly sorted, and only one entire bud and one bud fragment were recovered by examination of the material at 1X5 magnification. Eleven further buds were discovered in the seed collection from the site, perhaps indicating that the unsorted deposits may have been initially much richer in bud material.

Condition and treatment of buds

The buds were generally well preserved. The hairs on the margins of the scales were often intact. The buds from the seed collection had been dried, and were hard and brittle.

They were softened by soaking in 5% sodium hydroxide for a few minutes, or in distilled water for a few days. They were then thoroughly washed in warm water.

The buds were dissected and the shape and arrangement of the individual scales recorded. The scales were black or dark brown, and were soaked in dilute peroxide bleach solution until clear. Some masceration of the scales occurred, the inner and outer surfaces often separating.

The scales were washed, stained with aqueous malachite solution, and mounted in glycerol jelly.

Identifications and interpretation of results

Four buds were identified as Corylus avellana (L.), two (possibly four) as Betula sp., two as Quercus sp., and one was unidentified. All of these taxa were represented in the pollen analysis.

The presence of entire buds in the deposits would tend to indicate the presence of trees in close proximity to the site, but this is not borne out by the other environmental evidence. This could be taken as evidence for the deliberate incorporation of material into the shaft by man.

This is also suggested by other evidence.

If this was the case, it might also explain why no bud scales were recovered from the deposits. These are shed in great numbers, are light and easily transported by the wind. If trees had occurred in the vicinity of the site, scales might have been expected in the deposits. However, the poor recovery from the samples makes it difficult to assess the validity of this point.

Description of buds

Detailed descriptions of the buds from Wilsford shaft are given below. Similar buds are described together, with an indication of which were observed to display each feature (e.g. B6 = Bud 6)

BUDS 1, 4, 5 & 10 Corylus avellana (L.)

WHOLE BUD
3X2mm (B1,4), 2X2mm (B5), 4X3mm (B10)
Ovoid (B1,4,5,10) ?adpressed (B4)

TYPE AND ARRANGEMENT OF SCALES
No. scales: 6 (B1,4), 8 (B5), 7+ (B10)
Scale shape ?rounded (B1,4,5,10), ?/pointed (B4,5,10)
Not much variation within bud (B4,5,10)

INDIVIDUAL SCALES
Cells rounded to angular/subrectangular (B1,4,5,10), "Radial" (B4), sinuous/ jigsaw-shaped towards margin (B5)
Walls fairly thin (B1,5), thick (B4), pitted (B4,5)
Hairs on margins, abaxial and adaxial surfaces, single-celled (B1,4,5,10)
Glands multicellular, club shaped, on/near margins (B1,4,5,10), and surfaces (B4) ?very large,dark B4
Crystals small and rounded (B4), ?artifacts (B5)
Veins (parallel/) from multibase (B4,5)

NOTES ON IDENTIFICATION
The appearance of the multicellular gland closely resembles Corylus, and all major features support this identification.Pitting of the cell walls and crystals were not mentioned by Tomlinson (1985), but were recognised in some Corylus material by Attwater (1972).
Some or all of these buds are therefore likely to be from Corylus avellana (L.).

BUDS 2 & 9 Quercus sp.

WHOLE BUD
4X3mm (B2), 3X2mm (B9)
Ovoid (B2,9)

TYPE AND ARRANGEMENT OF SCALE
No. scales: 30 (B2), 25 (B9)
Scale shape rounded on outside, slightly pointed and longer towards inside of bud (B2,9)

INDIVIDUAL SCALES
Cells subrectangular to oblong. Long rows of square cells frequent, particularly at margins (B2,9)
Walls fairly thin (B2,9)
Hairs on margins and occasionally on surfaces, single celled (B2,9), some multicellular, one cell wide (B9)

NOTES ON IDENTIFICATION
The rows of square cells are typical of Quercus or Fagus, although the square crystals that they normally contain were not observed. The shape of the entire buds and epidermal cells is unlike Fagus. An identification of Quercus sp. is supported by the other features observed.

BUDS 6 & 8 Unidentified

WHOLE BUD
4X3mm (B6)
Ovoid (B6)

TYPE AND ARRANGEMENT OF SCALES
No. scales: 6 (B6), ?5 (B8)
Scale shape ?rounded (B6)
Not much variation within bud (B6)

INDIVIDUAL SCALES
Cells subrectangular (B6,8) /rounded to angular (B8), ?slightly sinuous/ jigsaw-shaped towards margins (B6)
Walls fairly thick, pitted (B6,8)
Hairs, single-celled, on adaxial surface (B6,8) and margins (B8)

NOTES ON IDENTIFICATION
There is insufficient data for a firm identification. They could be further examples of Betula, or possibly Corylus, buds.
B8 ? globular inclusions in some unicellular hairs.

BUD 3 Betula sp.

WHOLE BUD
4X3mm
Ovoid

TYPE AND ARRANGEMENT OF SCALES
No. scales: 6+
Scale shape slightly pointed
Inner scales slightly smaller than outer

INDIVIDUAL SCALES
Cells rounded to angular/ subrectangular, sometimes sinuous/ jigsaw-shaped

Walls thicker towards margins
Hairs on margins, adaxial and abaxial surfaces, single-celled
Glands multicellular, peltate, more on adaxial than abaxial surface
Crystals occasional, star shaped and angular
?Stomata (or possibly gland/hair cicatrices), surrounded by ring of small subsidiary cells

NOTES ON IDENTIFICATION

Taxa conforming to this general description and with the same type of glands are Betula, Alnus, and Myrica. The general shape of the bud, distribution of hairs and presence of crystals did not match Alnus. Myrica is similar in general features, but the glands are smaller, and the distribution of hairs is different. The most likely identification is therefore Betula, which this bud matches in most respects.

BUD 11 Betula sp.(?)

WHOLE BUD
A small fragment only was preserved

INDIVIDUAL SCALES
Cells rounded to angular/ subrectangular
Walls thick
Glands multicellular, round headed to peltate
Stomata large and pale coloured (green staining)

NOTES ON IDENTIFICATION

The large peltate glands again indicate Alnus or Betula. The large, pale stomata are more typical of Betula.

BUD 7 Unidentified

WHOLE BUD
3X3mm
Ovoid

TYPE AND ARRANGEMENT OF SCALES
No. scales: 8
Scale shape ?rounded, ?longer and thinner towards inside of bud

INDIVIDUAL SCALES
Cells rounded to angular, sinuous/jigsaw-shaped near margin
Walls fairly thin and pitted
Hairs on margins, single-celled
Glands/hairs on margins, multicellular, hairlike (one cell wide, 4+ cells long)

NOTES ON IDENTIFICATION

A number of taxa display a similar type of multicellular gland, but none of these are a good match for the general morphology of bud 7. The best agreement of features is found with Myrica gale L., but this should not be regarded as an identification: Tomlinson (1985) states that in Myrica, the glands occur largely on the adaxial surface.

References

Attwater*, C.A., 1972. The identification of bud scales with reference to archaeological deposits. BSc Thesis, University of London (Microfiche available at Institute of Archaeology Library, 31-34 Gordon Square, London, WC1H OPY)

Tomlinson, P., 1985. An aid to the identification of fossil buds, bud-scales and catkin-bracts of British trees and shrubs. Circaea (The Bulletin of the Association for Environmental Archaeology) Vol 3, No.2, 45-130

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