W. Groenman-van Waateringe & J. D. van der Waals

THE LATE NEOLITHIC TUMULUS AT BOUNDARY POST 425 AT SWALMEN (DUTCH LIMBURG)

The tumulus and the Beakers (J. D. van der Waals). The scarcity of knowledge concerning the economy of the Bell Beaker and related groups makes any new opportunity for acquiring fresh palynological data particularly welcome. This has proved possible with a tumulus excavated over twenty years ago, from which pollen samples could recently be taken.

In the years 1936-37 Dr. F. C. Bursch, then keeper in the Rijksmuseum van Oudheden at Leiden, excavated, in co-operation with the *Société historique et archéologique dans le Limbourg*, eight tumuli situated near the spot where the boundary of the communities of Swalmen and Beesel reaches the Dutch-German border, just at boundary post 425. The important results of this excavation have never been published, although the finds — thirteen complete or fragmentary Beakers — were discussed briefly in a general survey of Beaker types (*Palaeohistoria* 4, 1955, pp. 30-31, nos. 14, 33-36), in which these Beakers were cited as excellent illustrations of connections between the PFBeaker[1] Culture and the Bell Beaker Culture.

When the spot was visited on 4 September 1957, one of the tumuli, tumulus 6, appeared to be still recognisable, owing to the fact that this tumulus had been used — as Bursch noted on his drawing — as a base for boundary post 425. Bursch had left unexcavated part of the north east quadrant, with the boundary post, and adjacent parts at the eastern periphery and of the southeastern side, which were situated on German territory. Though considerably damaged, this part appeared still to be in existence, as was the boundary post, which had, however, fallen down along the Dutch side of the tumulus. It was impossible to identify the other tumuli or their remains, since no situation map could be found in the Museum at Leiden, and since the terrain had also changed considerably as the result of the building of fortifications and of reclamation.

During a second visit to the spot, on 13 September 1957, the original standing sections on the southwest and northwest side of the remnant of the tumulus were cleaned. New evidence concerning the stratigraphy of the tumulus could not be found. But an old

[1] Abbreviation for 'Beakers with Protruding Foot', as defined in *Palaeohistoria* 4, 1955, p. 7.

surface was recognised as a greyish zone above the lightly yellow undisturbed subsoil of fine sand, and beneath the more mottled yellow-ochre to grey-coloured body of the tumulus, also consisting of fine sand. The results of the palynological investigation of this old surface layer are the occasion for the present re-examination of the excavation of the tumulus by Bursch. Thanks to the generous permission of the director of the Rijksmuseum van Oudheden the original drawing could be utilised. No photographs nor notes were available.

On the plan of the excavation of 1936 (fig. 1, translated into the symbols currently in use) only the ground-plan is reproduced, and not the uninformative North-South section. On the drawing of this section the border between subsoil and tumulus is not shown, nor are the interments.

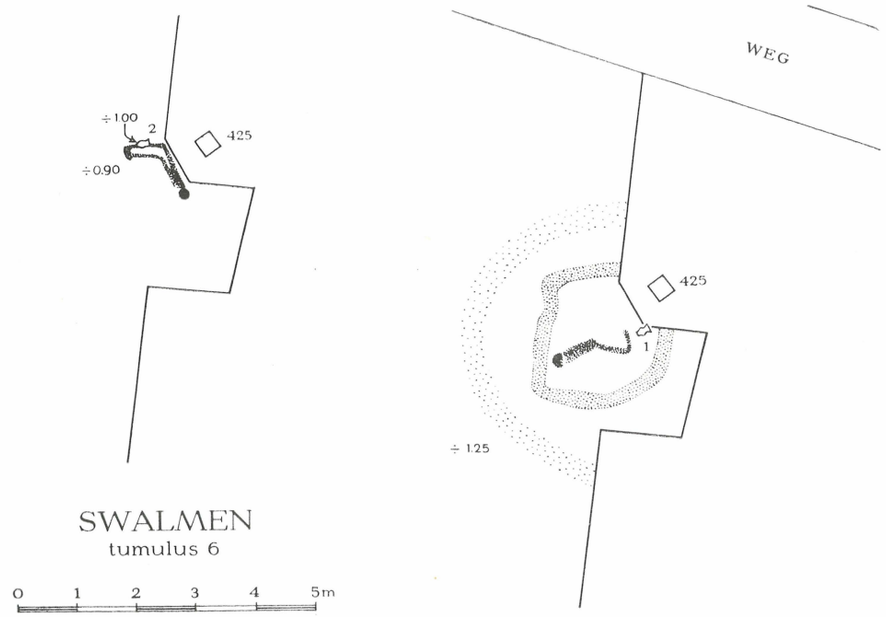

FIG. 1. Beaker burials in tumulus 6 at Swalmen (Dutch Limburg).

On the plan two intersecting corpse-silhouettes are noted in the centre. The upper one was found, placed with feet towards the NW and the head towards the SE, with raised knees, face towards the West, 0,90 m beneath the top of the tumulus : this must have been about the level of the base of the tumulus. At about the hollow of the knee, but a little lower, at 1,0 m beneath the top of the tumulus, a Beaker was found (marked on the plan as 2 = 1 1937/8.10) which almost certainly belonged to this burial. Deeper, at 1,25 m beneath the top of the tumulus, and certainly under the level of the base, a second corpse-silhouette was seen, placed with feet toward the East and head toward the West, facing South, also with bent knees. At its feet and at the same level a second Beaker was lying (marked on the plan as 1 = 1 1937/8.11). Around the interments, an irregular soil mark, circular but flattened on the west side, and consisting of yellow sand, is shown on the plan (greatest inner diameter c. 2 m ; breadth c. 0,25 m). Within this ring many infiltration veins are shown. Outside and more or less concentric to it is recorded a second « extremely faint... not dug in » circular trace (inner diameter c. 4 m ; breadth c. 0,30 m). These circular traces, were not, however, recorded on the drawn section. But in the section on the south side, where dark soil rested on the foot

FIG. 2. The Beaker from the primary grave in tumulus 6 at Swalmen (Dutch Limburg). (*Photo R.M.O.*)

of the tumulus, charcoal-traces and a lens of white sand were noticed. At the north side as well a zone of white sand was seen under and parallel to the tail of the mound. It is not easy to visualise the structure of the tumulus on the basis of these data. It seems certain that we have here burials of two phases, but it is not clear what interpretation is to be placed on the vague soil marks, and so the question remains open as to whether the whole tumulus was erected at the time of the first interment, so that the second burial was inserted into the top without enlarging the tumulus, or whether the original tumulus was smaller and only enlarged at the time of the second interment. We have the impression that the first of these alternatives is what actually occurred. It does not seem likely that the dark soil at the south side of the tumulus has anything to

do with this (or with the Beaker burials) ; in our opinion it points to a still later, local peripheral enlargment of the monument. The only thing that can be regarded as certain is that the inner circular soil mark — a foundation trench for a post circle ? — goes with the first interment.

Because of this uncertainty it cannot be definitely established which period is represented by the pollen sample — one is inclined to associate it with the erection of the monument. For the rest it remains to be asked whether much time can have elapsed between the two interments — on the basis of the finds one would not say so. The finds are:

Beaker with the earlier interment (Leiden, Rijksmuseum van Oudheden 1 1937/8.11 ; height 21,7 cm, thickness of the wall at the rim 0,6 cm ; *Palaeohistoria* 4, 1955, Pl. XI : 35). Beaker (fig. 2), reconstructed from a number of large and small fragments and c. 2/5 plaster ; with a pronounced S-shaped profile and a slightly protruding foot. The maximum diameter of the body is more or less the same as the outer diameter of the rim. The decoration reaches from the rim to underneath the greatest body circumference and is entirely impressed with a plain spatula. Eight horizontal decorated zones alternate with undecorated zones of about half of the breadth of the decorated ones ; they cover the upper part of the Beaker from the rim to the level of the greatest body circumference. The lowest and second from the lowest zones show diagonal hatching to the right, all the others show cross-hatching. The lowest zone does not run all the way round, but joins onto a zigzag line which continues 1½ turns round the Beaker in a spiral descending from the level of the greatest body circumference. The foot of the Beaker is undecorated. Just under the rim there is a horizontal series of impressed points. The somewhat flattened top of the rim is decorated with a row of parallel diagonal impressions ; a zone with cross-hatching decorates the interior of the rim. The colour varies from beige-brown (outside) to bluish grey-brown (inner part of the rim) ; it has a dull lustre on the outside. Some small grits are visible.

The Beaker] has all the characteristics of a hybrid of the PF Beakers and the Bell Beakers. The reminiscence of a protruding foot, the impressing of the decoration with a plain spatula, and the limitation — in the main — of that decoration to the part of the Beaker above the greatest body circumference recall the PF Beakers. But the presence of undecorated zones alternating with the decorated ones, the occurrence of some decoration beneath the greatest body circumference and the decoration of the interior of the rim show Bell Beaker influence. The zigzag line, finally, connects this Beaker with a group of hybrids that are characterised by zigzag lines and that occur mostly on the Veluwe, in Drenthe and in Northern Germany (*Palaeohistoria* 4, 1955, pp. 16-17, 31, Pl. XVIII : 51-53 ; K. W. Struve, *Einzelgrabkultur Schleswig-Holstein*, 1955, p. 49, Taf. 17 ; W. Glasbergen, *NDV* 1957, pp. 35-41, fig. 13-16).

The Beaker with the second interment (Leiden, Rijksmuseum van Oudheden 1 1937/8.10 ; height 21,1 cm, thickness of wall near rim 0,5 cm, outer diameter of the rim 12,2-14,4 cm, diameter of the body 15 cm, diameter of the bottom 5,5 cm ; *Palaeohistoria* 4, 1955, Pl. XI : 33). Beaker (fig. 3), deformed by prolonged pressure in the ground ; reconstructed from a series of large fragments and smaller sherds, with some plaster filling. Bottle-shaped, the profile being in the shape of an S with small upper and large lower part ; low body with a greater diameter than that of the rim, high sloping shoulder, high placed neck and short flaring rim. Flat bottom. The decoration, extending from rim to base, is impressed by a kind of cord which has recently been identified as *Häkelmaschenschnur* by E. Gersbach (*Jahrbuch der Schweizerischen Gesellschaft für Urgeschichte* 46, 1957, pp.1-12, Abb. 1-5, Taf. 1-4). Twenty seven non-spiralling encircling zones alternate with undecorated zones of the same breadth. This decoration is also found inside the rim, with three horizontal zones, and on the top of the rim, with diagonal hatching, likewise in *Häkelmaschen* technique. The clay is tempered with sand and fine grits ; the colour is light red- to beige-brown, the core of the fabric being dark. The surface is finely grained.

FIG. 3. The Beaker from the secondary grave in tumulus 6 at Swalmen (Dutch Limburg). (*Photo R.M.O.*)

The Beaker belongs to the Bell Beakers decorated in a style derived from the PF Beakers, and within this class to the Bell Beakers with all-over cord ornamentation, type 2^{IIb} (*Palaeohistoria* 4, 1955, pp. 28-30), the cord ornamentation in this case having been translated into *Häkelmaschen* technique, as occurs more often.

Thus there are recognisable in both Beakers elements of the PF Beakers and the Bell Beakers. The relationship between the two Beakers is emphasised by the extraordinary decoration on the top of the rim, and is even more apparent when one looks at these Beakers in the context of the other Beakers found by Bursch at Swalmen, which all have certain striking features in common (*e.g.* comparatively narrow base and pronounced S-shaped profile). Thus, on typological grounds, one is inclined to see no

FIG. 4. Beaker from a barrow at Bergeyk (North Brabant).
(*Photo B.A.I.*)

considerable gap between the first and the second interment, either culturally or chronologically.

A comparison with the Beaker found by G. Beex at Witrijt (*Bijdr. Brab. Heem* 11 — should be 9 —, 1957) is instructive (fig. 4). This too is a Bell Beaker decorated in a technique derived from the PF Beakers. More specifically it is a Bell Beaker decorated in zones with a plain spatula, type 2^{IIc} (*Palaeohistoria* 4, 1955, pp. 30-31). This Beaker is thus closely related to the two here described. The affiliation can furthermore be illustrated by the fine dagger of Grand-Pressigny flint found together with the Beaker from Witrijt. When associated, these daggers have thus far in the Netherlands only been found in connection with the hybrids of the PF Beakers and the true Bell Beakers, that is to say with the Bell Beakers borrowing the decorative techniques of the PF Beakers (types 2^{IIa-c}) and with the Beakers with zigzag line decoration already mentioned in connection with the Beaker of the first interment. Only once has a dagger of this

type been found associated with a late PF Beaker with herring-bone decoration, type 1^{d} (*Palaeohistoria* 4, 1955, pp. 11-12, 31-33, note 13 ; W. Glasbergen, *NDV* 1957, pp. 35-41, figs. 13-16), which thus is closely akin to our Beaker of the first interment. If one assumes that daggers of Grand-Pressigny flint were imported only during a limited period, then these associations also argue for the cultural and chronological relationship of the Beakers concerned, *i.e.* for our Beakers of the first and second interment. Both interments represent one cultural phase, in which the already devolved PF Beaker Culture and one branch of the Bell Beaker Culture were coalescing.

The Palynological Investigation (W. Groenman - van Waateringe). On 13 September 1957 two samples were taken from the old surface underlying the barrow. The old surface showed as a stratum of greyish sand above a subsoil of yellow-coloured, fine-grained sand. The barrow had been built of fine-grained sand without gravel. The subsoil did not show a heather podzol profile. In the darker-coloured sample (1) the pollen grains were better preserved than in the second sample (2). The preservation of the pollen grains in both samples was, however, rather poor. The samples were prepared for analysis by the Erdtman method, as modified by Iversen. The spectrum obtained was :

	Old surface (sample 1)	Old surface (sample 2)
Alnus	33 %	26 %
Quercus	4,7	3,0
Ulmus	0,9	0,6
Tilia	18	19
Fraxinus	0,2	—
Fagus	—	—
Pinus	—	—
Corylus	43	38
Salix	0,2	—
ΣAP ÷ *Betula*	571	372
Betula	43	27
Calluna	24	39
Cerealia > 50 μ	1,8	03
Artemisia	0,2	0,8
Rumex	—	0,8
Graminea?	9,1	6,5
Compositae lig.	1,4	0,8
Compositae tub.	0,4	—
Caryophyllaceae	0,2	0,3
Plantago lanc.	—	—
Ranunculaceae	0,4	0,5
Hedera helix	0,2	—
Filices	2,6	4,6
Sphagnum	0,5	+
Lycopodium cf. clavatum	0,4	—
Varia	7,4	18

Most remarkable in this spectrum is the high *Tilia* percentage and the absence of *Fagus*. This suggests a Late Neolithic date for the barrow overlying it (*cf.* H. T. Waterbolk, *De praehistorische mens en zijn milieu*, 1954 ; *Bijdr. Brab. Heem* 9, 1957). The high *Tilia* value, moreover, indicates that *Tilia* played an important part in the local vegetation, and that there may have been good conditions for this tree in the immediate vicinity of the barrow. The high percentage, however, may partly be caused by differential conservation in view of the bad preservation of the pollen grains.

A striking feature is the absence of *Plantago lanceo ata*, a plant typical for the *landnam* spectrum first identified by Iversen (*Danm. Geol. Unders.*, 2. Rk. 66, 1941 ; 4. Rk. 3, 6, 1949). On the other hand, pollen grains of *Cerealia* are present.

The spectrum shows much resemblance to that of the old surface beneath a barrow at Witrijt, municipality of Bergeyk (N.Br.), containing a grave with a Bell Beaker of type 2^{IIc} (Waterbolk, *l. c.*, 1957). Waterbolk here points to the high value for *Corylus* (44,1 %), the relatively high value for *Ulmus* (1,4 %) and the low value for *Fagus*. Besides, in the spectrum of Witrijt, the low value for *Betula* and the rather low *Calluna* percentage are conspicuous. The spectrum of the old surface beneath the barrow at Swalmen also shows high values for *Corlyus* (43 %) and *Ulmus* (0,9 %), whereas *Fagus* is absent. The percentage of *Betula* is somewhat higher ; *Calluna* is about the same. In contrast to Swalmen, the Witrijt barrow was built on a clearly podzolized old surface. The *Tilia* percentage at Witrijt, though rather high (8,7 %), is lower than at Swalmen. As to the weeds, neither Witrijt nor Swalmen shows a *landnam* spectrum. The value for the weeds is very low, particularly for *Plantago lanceolata* and *Rumex*. At Witrijt no pollen of *Cerealia* was found.

A barrow at Putten (Gld.), palynologically investigated by Waterbolk (*l.c.*, 1954), contained a Beaker with a decoration of zigzag lines, also a hybrid between Bell Beat kers and PF Beakers. The spectrum was interpreted as a *landnam* spectrum, but excep- for the high value for *Caryophyllaceae* it does not show the characteristics of a *landnam* spectrum, as the values for *Plantago*, *Compositae*, *Gramineae* and *Rumex* are very low.

The conclusion must be that the old surface sample taken from the Swalmen barrow, containing two hybrid Beakers — a PF Beaker, *cf.* sub-type 1^{d}, and a Bell Beaker, sub- type 2^{IIb} — dit not show a real *landnam* spectrum. Thus the barrows containing dif- ferent types of hybrid Bell Beakers (Bell Beakers decorated in a technique borrowed of the PF Beakers) seem to belong to a group with an economy closely related to that of the Bell Beaker group.