Excavations and Survey at Bryn Cysegrfan, Llanfair Clydogau, Dyfed, 1979

By DAVID AUSTIN
Saint David's University College, Lampeter
With contributions by
G. A. M. GERRARD *and* M. J. C. WALKER
Saint David's University College, Lampeter
and by G. WILLIAMS
Dyfed Archaeological Trust

THE EARTHWORKS of a group of pillow mounds in association with four buildings were surveyed and partially excavated during 1978 and 1979 in advance of destruction. Below the earthen mounds, on the former ground surface, were alignments of flat stones found to cover a network of artificial burrows for rabbits. A single radiocarbon date from burnt vegetation beneath one mound provided a date of a.d. 1375 ± 60. The buildings were also excavated and found to be of typical Welsh upland form.

The hill called Bryn Cysegrfan (SN 643 516) is a spur of the Cambrian Mountains overlooking the R. Teifi in the parish of Llanfair Clydogau three miles (5 km) NE. of the market and university town of Lampeter in the former county of Cardiganshire, now Ceredigion District, Dyfed (Fig. 1). Its name, 'hill of the holy place' in English, and the presence of over thirty earthen mounds had, earlier in this century, attracted the attention of antiquarians believing the hill to be a prehistoric burial ground and religious centre.[1] Their exploratory excavations were, however, inconclusive, although T. Lewis recorded a local tradition 'that these mounds were constructed by the last squire of Llanfair, who was a keen agriculturalist and animal breeder, to form a rabbit warren'.[2] Lewis rather dismissed this suggestion and only Ordnance Survey officers, who identified the features as pillow-mounds, paid any further attention to them before 1978, when they were threatened by bulldozing and deep ploughing for the improvement of the pasture on Pen-lan farm. Following correspondence between the Ancient Monuments Branch, DoE (Wales), and the owner (Mr Lewis) concerning the proposed land-reclamation scheme, the Dyfed Archaeological Trust's attention was drawn to the site early in 1978. Four mounds had already been levelled during 1977 and a further twelve were scheduled to be bulldozed in Spring 1978. The Trust surveyed some thirty-four mounds and other features, with the assistance of the Archaeology Unit, Saint David's University

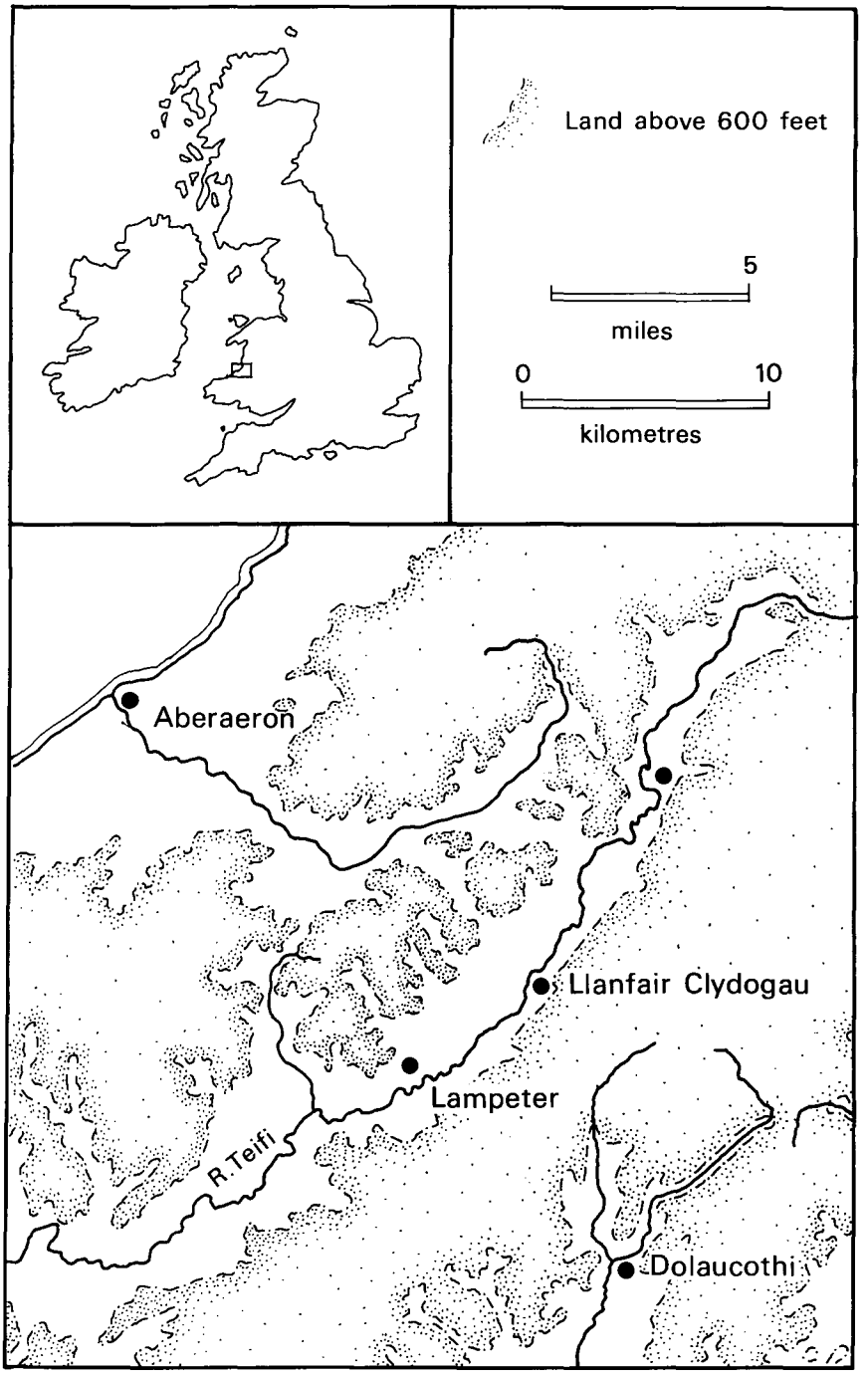

FIG. 1
Location map

College, Lampeter, and recording was completed by Spring 1978. The archive of the survey and excavations is contained within the Trust's Sites and Monuments Record, with each individual earthwork identified by a unique four- or five-figure number prefixed with the code PRN.

The Trust also carried out a watching brief on the mounds destroyed at this time. In Spring 1979 an opportunity arose to examine the surviving western area of the complex prior to destruction, and the College was asked to conduct a short season of rescue excavation on behalf of the Trust. The work was completed largely by students of the College under the direction of David Austin and Richard Daggett with assistance from Sandra Litt and Sandy Gerrard who also conducted a soil phosphate survey for his undergraduate dissertation. Dr Michael Walker of the Geography Department also contributed valuable information on the palaeobotany of certain parts of the sites.

Location and Historical Geography

The Lower Silurian rocks of the Llandovery Series form the basal geology of this area and these outcrop in almost vertical strata where coarser textured gritty bands of shale occur with mudstone and sandstone. The rocks, under immense stress from the Caledonian Orogeny which formed the Teifi Anticline and the Central Welsh Syncline, are highly jointed and thus easily weathered, but those strata more resistant to erosion stand out as ridges in the landscape. Bryn Cysegrfan rising to over 1100 ft is a good example and its glacially rounded hump running back, with the trend of the strata, north-eastwards into the mass of the Cambrian Mountains is a prominent feature in the locality. The small side valley of the Nant Clywedog to the S. and SW. of the hill accentuates this prominence. Closer observation of the hill's topography, however, demonstrates that glaciation and weathering have not entirely smoothed its profile and spiny outcrops of very hard upended shale strata surface through the gentler benches, hollows and slopes. Close to these narrow outcrops the soil is limited to a few centimetres in depth while in the more weathered hollows deposits of over 50 centimetres may have accumulated above the basal rock. A soil pit dug close to mound PRN 8274 in a prominent hollow at the W. end of the site had a characteristic profile with a dense organic O horizon above silt and silty clay loams over the bedrock. These Brown Earths of the Denbigh soil series are derived from the highly fractured Lower Silurian and glacial till and are acidic enough (pH 3.9 to 4.3) to destroy all bone and most artefacts.[3]

These upland soils since the late Bronze Age have, for the most part, supported a classic moorland vegetation of coarse grasses, bracken and gorse suitable for rough pasture and the part of Bryn Cysegrfan belonging to Pen-lan was still in this state before 1978. Yet the history of land use in this area is littered with often futile attempts to improve the bleak economic prospect and give a greater return. Essentially, however, the uncompromising landscape dictates that the better farmland is restricted to a narrow belt of territory below the seven-hundred-foot contour and above the flood levels of the R. Teifi. Farms here traditionally had control not only of this relatively fertile and arable low ground but also had access to, and extensive rights over, the high, broad pastoral uplands.

In Llanfair Clydogau parish little is yet known of the nature of this linkage during the medieval and early modern periods, but even at the time of the Tithe Survey in 1840 (N.L.W.) the bulk of the land ownership still reflected this kind of arrangement (Fig. 2). The major farms were principally owned by two estates, the date of whose creation is unknown, but the most important of which was that owned by Lord Carrington. This landholding had previously been in the possession of the Vaughans of Crosswood and later the Johns of Dolaucothi and in 1772 an indenture listed the constituent farms in 'the capital messuage and demesne called Llanvair, alias Llanfair Clydogy'.[4] The capital messuage was the Johns's mansion (now

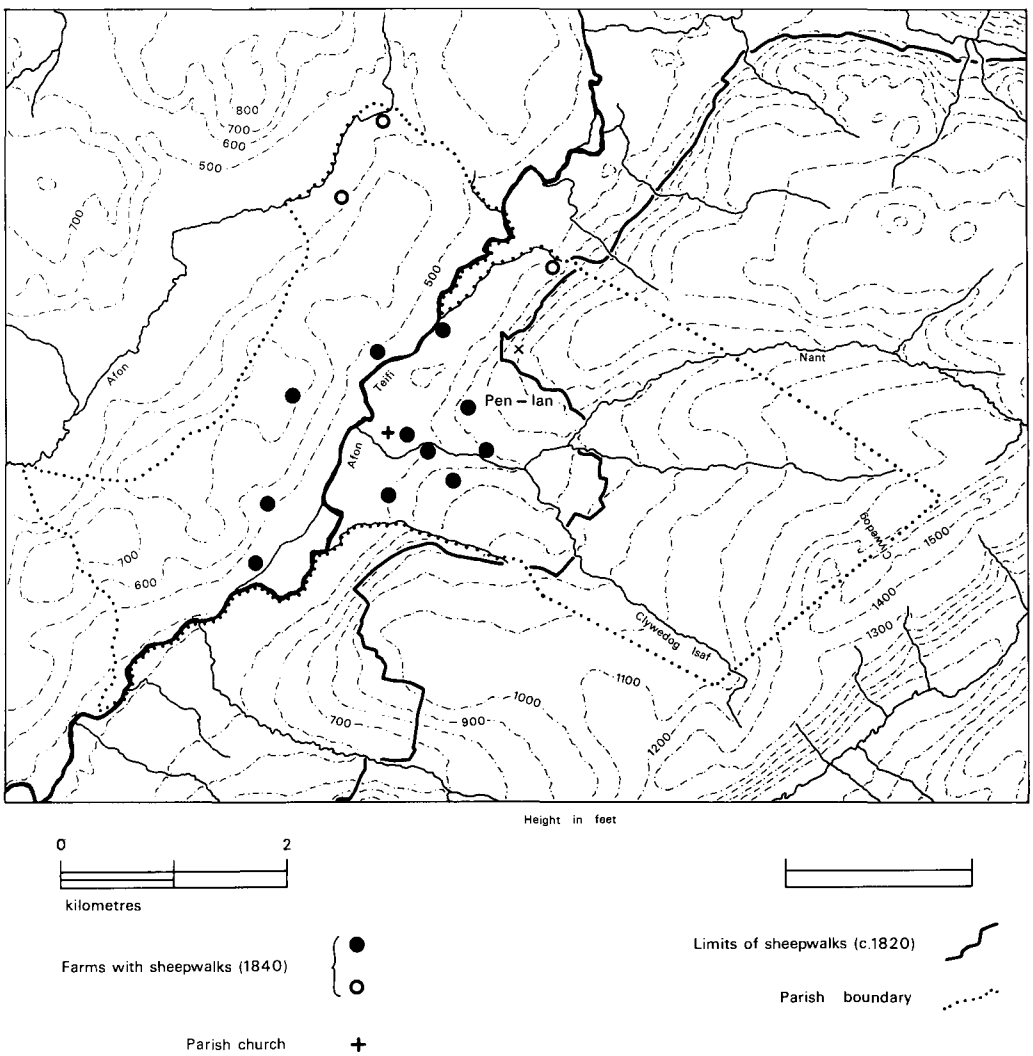

FIG. 2

Parish of Llanfair Clydogau and farms with access to sheepwalks *c.* 1840

demolished) next to Llanfair Fawr farm (Fig. 3), and the demesne was essentially those farms which in 1840 clustered at the lowland heart of the parish and which together had almost total control of the sheepwalks on the mountains to the W. (Fig. 2).

Pen-lan was one of these farms and its elongated block of land in 1840 stretched to the parish boundary, its internal boundary between upland and lowland still preserved (Fig. 3). This line in fact was generally definable in the Teifi valley during the earlier 19th century and the two-inch to the mile Ordnance Survey drawings of 1819–20 (N.L.W.) reproduced it for great distances (Fig. 2, limits of sheepwalks). To what extent this also represented the boundary in earlier periods is unknown, but it is not likely to have been much different. In the mid 19th century, population growth brought squatting and enclosure to the uplands and Pen-lan surrendered parts of its pastures to the farms of Fron-deg, Wenallt Uchaf and Pen-y-gelli, all of which are now ruinous and their improved grasslands encroached by bracken (Fig. 3).

In 1978, the original sheepwalks of Pen-lan were still covered in moorland vegetation and within its limits remained the earthworks of four rectangular structures, 36 pillow mounds, three cross-shaped features, the bank and ditch of a leat, a large platform and some very faint ridge and furrow (Fig. 4). It is clear that their creation and function should be viewed in the context of Pen-lan farm and the medieval antecedents of its upland and lowland dichotomy.

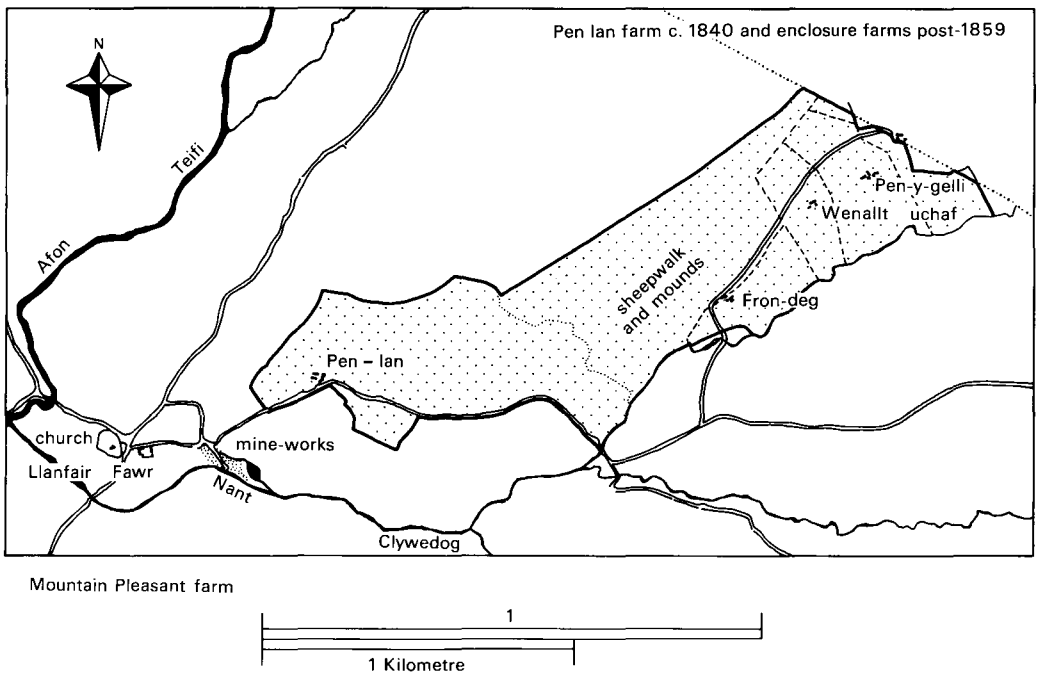

FIG. 3
Pen-lan farm *c.* 1840 and farms created by enclosure *c.* 1859

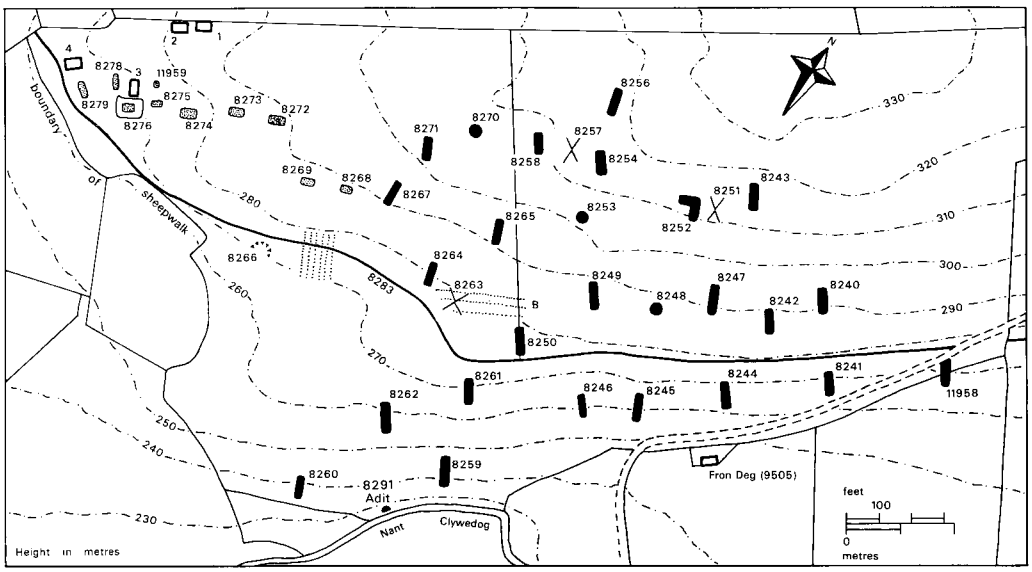

FIG. 4
Location of earthwork features on Bryn Cysegrfan

The Earthworks

The overall plan (Fig. 4) shows the general location of the earthworks and a fundamental subdivision is apparent from the outset. At the south-western end of the ridge is a pronounced horse-shoe shaped hollow which gives some slight protection from the wind and in this are two of the rectangular structures (3 and 4) and seven of the smaller pillow mounds. Five of these are aligned down the bottom of the hollow with the other two more or less at right angles. On higher ground above a spiny outcrop to the N. are the other two structures (1 and 2) with, to the E., the remaining two smaller pillow mounds which share the same alignment as those in the bottom of the hollow. These four structures and nine pillow mounds seem to be of a different character to the rest of the earthworks to the E. In general, the eastern pillow mounds are larger and tend to lie against the slope. Many in fact were clearly dug into the hillside almost in the manner of platform houses and some, such as PRN 8261 and 8262, were built on the steeper parts of Bryn Cysegrfan above the Nant Clywedog.

i. *The western group* (Pl. III, A)

The four earthworks of buildings displayed many similar features and belonged essentially to the class of platform houses frequently associated with *hafotau*. They consisted of continuous, low banks 0.30–0.50 m high with rounded corners. Building 3 (14.2 m × 7.5 m) in the hollow, set out on a naturally flat platform, showed no obvious traces of entrances prior to excavation; building 4 (13 m × 6.5 m), however, had entrances opposed in the long sides with the upslope end placed on a platform

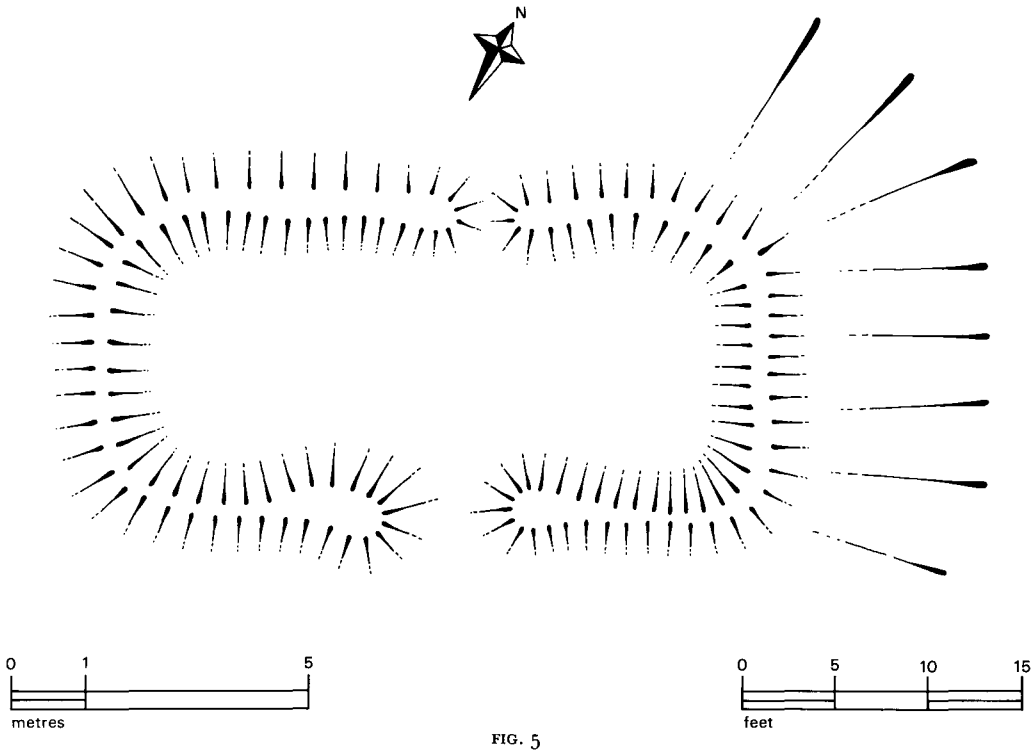

FIG. 5
Survey of Building 4

created by a depression cut into the hill (Fig. 5). Building 2 (16 m × 8.5 m) above the hollow also had opposed entrances but the platform aspect was missing. Building 1 (15 m × 8 m) was the most mutilated of the group but probably also had opposed entrances although the western side was not visible since it lay under the north-western boundary wall of Pen-lan farm.

The pillow mounds of this group were of similar sizes and construction, but displayed interesting differences which enable some speculation about the development of the site (see discussion p. 155). The principal dimensions are given in Table 1, and surveys of typical examples are shown in Fig. 6 together with a composite levelled section down the hollow. The predominant form was the small oval mound completely, or almost completely, surrounded by a quarry ditch and varying in length from approximately nine to twelve metres (Type I, Fig. 6). Six mounds were of this type while a seventh (PRN 8279) was little different except in terms of length, being nearly five metres longer than the others. A further two, however, could be distinguished morphologically although the method of construction was similar (Type II, Fig. 6). The continuous ditch was still present, but they were both distinctly rectangular in shape with broad flat tops. There was also a hint of a slight counterscarp bank outside the ditch, and the dimensions suggest that both

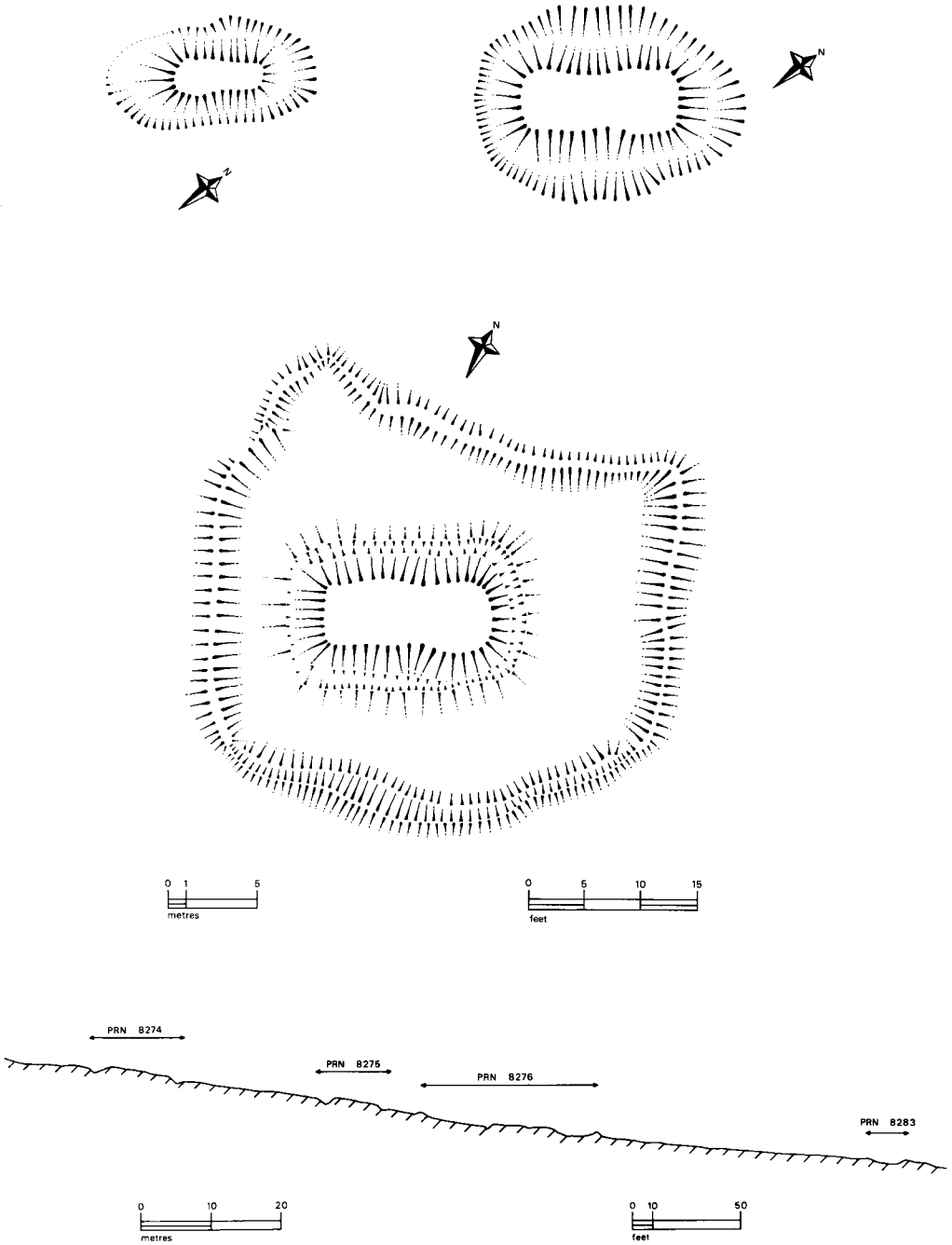

FIG. 6

Examples of pillow-mound surveys: top left — Type I (PRN 8275); top right — Type II (PRN 8274); centre — Type II with enclosure (PRN 8276); bottom — levelled profile, ESE–WNW, through these three and ditch or leat PRN 8283

TABLE I

DIMENSIONS OF PILLOW MOUNDS IN THE WESTERN GROUP (in metres)

Number	*Length* (mound)	*Length* (overall)	*Width* (mound)	*Width* (overall)	*Type*
PRN 8268	7.0	9.3	5.0	7.5	I
PRN 8269	7.5	10.0	3.7	5.7	I
PRN 8272	8.8	12.0	4.3	9.1	I
PRN 8273	9.8	11.2	7.2	12.0	I
PRN 8274	11.9	15.1	6.0	10.9	II
PRN 8275	7.2	11.4	3.8	6.0	I
PRN 8276	11.5	15.2	6.3	10.5	II
PRN 8278	11.4	12.4	3.5	4.0	I
PRN 8279	15.2	17.1	4.3	5.6	I
PRN 11959		3.6 (mound)	3.8	6.0 (diameter)	IV

were dug to very much the same measurements and plan, although there was one major difference between the two: a continuous low bank surrounded one (PRN 8276) and not the other (PRN 8274). Only one other mound was present in this group, dug into the northern slope of the western hollow near building 3 (PRN 11959: not on Fig. 6). It was roughly circular with flanking ditches and thus similar in some respects to the three round mounds of the eastern group although it lacked the continuous quarry ditch of the others and was by contrast terraced into the hillside.

ii. *The eastern group* (Pl. IV)

The features of the eastern group covered a much more extensive area on the top and along the steep southern flanks of Bryn Cysegrfan. There were no recognizable buildings in this part of the site and pillow mounds predominated. Their dimensions are summarized in Table 2 and surveys of typical examples are shown in Fig. 7. The main type was long, sharply rectangular and created with material dug from flanking ditches on either side (Type III). In particular, however, they had been constructed down the slope of the hill, and there was clearly an intention to select the steepest inclines since the slight natural benches were ignored. The bulk of the quarried soil had been distributed at the downslope end of the mounds, giving them a thin wedge-shaped profile not rising on average above half a metre in height. They were considerably larger than those of the western group, varying from nineteen to thirty-one metres in length, with a relatively uniform width of between five and six metres for the mound itself, while the ditches added another four metres. This uniformity suggests that they were constructed to a single plan and at the same time. Two other mounds might be regarded as belonging to this type, but are sufficiently different to propose separate places in the classification. PRN 8252 was L-shaped, formed by the junction of two long mounds of Type III dimensions, each with their

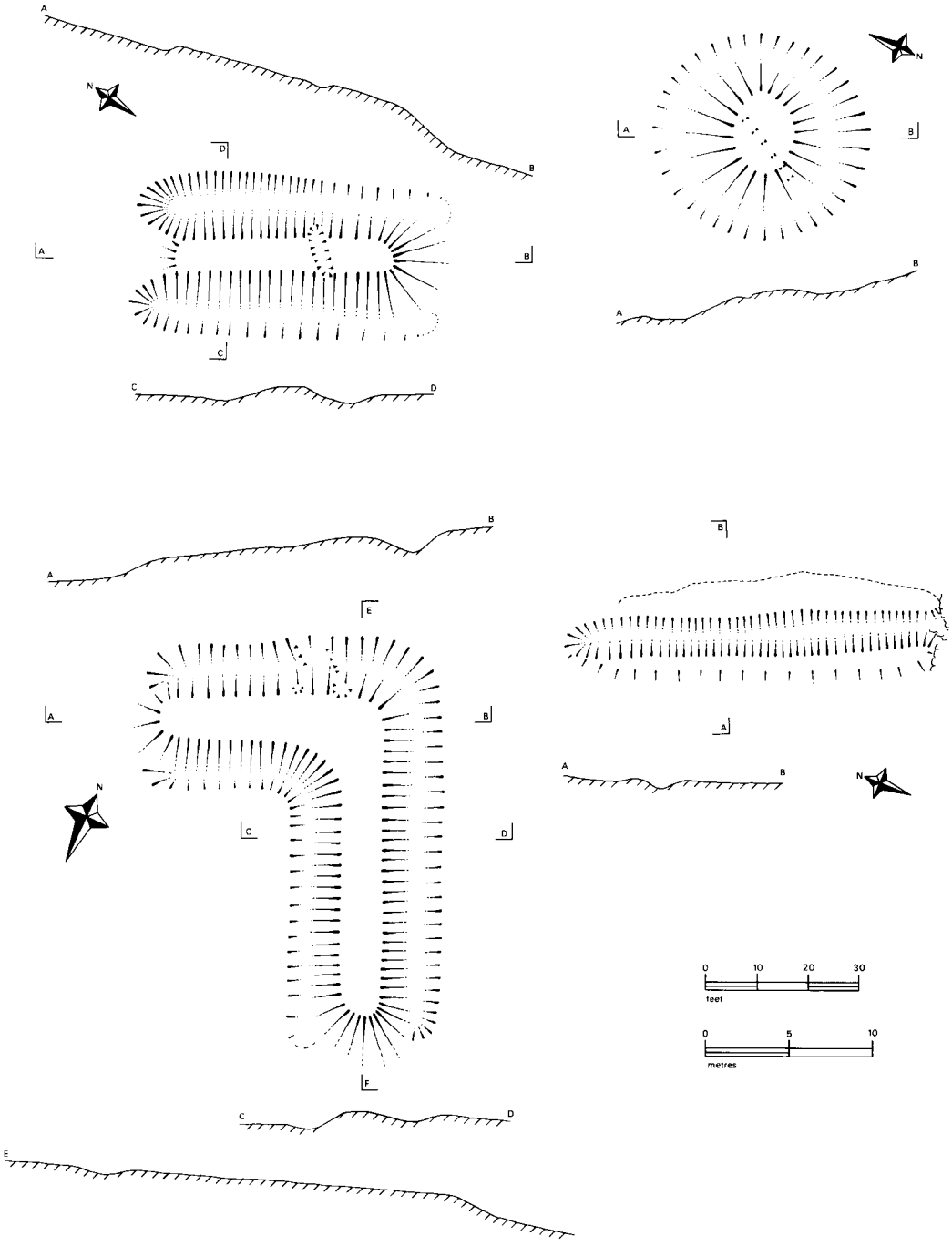

FIG. 7

Examples of pillow-mound surveys: top left — Type III (PRN 8246); top right — Type IV (PRN 8248); bottom left — Type V (PRN 8252); bottom right — Type VI (PRN 8260)

own flanking ditches (Type V, Fig. 7). PRN 8260, however, consisted of a long central gulley about two and a half metres wide with low linear banks on either side (Type VI, Fig. 7) which may represent a normal Type III mound abandoned before completion (see Discussion).

A final form (Type IV, Fig. 7) represented by three examples, had a continuous circular ditch surrounding a central oval mound. Again these are of uniform

TABLE 2

DIMENSIONS OF PILLOW MOUNDS IN THE EASTERN GROUP (in metres)
* denotes mounds not surveyed prior to destruction in 1977

Number	*Length*	*Width* (mound)	*Width* (including (ditches)	*Type*
*PRN 8240	no data			III
*PRN 8241	no data			III
*PRN 8242	no data			III
*PRN 8243	no data			III
PRN 8244	22.5	6.4	10.0	III
PRN 8245	24.0	5.5	9.1	III
PRN 8246	19.3	6.0	9.9	III
PRN 8247	29.5	5.5	9.4	III
PRN 8248		N.–S. 8.2 E.–W. 9.0	13.0 12.6	IV
PRN 8249	25.7	5.1	9.1	III
PRN 8250	30.9	*c.* 5.5	*c.* 9.5	III
PRN 8252	N.–S. 24.0 E.–W. 16.7	6.0 5.9	9.2 8.9	V
PRN 8253		N.–S. 8.4 E.–W. 9.2	12.1 12.0	IV
PRN 8254	21.0	5.4	8.8	III
PRN 8256	25.5	5.5	8.9	III
PRN 8258	17.5+	6.1	9.1	III
PRN 8259	20.5	5.2	9.6	III
PRN 8260	22.7	2.5 (Centre gulley)	6.0	VI
PRN 8261	21.9	5.4	9.3	III
PRN 8262	31.0	5.3	9.1	III
PRN 8264	21.5	5.9	9.9	III
PRN 8265	19.0	5.4	8.7	III
PRN 8267	20.8	6.3	9.5	III
PRN 8270		N.–S. 10.0 E.–W. 9.8	12.7 12.2	IV
PRN 8271	12.0+	6.0	9.1	III
PRN 11958	18.1+	6.1	9.4	III

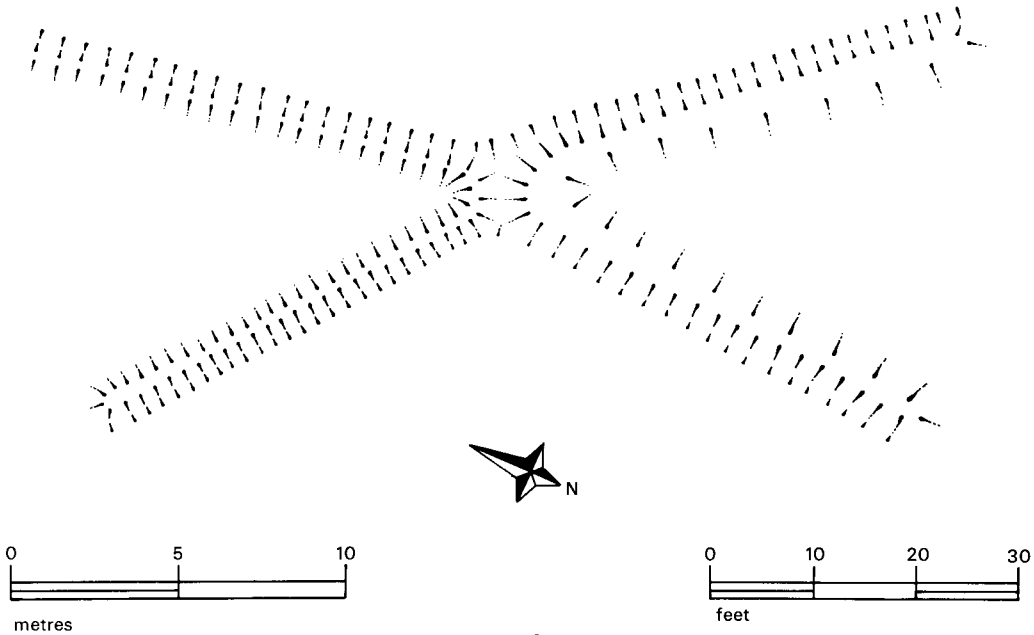

FIG. 8
Survey of vermin trap (PRN 8257)

dimensions between twelve and thirteen metres in diameter. Interspersed among the mounds were three features formed by very low banks and shallow flanking gulleys (PRN 8251, 8257, 8263). In plan (e.g. PRN 8257, Fig. 8) each consisted of two chevrons laid apex to apex but separated by a narrow (1 m) flat area of ground between. Their quarry gulleys, however, dug on the outside of the chevrons met on either side of the central area to give an overall cross-shape to the features. The relative distribution of the cruciform features and the oval mounds may have been significant: they may be regarded as pairs (PRN 8270/8257, 8253/8251 and 8263/8248) with one of each placed on the succession of natural benches down the slope of the hill.

Other features

Apart from enclosure banks and walls there were two other sets of features worth noting. Traces of ridge and furrow, which were almost imperceptible at ground level, were visible on the air photographs particularly those taken by Terry James in light snow during 1978 (especially TAJ/AP/120.1; Pls. III, A and IV). Two patches (Fig. 4), which lay, without enclosing banks, on the bench of ground at the western end of the hill, were cut by later elements; one (A) by the leat, and the other (B) by a cruciform feature (PRN 8263). These were probably, therefore, earlier than the

eastern group of mounds. One additional feature immediately to the west of A was a semi-circular scoop on the hill-slope, similar to, but much larger than, the upslope of a platform hut (PRN 8266). Not a building, it may have been a stack stand associated with the ploughed land.

Crossing the site from E. to W. along the 278 m contour was a broad ditch protected on its downslope side by an earthen bank (PRN 8283).[5]

THE EXCAVATIONS

Most of the excavation was conducted during the Easter vacation of 1979 just prior to destruction of the western group and a period of severe wintry weather meant that the programme of work suffered heavily in its latter stages. It had been intended, for example, that at least three of the buildings and two of the mounds should be examined in considerable detail, but in the end this was not possible before the deep ploughing destroyed the sites.

i. *The buildings*

The remains of three stone structures were deturfed (buildings 1, 2 and 3), but little more could be achieved than the recovery of the rubble plans and some limited

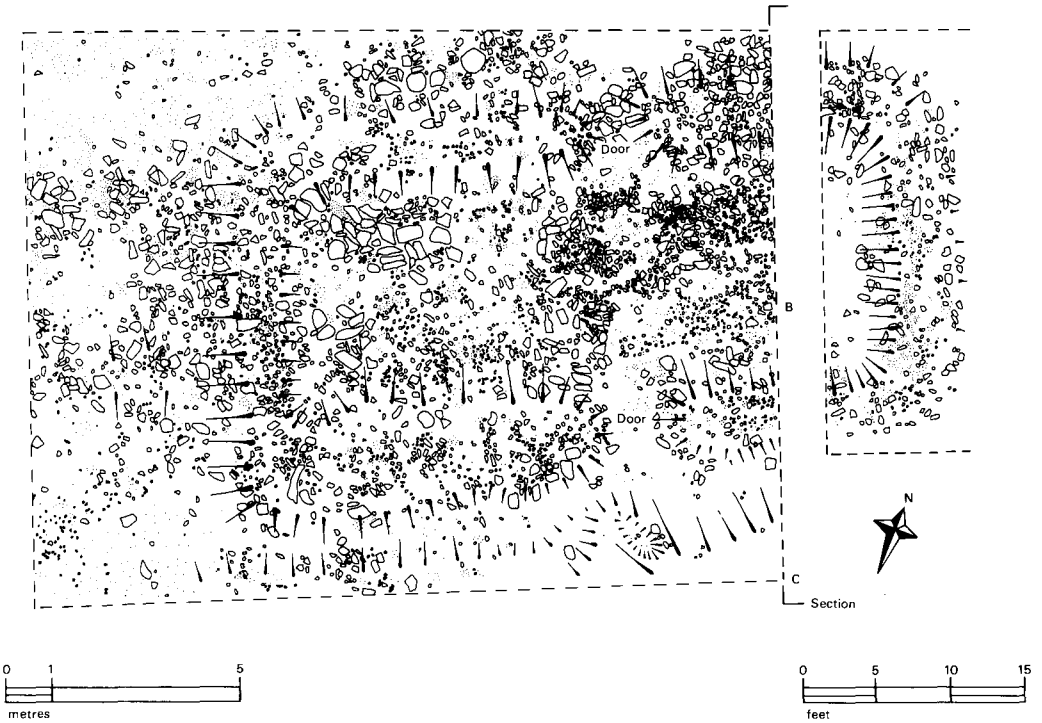

FIG. 9
Building 2: excavated features

examination of the floor surfaces. Building 1 was found, on removal of the turf, to have been very heavily disturbed by stone robbing, presumably for the enclosure wall on its north-western side, and no further work was done there. Building 2 (Fig. 9), which lay immediately to the W., was in slightly better condition, but little of substance had survived. The stone walls had been completely robbed through the rubble of the final collapse, but there was sufficient evidence from sections across wall-lines (Fig. 10) to say that the dry-stone foundation had protected the sub-soil from erosion sufficiently to create low banks especially at the downslope W. end. The erosion had left a slightly sunken earth and stone floor, just distinguishable by the traces of burnt stone below a thin level of rubble. The floor was essentially the worn surface of the subsoil, as were the gulleys or pathways on the S. side of the building which led to one of the two opposed doors. In the NW. corner of the building, however, some larger flat stones hinted at the possible presence of rough flagging. The equivocal results of phosphate analysis (see Appendix II) may suggest that this lower end, as in building 3, perhaps performed the function of an animal byre. Building 3 was also heavily robbed although one tiny fragment of wall did survive on the E. side, enough to confirm the interpretation of the wall-lines from the robber trenches (Fig. 11). Problems with the weather prevented a complete examination of the floor surface, but sufficient was seen to confirm the same general picture as Building 2.

ii. *The mounds*

One mound (PRN 8276) was extensively excavated, one (PRN 8261) rapidly cleared and another (PRN 8274) sectioned during 1979 while very limited excavation

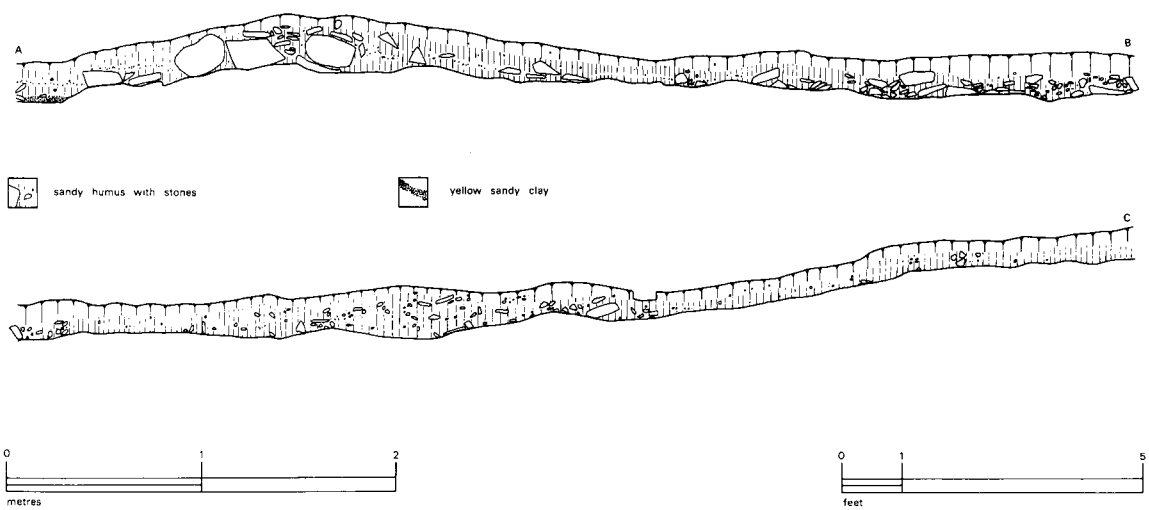

FIG. 10
Building 2: section

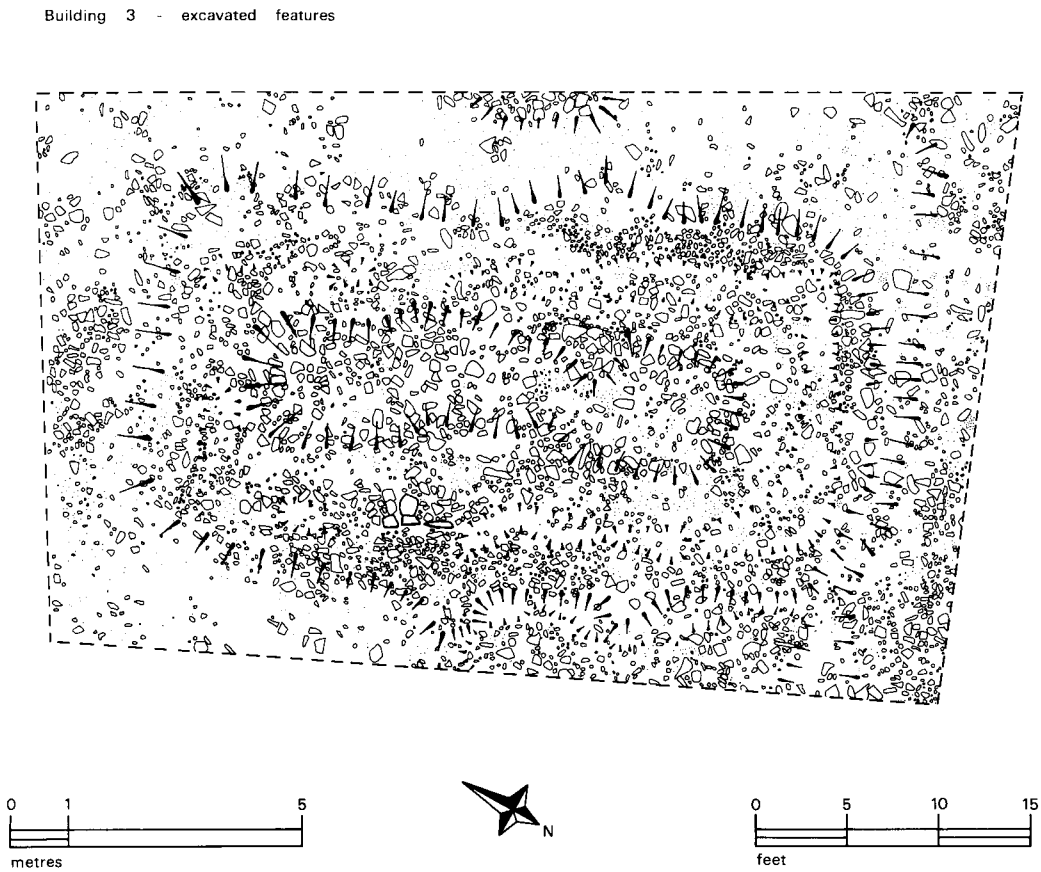

FIG. 11
Building 3: excavated features

was carried out on mound 8254 and cruciform feature 8257 as part of the salvage work by George Williams in 1978. Mounds 8262, 8256 and 8258 were also closely observed during destruction.[6] All this work was undertaken before a typology of the earthworks had been developed and does not represent a selection based on that criterion. Mound 8276, however, was clearly important to any interpretation of the site since it was the only one to be enclosed by a bank which itself was constructed to respect the prior existence of Building 3.

PRN 8276 (Figs. 12–13 and Pl. III, B)

The mound was excavated to a buried soil level (07) leaving transverse baulks one metre wide to give two principal sections A–C and D–F. The remaining features were then excavated with all baulks removed. The stratigraphy was simple since it consisted largely of upcast soil and subsoil (max. 0.75 m deep) with different tip-lines suggesting that the mound had been built in an easterly (upslope) direction. Below the top-soil three principal levels formed the core of the mound. Uppermost at the eastern end was a large dump of loose orange to brown light sandy loam with many fragments of shale (02), and below this was a

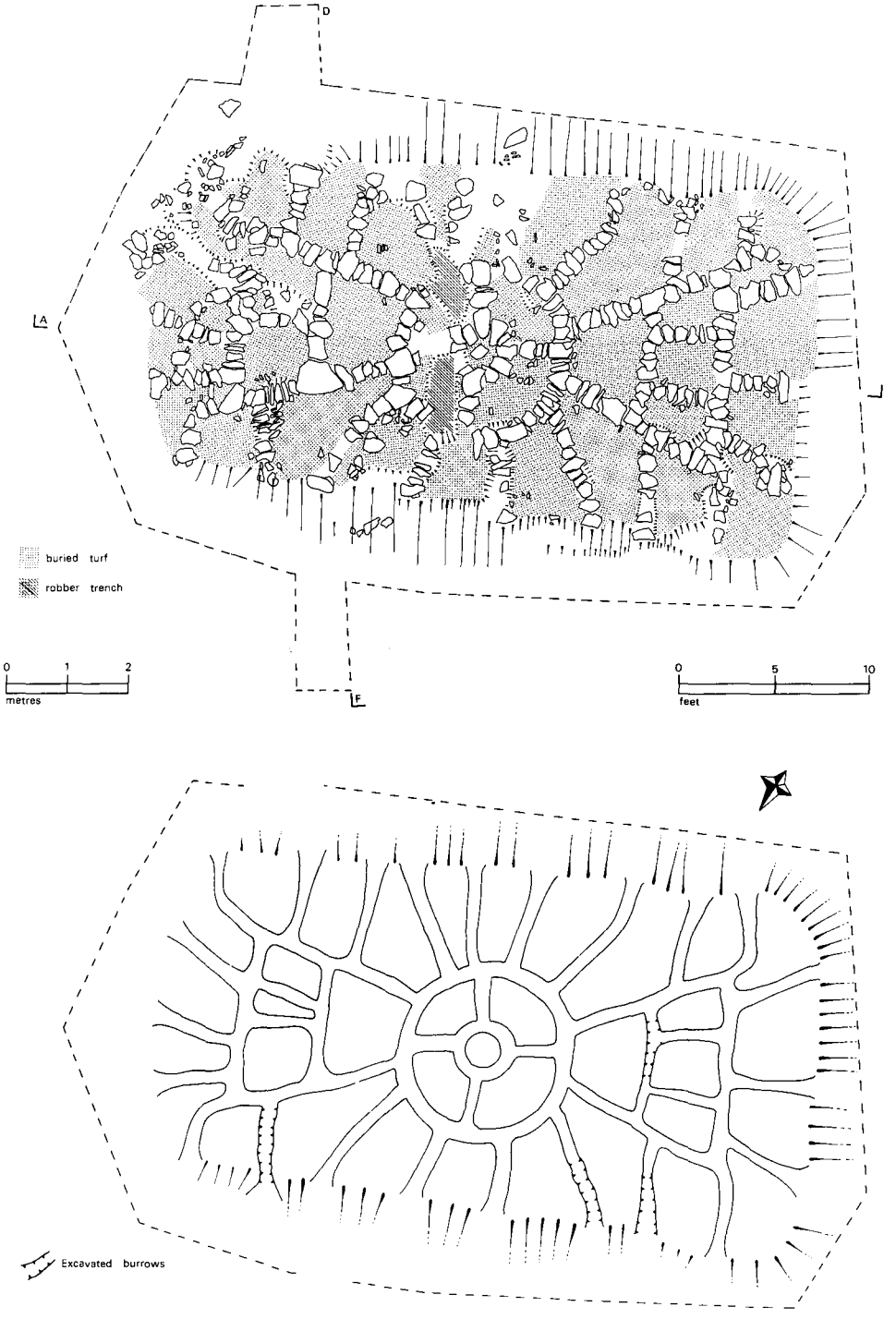

FIG. 12

Pillow mound 8276: excavated features on old ground surface (top) and schematic plan of burrows (bottom)

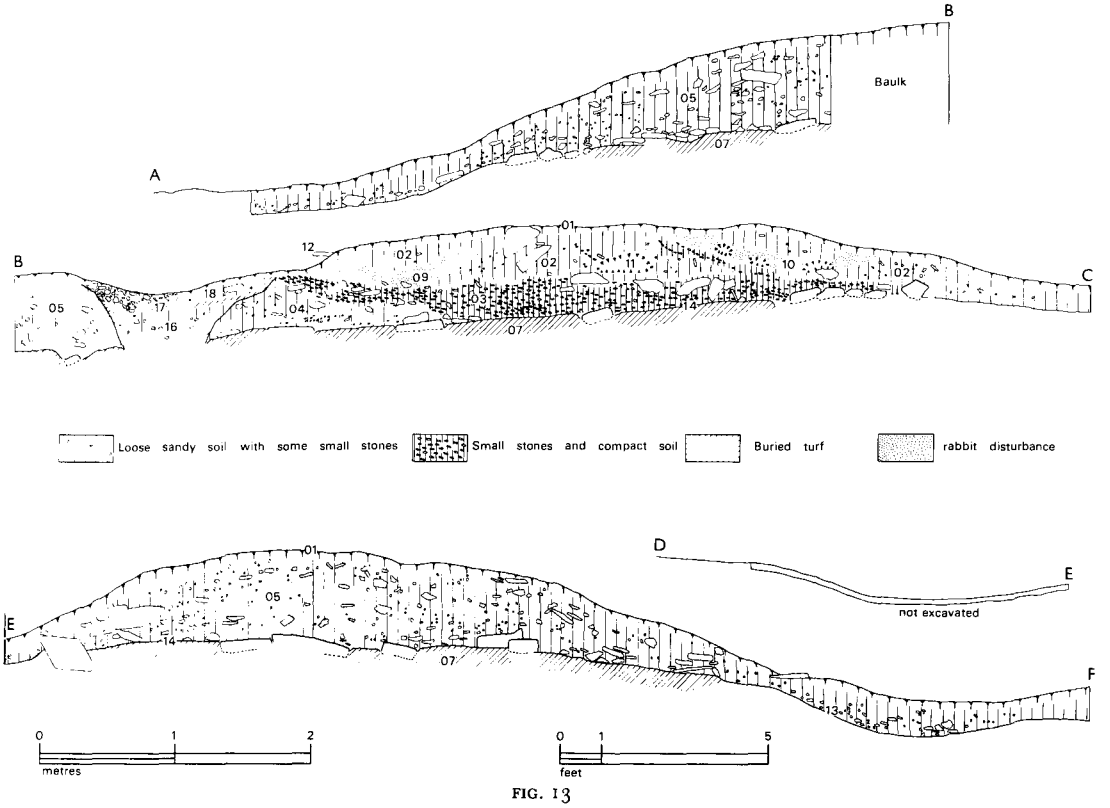

FIG. 13

Pillow mound 8276: sections (see Fig. 18 for locations)

sloping band of more compact, grey-green clay loam containing much more fractured shale (03) and probably derived from a C rather than a B horizon. Below this at the W. end was a dump of soil (04 and 05) very similar to 02. The looser loams (02, 04 and 05) were riddled with modern active rabbit burrows, one of which (09) had an artificial entrance of capstone with two stones on edge supporting it (12). The loose soils had also provided the fill for the side ditches (13) which had been dug down through the old ground surface.

The former turf level was easily detected as a hard grey slightly gleyed soil (07) with a sharp interface with the mound deposits (14). At this junction was a large amount of charcoal of small section derived from tree twigs or shrubs. Traces of scorching (reddening) on the surface of the buried turf suggested that this material had been burnt in situ. In the absence of any significant charcoal above or below the interface (14) it seemed certain that the burning had occurred just immediately before the construction of the mound. It is important to lay stress on this fact because some of the charcoal was submitted for radiocarbon dating (see Discussion). Samples for pollen analysis were also taken from the top of the buried turf layer (see Appendix I).

On and in the surface of the buried turf was an intricate pattern of flat stones (shale) laid in interconnecting straight lines and circles (06). On sample excavation these stones were found to cover gulleys originally about 0.2 m square in section (08). These had, however, been severely eroded by rabbit action and in places the capping stones had collapsed into the widened trenches. The pattern consisted of two central, concentric circles, joined by cross arms. From the outer circle radiated eight straight lines all of which reached the edge of the outer ditch. At the E. and W. ends there were further rectilinear patterns linked to the central

arrangement and which again reached the edges of the ditch. In all there were some 23 outlets.

Finally, across the width of the mound from side to side, there were clear signs that a trench had been dug from the surface down to and through the buried turf layer. It had at least two buried turf layers of its own in its fill (15 and 17) and it seemed sufficiently recent to support the interpretation that this may have been a trench dug by disappointed antiquarians.

PRN 8274 (Fig. 14)

This mound was similar to 8276 as an earthwork and this was confirmed by a trench cut down to its substructure. The core of the mound (max. 1.05 m deep) consisted of various loose brown loams with many rabbit burrows, laid over a buried turf-level and lines of stones. The trench revealed the arc of a circle placed centrally on the former ground surface. Comparison with 8276 suggests that the design and dimensions of concentric circles and radiating arms was almost exactly repeated.

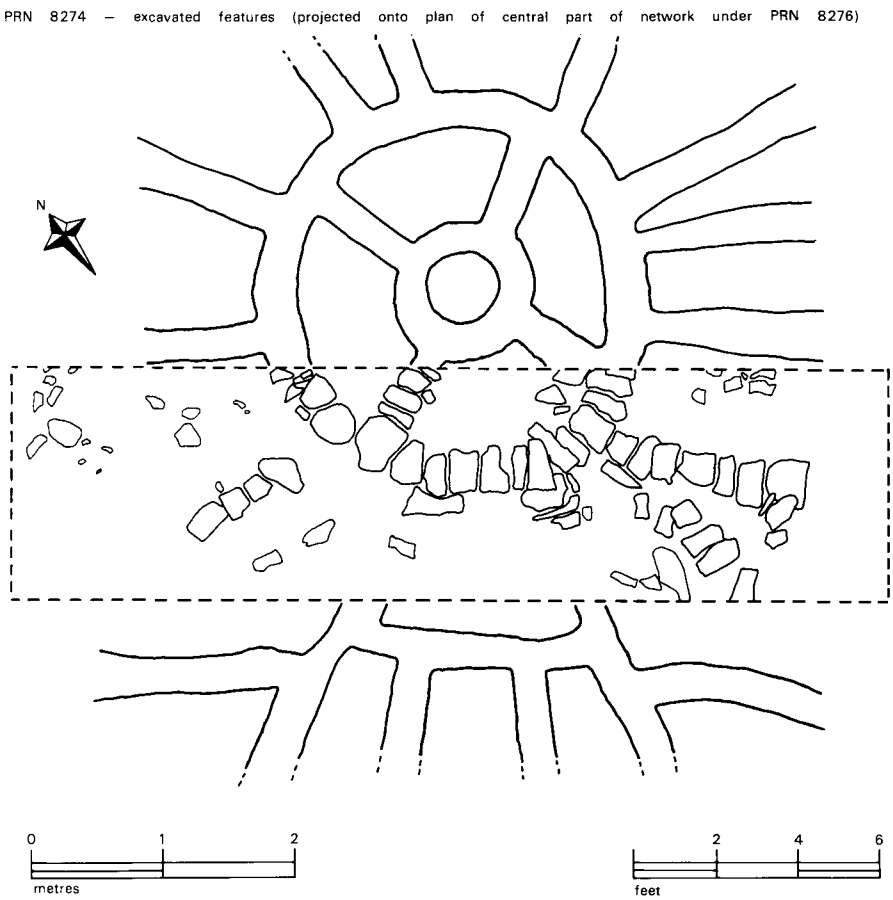

FIG. 14

Pillow mound 8274: excavated features on old ground surface; results of trial trench projected on to part of the schematic plan of 8276

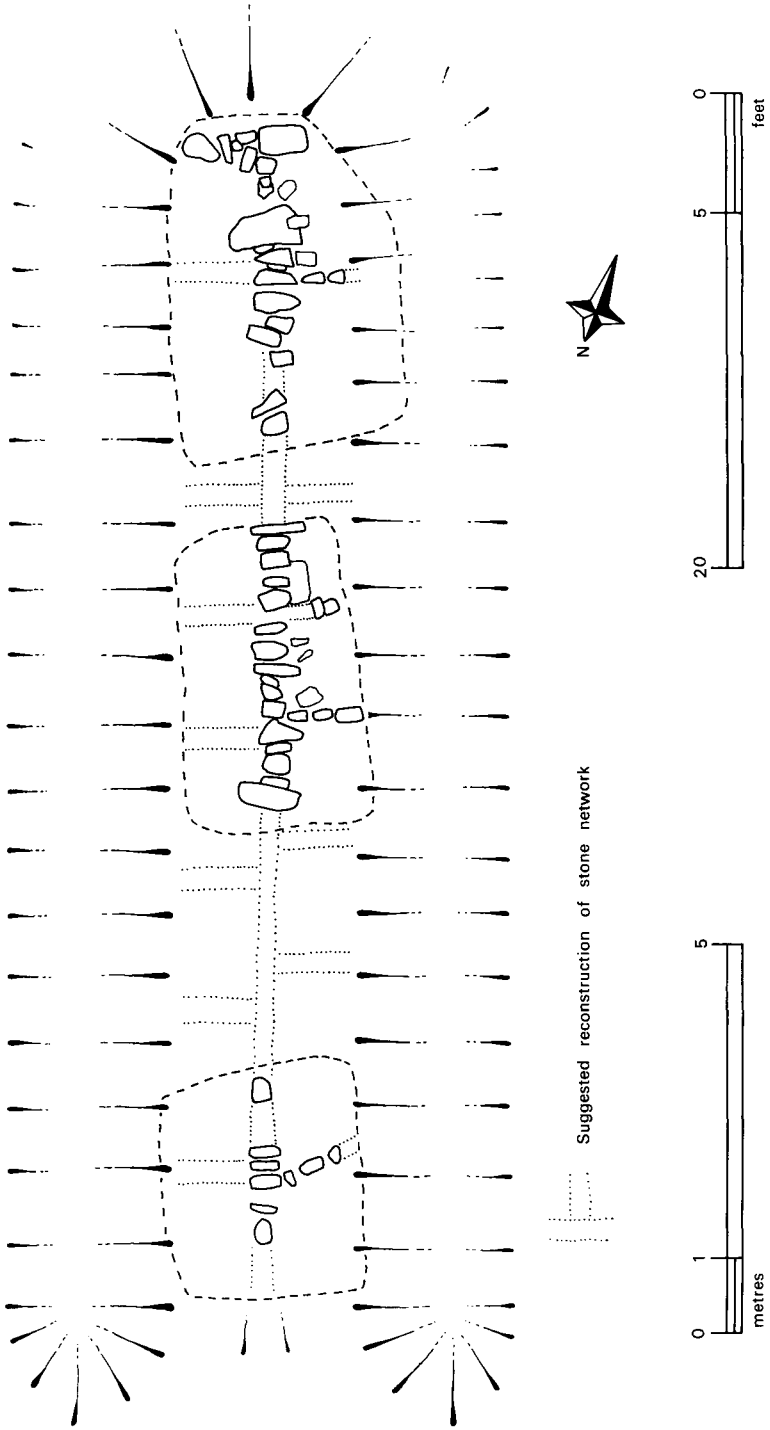

FIG. 15
Pillow mound 8259: features excavated just prior to destruction

PRN 8259 (Fig. 15), *8254, 8252, 8256, 8258*

Mound 8259 lay on one of the steepest parts of the hill and as an earthwork belonged to a type different to the other two excavated. Work here was hurried and was only able to reveal part of the mound's structure. The familiar loose brown loam varied in depth from 0.5 to 1 metre and again covered a network of flat stones. The pattern, however, was less intricate than the others: a central spine ran almost the complete length, but at the N. (upslope) end it terminated against a line laid across the width of the mound; at right angles to the central line there was evidence of others which led to the inner edges of the flanking quarry ditches. Other Type III mounds (PRN 8254, 8255 and 8256) and the one Type V mound (PRN 8252) were also rapidly examined by George Williams in 1978 who reports:

'*Mound 8254*. A section was machine cut across the mound and buried soil and a small area excavated to the south. The buried soil horizons were well-preserved: an 'A' horizon with a thin turf overlay an orange-brown slightly eluviated 'B' horizon and a greenish clay loam 'C' horizon. The mound material broadly reflected the reverse of this sequence. A basal layer of flat stones showed a similar pattern to that revealed in the more extensive examination of 8259. At a more superficial level there was a scatter of stones which appeared to form a rough spine.

Mounds 8252, 8256, 8258. Features observed during demolition of these mounds varied from mound to mound. All had the same sequence of soil make-up as observed in 8254. Stone concentrations (including fairly amorphous central arrangements with flat, apparently laid stone) were observed in all of these mounds. Such stones appeared to be basal in 8252, but in 8256, concentrations of large stones were also present in the upper horizon of the mound. As in the case of 8254, this may suggest that, unlike mounds in the western group, some mounds in the eastern group may have had two levels of stone structures. In the case of the L-shaped mound 8252, most of this was relatively stone-free.'

iii. *Other features*

The central area of one of the cross-shaped features was excavated, but the rectangular trench was able to prove only that it consisted almost solely of the banks and outer gulleys. The central area was blank apart from a single shallow gulley which connected the two outer ones, although this was blocked by one large earth-fast stone at the eastern end (Fig. 16).

The ditch (8283, Fig. 4) was sectioned in three places by machine to provide evidence of construction and samples of sediments for hydrological examination. The resulting sections were very difficult to interpret with the outer bank being almost impossible to distinguish from the subsoil. Only the presence of an intermittent iron pan possibly suggested the presence of previous turf levels. Interpretation suggests a very shallow water-course filled in its latter stages with gravelly clay deposits.

DISCUSSION

The problems of land-use in upland areas of Wales during the Middle Ages and early modern period have received a certain amount of attention in recent years, but there is still relatively little coherent study of the field remains. Perhaps the greatest need is for closer examination of the relationships between the more fixed lowland and the rather more volatile upland patterns of settlement and agriculture which exist side by side in Central Wales. The archaeology of Llanfair Clydogau is unexceptional in this respect, but on Bryn Cysegrfan there is evidence of at least four, perhaps five, separate uses of the higher ground by the valley community: ploughing for arable, pasture for cattle and sheep, rabbit farming, mining and fuel gathering.

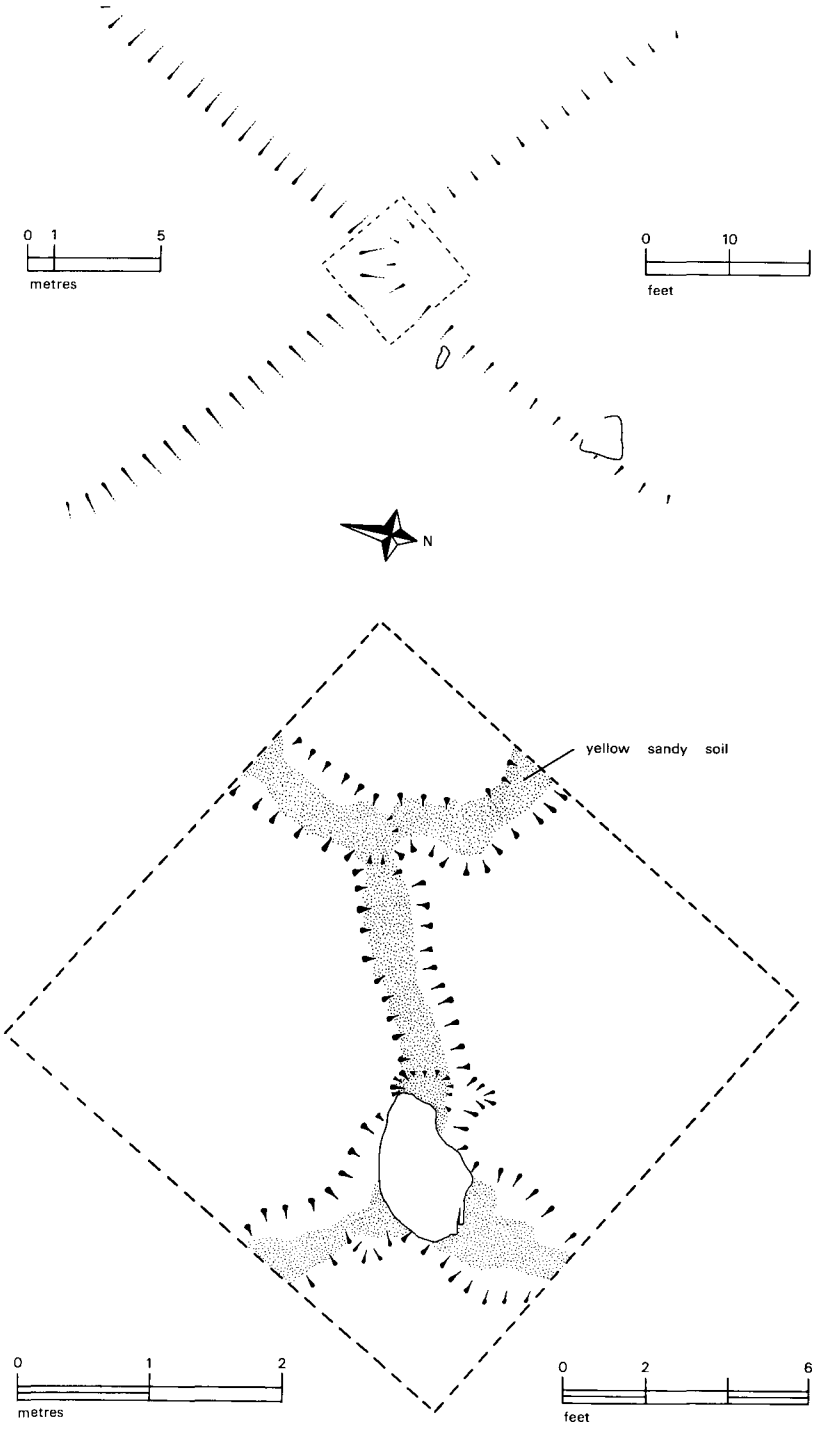

FIG. 16
Vermin trap 8263: survey and excavated features at the centre

Only in the first use can the land be really considered marginal and then only by ignoring the essential nature of the other activities in the overall management of local resources.

First, however, it is necessary to discuss as much of the sequence of archaeological events on Bryn Cysegrfan as the limited excavation and salvage record will allow. Because of the high soil acidity all forms of artefact apart from one flint were destroyed *in situ*, even pottery being almost entirely absent apart from a few tiny scraps which were little more than soft red or gritty orange paste. These were found in the rubble of Buildings 2 and 3 and would not be inconsistent with a medieval date, but in all honesty ought not to be accepted as proper chronological evidence since one sherd of 19th-century brown-glazed basin was found in a similar context. Much more certain dating came from the carbon-14 sample beneath mound PRN 8276: produced in the C-14 Laboratory of the Department of Plant Science at University College, Cardiff, the date was 575BP ± 60, a.d. 1375 ± 60 (CAR 317) giving a one-sigma calibrated range of A.D. 1315–1415 (Stuiver calibration).[7] The stratigraphy would seem to suggest that this dates the construction of the mound (see below for further discussion of the context).

Other statements about date and sequence, however, must be highly inferential and based largely on morphological arguments. For example, the enclosure bank of mound 8276, on its N. side, appears to bend and respect the end of Building 3. Yet it is impossible to say that the mound, bank and building were necessarily made at the same time. It is likely, therefore, but unproven, that the mound and bank were contemporary, and that the bank was added after the construction of the building. Yet we may also suggest that, since the bank and its mound were deliberately sited as close to the building as possible, they were clearly intended to function together in the operation of the warren. Building 3, however, was also part of a group of four similar structures which we can only assume to have been approximately contemporary on grounds of plan typology. They would seem, therefore, to form a small *hafod* complex for temporary occupation, from which one structure at least was subsequently selected to house a labourer or overseer for the rabbit warren. Again on typological grounds, it is concluded that the other mounds of the western group belong to the same period of construction and use, but that those of the eastern are later and represent an extension of the earlier activities. The two patches of ridge and furrow below the later features must probably be included among the early activities. The date for the later mounds must again be speculative but there is one piece of evidence: the enclosure wall overlying PRN 11958 which belongs to Frondeg, a squatter farm of the earlier 19th century. The later mounds may, therefore, be placed somewhere in the early 19th century or earlier. The leat and the mining may belong to the same period.

On the basis of these assumptions and relationships, the excavators would tentatively suggest the following sequence:

1. Medieval — *Hafod*, grazing and some intermittent ploughing.
2. Later medieval (14th century onward) — *Hafod*, grazing and limited rabbit farming.

3. Early modern (to *c.* 1800) — Grazing (? enclosed) and extended rabbit farming.

4. Later modern (19th century) — Grazing, mining and enclosure.

The constant factor of grazing in the sequence might be expected from what is known of farming practices in the region, but was confirmed at least for the period prior to the construction of the first warren by the pollen analysis of material from the top of the buried turf level (07) under mound 8276 (Appendix 1). The high grass and sedge component, coupled with the large quantity of ribwort plantain, strongly suggested a grassland environment perhaps similar to the one present on Bryn Cysegrfan before the modern agricultural improvement. Arable was, however, indicated 'on a very limited scale' which must also have been relatively local since the dense pollen grains of cultivated cereals do not travel far. The hint of arable production may be related to the ridge and furrow observed on the air photographs, but may equally have derived from farms like Pen-lan on the slope between Bryn Cysegrfan and Llanfair Clydogau where modern improved pasture will have swept away other indicators. The evidence for occasional breaking of upland for arable during the Middle Ages is a well-known phenomenon in the British Highland Zone, and some documented examples occur in Wales.[8]

The commonest use of the upland was for pasture, usually during the summer months under the *hafod* system. The literature on the social and legal aspects of this phenomenon is comprehensive, but the archaeology and settlement geography has only been tackled in limited areas.[9] The tenurial mechanisms which triggered the movements of the kin and their herds on to the high pastures disintegrated in the later Middle Ages and the early modern period under landlord and other pressures.[10] The enclosures of, and squatting on, the former common pasture lands over the last three centuries left only the more remote and exposed hill and mountain tops uncluttered by farms and fields.[11] Yet the retreat from the upland was, by contrast, rapid in this century and has only been arrested recently by second-home buyers and the proponents of an alternative economy and society.

In the parish of Llanfair Clydogau the position of Bryn Cysegrfan in the general pattern of pasture is best demonstrated on the early 19th-century maps as described earlier (pp. 133–34, Figs. 2 and 3).

The use of upland pastures during the summer months has been well described by historians and ethnologists and there is now a considerable literature for Wales.[12] In archaeological reports, however, the identification of building remains in the upland with the temporary residences of the *hafod* system is tentative with a marked preference for neutral terms such as farmstead or homestead,[13] although some fieldworkers have felt a greater degree of certainty.[14]

Archaeologists and historians of vernacular architecture also cannot agree on a specific type of structure which may be called an *hafoty* and candidates which have been offered include small, primitive rectangular structures, long huts, platform houses and longhouses with house and byre under one roof, although it is rather more acceptable to link the latter category with the *ty hir* of the medieval Welsh laws.[15] Part of the problem stems from the use of very late place-name and

documentary evidence to locate and analyse the phenomenon of the *hafod*, and historians suggest that the 12th and 13th centuries did not see the construction of dwellings for the kin or *gwely* during the summer months, but that these first appeared as *hafoty* or *lluest* in the 15th or even 16th centuries:

> From the 16th century onwards, *hafod* became progressively transferred from being the name of a grazing area to being the name of a summer dwelling on the grazing area, and eventually to being the name of a farm which grew around the summer house or dairy by the enclosing of fields from the common grazing area.[16]

There are problems with this argument for the archaeologist: on no site has such a transition yet been convincingly demonstrated although one must assume from the linguistic evidence that opportunities should exist on abandoned upland farms bearing the name *hafod* or *lluest*. From some excavated buildings on the upland there has been evidence for medieval dates, although their precise association with the *hafod* is again unclear as at Gelligaer Common, Glamorganshire.[17] Yet corroboration of Davies's chronology is available from some sites such as Brenig 48, Denbighshire[18] or Bwlch-yr-hendre, Cardiganshire.[19] Dating, as at Bryn Cysegrfan, is a considerable problem for these rectangular buildings, whether excavated or unexcavated, and much depends on the frailest evidence. Recently Kelly, in discussing the excavation of a medieval farm at Cefn Graeanog, has stressed how little hard evidence there is for identifying any structural form or even its location with the tenurial patterns of Welsh rural society.[20] The lack of archaeological studies which look at lowland and upland together in an integrated way is as much to blame as the flimsiness of the archaeological results, although historians have been pointing the way for several years.[21]

The information from the excavated houses at Bryn Cysegrfan takes the debate little further except perhaps to add a few more platform houses with cross-passages to the list of medieval upland sites. The pillow mounds, however, introduce another problem since it would seem that for at least a time in the later Middle Ages their function was clearly related to that of the buildings and there can be little doubt that this function was rabbit farming. The detailed evidence is discussed in the next paragraph, but, in the context of the debate on house types and their relationship to the *hafod*, interesting social and legal questions are raised. If the buildings are the *hafod* of a *gwely* on common pasture, how was it possible for any individual or group to appropriate land for this use? Is it more likely that the pasture was not held in common at this time and that at least this part of Bryn Cysegrfan formed part of some freehold or seigneurial estate? With the lack of documentary sources for the area these questions must be unanswered for the moment, but the social milieu of rabbit farming in this part of Wales has yet to be analysed.

Indeed rabbit farming in Britain as a whole in the Middle Ages has been regarded as a largely seigneurial activity, but this is far from certain since scholars have not addressed themselves specifically to this aspect of the study.[22] Nearly all medieval documents, however, show the rabbit as an expensive delicacy of the lord's table and its fur a lucrative element of the export trade.[23] Their value was due, in part, to the difficulties of management; rabbits are not easy to establish, are prone to

predators and like to have their feet dry and the earth of a burrow at their backs. They only became abundant as wild animals in the British landscape during the late 18th and 19th centuries when estates began the methodical extermination of vermin to protect game for shooting.[24] It was probably the initial difficulties which led to their first introduction in the 12th and 13th centuries on islands and coastal dune areas. In fact Matheson, writing of the rabbit in Wales, was certain that it remained almost entirely coastal in distribution in Glamorgan until the 16th century.[25]

In the less-favoured inland parts of Wales and England, however, the protection and the well-drained soft earth seem to have been provided in managed warrens or coneygarths. The earliest dated example is the royal 'cuningera' at Guildford mentioned in 1241[26] and elsewhere there are 14th- and 15th-century references to hedges, ditches, palings, gates, locks and hinges to keep out the predators both animal and human.[27] Recent literature, well summarized by Spurgeon,[28] has also assumed that the pillow mound was an additional feature of these artificial warrens, but this has not always been so. Crawford was the first to identify this and to name this class of monument, but only to confess his ignorance of their function[29] and various fieldworkers, including the earlier excavators of Bryn Cysegrfan, have believed them to be prehistoric or Roman.[30] Bosanquet, listing five in Wales, first offered the explanation of rabbit farming with the observation that they were fairly recent in date.[31] Spurgeon agreed, although tentatively, that these mounds were largely post-medieval, although admitting a 'suspicion' that some might be earlier,[32] but Sheail was less equivocal: 'recent fieldwork has proved that most pillow mounds are post-medieval in origin.'[33]

The carbon-14 date for Bryn Cysegrfan provides evidence for at least one mound in Wales being medieval in origin, if the interpretation of the method of construction can be accepted. This would suggest that the vegetation on the intended site of the mound was burnt off and the job of digging begun at once: the presence of significant concentrations of charcoal on the surface of the buried soil in this windy, wet location argues that insufficient time had elapsed for the burnt material either to be blown away or assimilated into the underlying soil structure. After burning, narrow gulleys were dug to a preconceived, and perhaps well-known, pattern within a rectangular area already marked out on the ground. The ditches were then quarried around the line of the rectangle to provide material for the mound. The careful heaping of the dump probably ensured that the gully-ends were exposed in the sides of the ditches.

An interpretation of the gulleys as drainage will not properly explain their function since the pattern of circles and lines radiating to all points of the compass would trap rather than disperse water. It is worth noting that all the gulleys were connected to each other and to the 23 outlets at the base of the upcast, and it is much more likely that they were intended as the initial burrows of the introduced rabbits, with the pillow mound above offering further protection as well as soft soil for later 'free-lance' expansion. The outer ditches in fact would provide all the necessary drainage from surface water running off the hill slope and the top of the mound.

The definition of only one mound (PRN 8276) by a bank and ditch must have been for a special purpose, probably the protection of the breeding does at an early

stage in the development of the warren. The adjacent building (3) may have been used to house the person looking after both this process and the rest of the warren since this one enclosure was probably used to stock all the other mounds as they were slowly added to the group. At Friarhead near Flasby in the North Riding of Yorkshire a group of nine mounds similarly had only one which was surrounded by its own bank[34] and in the same county, at Sutton near Keighley, another enclosed pillow mound was excavated in 1910, producing medieval pottery in the core and charcoal which was 'always present on the upper surface of the subsoil',[35] an interesting parallel to Bryn Cysegrfan.

The marked difference in the character of the mounds in the western and eastern groups on the site strongly suggests that at some later stage the small warren was expanded in a planned and large-scale way. The mounds of the eastern group, laid down on steep slopes for drainage and incorporating round and L-shaped forms, perhaps reflected new ideas of rabbit management introduced with the reforming agriculture of the 17th and 18th centuries. The mounds also were regularly spaced on a south-facing slope, allowing warm, well-drained pasture for rabbits with strict control of vermin by the cruciform traps. The regularity suggests firm planning and a considerable capital venture although the method of construction did not differ fundamentally from the practice of the earlier period. Yet the pattern of buried artificial burrows was less compact and more rectilinear in the long mounds of Type III with their central spinal gulley and right-angled off-shoots to the ditch edges. The double-banked mound (PRN 8260, Fig. 7) may be an unfinished pillow mound where only the cut for the spinal burrow was completed. The similarity of the structure of these eastern mounds to those excavated at Llanelwedd, Radnorshire[36] and Cefn Hirgoed, Glamorganshire[37] might even suggest some common source of reference such as a lost handbook on rabbit farming.

The control of pests and vermin was an important aspect of such management and in this lies the most likely explanation of the cross-shaped features. They are strikingly similar to a number from Dartmoor which have been known for some time but recently discussed in detail.[38] The major difference is the lack of central worked-stone traps at Bryn Cysegrfan, but the incorporation of a large earth-fast boulder in the excavated one (PRN 8263, Fig. 16) may have served a similar function as the support for a wooden hutch-trap placed in the central gulley. Haynes explains that the banks and ditches were funnel walls channelling the vermin such as rats or stoats towards the centre where they would have been trapped alive. On the evidence of the Devon examples these cross-shaped vermin traps are of 17th- and 18th-century date and were not found in the 19th century.[39]

Rabbit farming would have required the presence of a warrener at all times of the year, particularly during the winter months, and for this reason it is significant that the single enclosed mound used as a breeding pen was very close to one of the houses. This aspect of permanence underlines the problems of determining the social and legal context for the warren since it implies that the land had been alienated from the common pasture lands. As already discussed, very little is known about the development of the land holdings in Llanfair Clydogau itself, but the general pattern for Cardiganshire[40] and Wales[41] is well attested. The two principal causes for the

demise of the pastures were individual acts of encroachment and the consolidation and enclosure of holdings under seigneurial control, and in both stages of development the rabbit farm on Bryn Cysegrfan was more likely to have been created under some kind of lordship management, probably closely linked to the Llanfair demesne of which Pen-lan was a part.

Towards the end of the warren's life, another asset materialized: silver and lead. It was reputedly Chauncey Townsend who, in 1760, found a body of argentiferous lead ore at the base of Bryn Cysegrfan next to the Clywedog. The ore yielded a high proportion of silver, 87 ounces to the ton of lead, and there are records of work there until the middle of the 19th century.[42] During this period of exploitation the excavated ditch may have been dug as a leat with the intention of drawing water from the Nant Clwyedog Uchaf on approximately the 900-foot contour and leading it to the mine workings. Archaeologically there are problems with this interpretation since at either end of the Pen-lan property it has entirely disappeared. If the water had been intended for the works in Llanfair itself, it would have been released down a precipitously steep incline to the wheel powering the crushing and smelting plant on the valley floor. This interpretation is very unlikely from what is known of mining technology at this time and a pond and leat shown on the Tithe Map (see Fig. 3) was probably adequate for the tasks employing hydraulic power. Alternatively the water may have been intended for shaft workings on the hill top associated with the lower adits, but there are no field remains of such an undertaking. Despite the excavation no calculation of the quantities of water involved could be realistically assessed since it was almost impossible to find an original leat profile or even a silt deposit which in any way indicated that it had ever functioned as an aqueduct. Indeed on the 1853 Enclosure Award map the feature is designated as a carriageway, although this was probably a secondary use. Only assertions by some of the older generation in the community that they had seen water in it convinced us that leat was the right interpretation and even then it was difficult to escape the conclusion that it was a wild scheme and never finished!

Much of what has been written here is speculative, but the site does reflect accurately many of the problems encountered by the field archaeologist studying the landscapes of upland Britain. At the end, however, it is probably worth stressing that these moorland tracts, so often associated with the words 'waste' and 'marginal land' were in fact vital elements in the pattern of resources available to the medieval and earlier communities with their permanent settlements on the valley floor and lower slopes. Fuel, pasture, minerals and episodes of agricultural improvement all form part of the changing and often repeating sequence which still continues today, and although its archaeology is superficially unexciting, it is as worthy of close scrutiny as the rich and arable lowlands. New techniques, particularly of environmental and landscape assessment, will have to be developed, therefore, to convert speculation into more tangible fact.

APPENDIX I

Pollen analysis of sample from buried turf layer (07) below mound PRN 8276

M. J. C. WALKER, *Department of Geography, Saint David's University College, Lampeter*

Treatment: Sample digested in 5% NaOH, sieved, boiled in 40% HF (Hydrofluoric acid), acetolysed by Erdtman's technique, and mounted in safranin-stained glycerine jelly.

Pollen sum: Five hundred land pollen.

Pollen spectrum:

Trees/Shrubs:	
Betula (birch)	0.8%
Alnus (alder)	1.6%
Quercus (oak)	1.0%
Corylus (hazel)	8.4%
Ericaceae (heathers)	0.8%
Grasses-Sedges:	
Gramineae (grasses)	26.6%
Cyperaceae (sedges)	13.0%
Avena (oats)	0.4%
Hordeum (barley)	0.4%
Other cereals	0.2%
Herbs:	
Caryophyllaceae (pinks)	0.6%
Chenopodiaceae (goosefoots)	0.2%
Liguliflorae (dandelions, etc.)	1.2%
Tubuliflorae (other daisies)	2.1%
Galium type (bedstraws)	4.2%
Polygonum type (docks)	0.6%
Rumex (sorrels)	0.8%
Caltha type (buttercup)	0.8%
Potentilla type (tormentil, etc.)	1.2%
Saxifraga type (saxifrages)	0.2%
Umbelliferae (carrot family)	0.2%
Centaurea nigra type (knapweed)	0.2%
Succisa pratensis (scabious)	0.8%
Plantago maritima (sea plantain)	0.8%
Plantago lanceolata (ribwort plantain)	26.2%
Ferns:	
Filicales (ferns, undiff.)	0.6%
Polypodium (polypody fern)	1.3%
Indeterminable/unidentified grains	7.0%

Interpretation

The pollen spectrum reflects an open landscape dominated by species of grass and sedge. The very high values for *Plantago lanceolata* in association with high frequencies of Gramineae pollen are most easily interpreted as indicating extensive pastoral activity in the vicinity of the site.[43] Other herbs typical of grassland areas include *galium* spp, *Potentilla* spp, Liguliflorae and *Plantago maritima*. Only five cereal grains were found, two of barley, two of oats, and one which was too badly degraded to allow identification to the genus level. Arable farming must therefore have been on a very limited scale, and this hypothesis is substantiated by the absence, or occurrence in very low frequencies, of pollen from such herbs as *Artemisia*, *Rumex*, *Urtica*, and Chenopodiaceae, all of which are commonly associated with arable activity. Tree-pollen values are low and probably reflect the growth of small numbers of birch, oak and alder on the surrounding valley sides. Hazel percentages are moderately high, and could be indicative of the former presence of hazel shrubs and bushes in fairly close proximity to the site. The pollen content of the sample was relatively high, but the state of preservation was poor (most of the grains showing signs of corrosion and abrasion), hence the large number of pollen grains in the indeterminable category.

APPENDIX II

Phosphate Analysis of Buildings 1–4

G. A. M. GERRARD, *Archaeology Unit, Saint David's University College, Lampeter*

Aims

Phosphate analysis is a well-recognized technique of field archaeology and settlement study, since it detects the phosphorus in animal refuse which has been fixed permanently into the soil structure at the point where it was deposited. The level of phosphate in soil is determined by two unrelated factors: first the amount of solubility of the element in the underlying rock and second the rate and quantity of deposition by man and other animals. Thus the technique has, for example, been profitably employed in the location and definition of settlement sites and individual archaeological features, the identification of burials and levels of economic development.

At Bryn Cysegrfan, within a limited sample of the four buildings, there were three principal objectives: first, to test the effectiveness of this form of analysis in upland pastoral contexts; second, to provide information on the use and function of the structures; and third, to compare results from auger sampling of earthworks with those obtained from the occupation surfaces revealed during excavation.

Technique

In the first stage, prior to excavation, each of the earthworks of the four buildings was gridded and sampled at one-metre intervals. Samples were taken using a screw auger, at a depth of 250 mm, although the extreme stoniness of the soil and the need to preserve archaeological deposits meant that not all points on the grid could provide material. Twenty grams of soil were collected in an air-tight plastic bag from each location, care being taken to avoid human contact and to clean the auger between samples with distilled water. Only five grams of each sample were, however, used in the analysis which employed a technique developed by Gundlach[44] and refined by Eidt.[45] The data generated express relative levels of phosphates present in the soil as five numerical values based on those criteria ascertained from the measurement of the chromatographic reaction of the samples in solution as shown in Table 3.

At the second stage similar samples were collected over the same areas from the observed occupation surfaces revealed after excavation. This was only possible for Buildings 2 and 3 since 1 and 4 were not excavated.

The data are presented using two principal methods: chloropleth maps with lines at the 2.5 and 3.5 intervals for the values to show areas of relatively low and relatively high phosphate (Fig. 17); and calculations of average phosphate values for certain zones of the sample area, viz. the interior of the building as a whole, the upper and lower halves of the interior, the exterior within one metre of the walls, and the exterior as a whole (Table 4).

Discussion of results (Fig. 17)

Building 1. The exterior of the building was relatively higher in phosphate than the interior with higher values in the immediate vicinity of the walls. There was otherwise little differentiation within the building.

Building 2. The average values for the two methods of sampling (auger and excavation) do not appear to correlate. Whereas the auger samples show internal values to be higher than external, the excavated samples show the opposite. Both sets of figures and the chloropleth diagram do, however, point to higher values in the lower end of the building when compared with the upper. As with Building 1 both results also suggest that outside the buildings the higher readings were to be found immediately next to the walls.

Building 3. Correlation between auger and excavation results is not good. The chloropleth diagrams look very different, with the auger plan dominated by a high phosphate level in the SE. corner. The

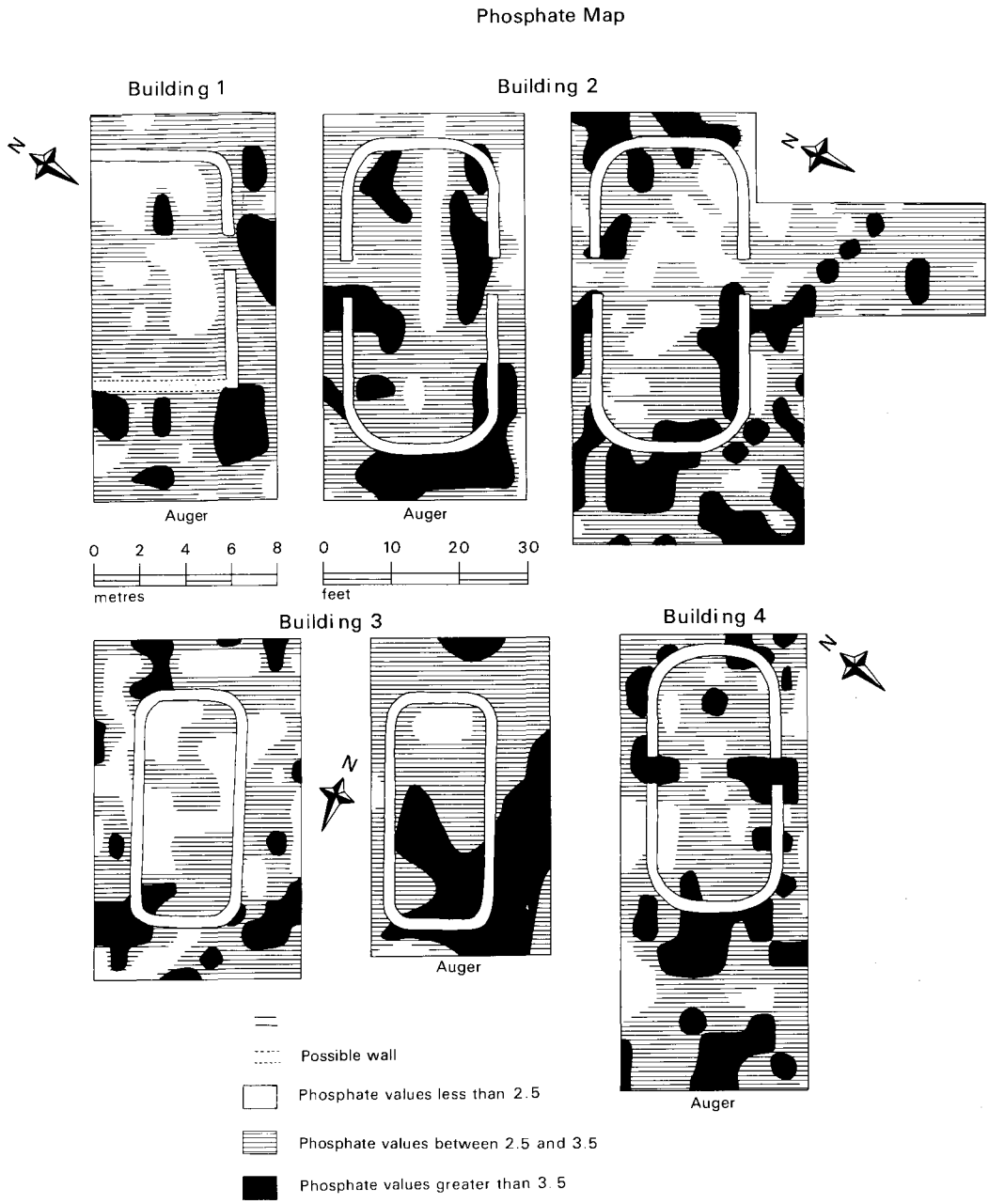

FIG. 17
Buildings 1–4: results of phosphate survey

TABLE 3
CRITERIA FOR ASCERTAINING PHOSPHATE VALUES

Phosphate value	*Length of radiating lines (mm)*	*Time for appearance of lines (mins)*	*% Ring around sample*
1	0	0	0
2	1	2	Variable
3	2	1–2	50
4	3–5	½–1	75
5	8	½	100

TABLE 4
AVERAGES OF PHOSPHATE VALUES FROM CERTAIN ZONES

	1 *Auger*	2 *Auger*	2 *Excavated*	3 *Auger*	3 *Excavated*	4 *Auger*
Building interior	2.35	3.11	2.78	3.2	2.33	2.84
Upper interior	2.25	2.86	2.56	2.88	2.2	2.88
Lower interior	2.46	3.25	2.98	3.66	2.7	2.8
Exterior within one metre of walls	3.14	2.84	3.11	2.95	2.63	3.09
Exterior as a whole	2.77	2.58	3.03	3.36	2.77	2.98

zonal averages too do not produce totally comparable patterns although both sets provide very high values for the lower end of the building as in Building 2. The averages from the auger sample also suggest that in this case phosphate values from the zone near the walls were slightly lower than the exterior as a whole.

Building 4. The chloropleth diagram clearly shows that the main areas of high phosphate are outside the building, although the differences in zonal averages are small and of little significance. High readings outside and through the doors may suggest very localized deposits of material.

Leat west of Building 4. A low reading of 2.5 was obtained from this feature, perhaps due to the removal of topsoil for the creation of the leat and the leaching of phosphate by groundwater.

General conclusions

Given the stated aims the results were of restricted use although suggesting that future research strategies involving the use of phosphate analysis in the Welsh upland landscape may be of value particularly in conjunction with other forms of pedological work. Clearly at Bryn Cysegrfan not enough area was sampled and should have been increased to form a broader context for the buildings. It is not possible to know from these results whether the phosphate levels around the structures were part of a general pattern in surrounding, undisturbed soils. Comparison of the auger and excavation results from Buildings 2 and 3 was also disappointing although the figures from the former were consistently higher. The comparison was statistically tested by calculating a mean difference for the two sets of results and generally the correlation was low, more particularly for Building 3: this has disturbing implications for sampling depths on unexcavated sites. The explanation of varying levels is

consequently difficult, but two broad trends were noticeable. First, there was a marked difference between interior and exterior figures with a tendency for the highest values to be recorded in areas next to the building walls. This could be associated with the cleanliness of the occupants in keeping the floors swept, something noted in the excavation of Building 2, where the surface of the floor was worn down below the level of the wall footings. Low phosphate levels in the interior may, however, be due to the initial stripping of topsoil in the construction of the building. The high values close to the walls, by contrast, could be explained in many different ways: phosphate in soil from pre-building or construction phases; the occupants relieving themselves; the dumping of domestic rubbish; or animals sheltering against the walls in bad weather. Second, the distinction between the upper and lower interiors of buildings was fairly consistently maintained throughout the figures and may be explained as reflecting the classic longhouse division into house (upper end) and byre for animals (lower end), although the usual archaeological indicators, e.g. drains or stake-holes for stalls, are missing. This might suggest that animal housing was occasional rather than regular.

APPENDIX III

Flint

G. A. M. GERRARD, *Archaeology Unit, Saint David's University College, Lampeter*

From destruction rubble in Building 3, a black, partially translucent plano-convex scraper. The front face has several flake scars and the distal end has been subjected to secondary retouching to produce the scraping edge. On the other face the waves, radial from a broken off bulb of percussion, are visible and on one edge four small flake scars suggest either secondary retouch or abrasion. It cannot be dated.

APPENDIX IV

Pillow mounds in the Dolaucothi mining complex (SN 684 401)

G. A. M. GERRARD, *Archaeology Unit, Saint David's University College, Lampeter*

During an undergraduate field class at Easter 1983 conducted by the Archaeology Unit of Saint David's University College, Lampeter the earthworks of eleven complete pillow mounds were identified within the extensive earthworks of the Dolaucothi mine complex. They lie scattered in five groups amongst the opencast remains of the Allt Ogofau area on the S. side of the Pumsaint to Caio road (Fig. 18). Since the Dolaucothi gold mines are only nine miles S. of Llanfair Clydogau (Fig. 1), these now represent the nearest known group of mounds to those excavated in 1979, and were consequently surveyed in the spring of 1984 for inclusion within this report for comparative purposes (Fig. 19).

All the mounds were of similar dimension and character (Table 5) suggesting that they were of a single plan and contemporary and in this way comparable to the eastern group at Bryn Cysegrfan. Typologically, however, they had closer affinities with the late medieval Type II of the western group, although this was not precise. A ditch and bank to the east of mounds 2 and 4 may be the remnants of an enclosure similar to that around PRN 8276, the breeding pen at Bryn Cysegrfan. Without excavation dating is impossible, although observed relationships with the mining earthworks may offer some basis for discussion. Most of the mounds were complete and unaffected by the mining which might suggest that their construction and use was contemporary with or subsequent to at least the majority of the mining activity at Dolaucothi. A small truncated bank to the west of mound 1 may be the

TABLE 5

DIMENSIONS OF PILLOW MOUNDS AT DOLAUCOTHI (IN METRES)

Number	*(Mound) Length*	*Overall Length*	*(Mound) Width*	*Overall Width*	*Height*	*Type*
DOL 1	10	10.8	4.4	8.0	0.4	II
2	10.8	12.6	4.4	7.6	0.4	II
3	12.6	12.6	4.0	7.2	0.3	III
4	12.4	14.4	4.0	7.0	0.4	II
5	13.0	16.0	4.6	8.0	0.4	II
6	10.0	13.0	5.6	10.8	0.3	II
7	11.0	13.0	4.0	7.0	0.3	II
8	14.4	16.0	4.6	8.0	0.5	II
9	10.0	10.0	4.0	5.0	0.2	II
10	11.0	12.0	3.0	5.4	0.3	II
11	11.0	13.0	4.6	7.0	0.2	II

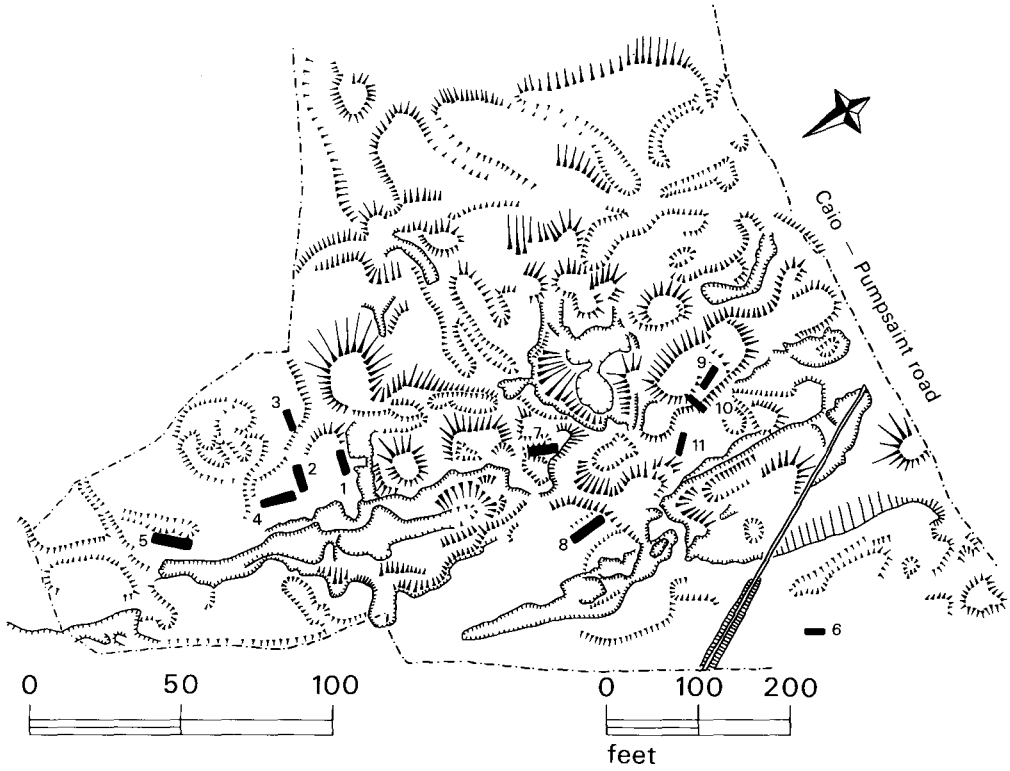

FIG. 18

Dolaucothi: survey of part of the surface workings to show the location of the pillow mounds

remnants of a pillow mound removed by the nearby openwork, but this is the only hint that any of the mining is later. Recent fieldwork[46] has demonstrated that the exploitation of gold on the site may have had many more phases than previously assumed. So it becomes even more difficult to assign absolute dates to any but the most recent and documented areas of mining and quarrying and consequently also to the pillow mounds themselves. The association of rabbit farming with mineral mining has, however, been noticed before, in the Dartmoor tin areas, but at Dolaucothi the proximity of the farm called Pen-lan Wen should also be noted before assumptions about who was building the mounds can be converted into firm conclusions.

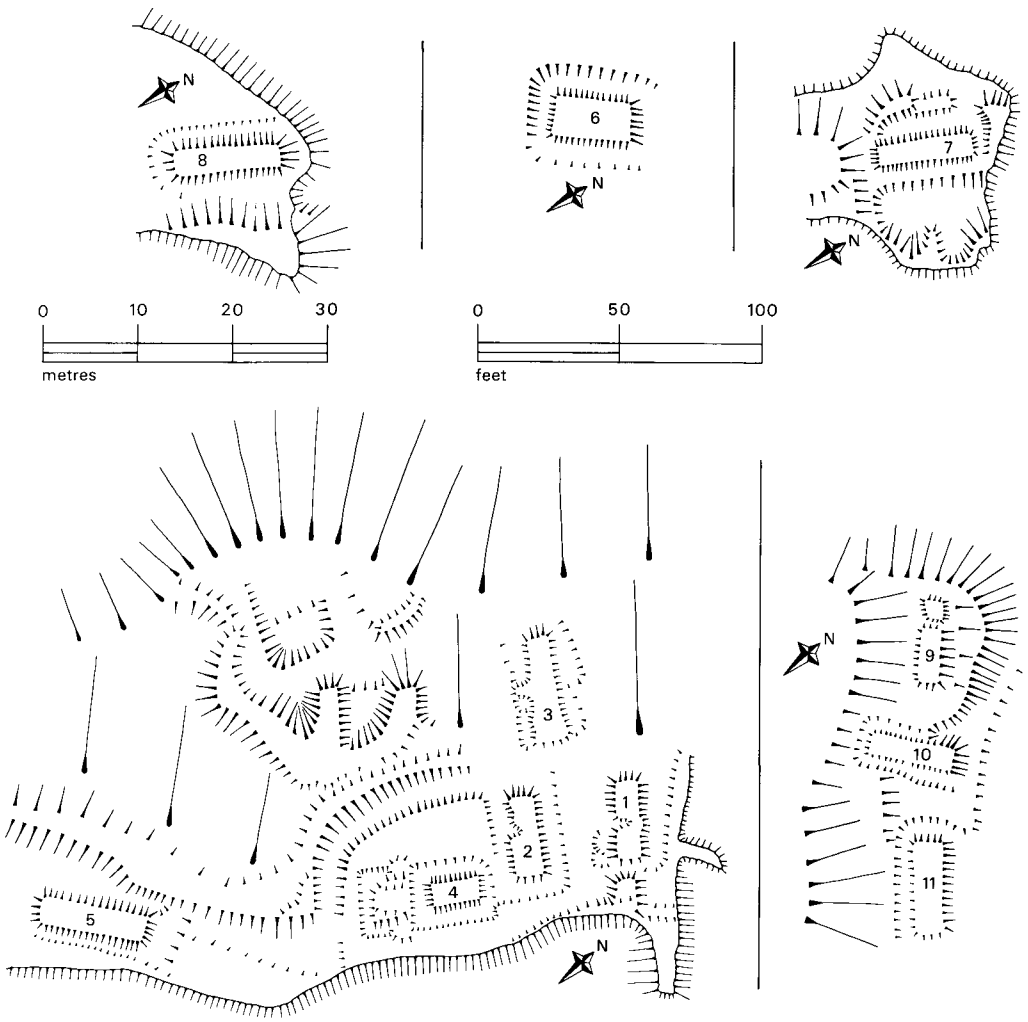

FIG. 19
Dolaucothi: survey of pillow mounds

NOTES

[1] J. Evans, 'Llanfair Clydogau', *Trans. Cardiganshire Antiq. Soc.*, 1 (1913–14); T. Lewis, 'Llanfair Clydogau and Bryn Cysegrfan', *Trans. Cardiganshire Antiq. Soc.*, 5 (1927), 90–93.

[2] Lewis, op. cit. in note 1, 91–92.

[3] C. C. Rudeforth, *The Soils of North Cardiganshire: The Soil Survey of Great Britain and Northern Ireland* (London, 1970).

[4] F. Green, *National Library of Wales, Calendar of Deeds and Documents, vol. 2 The Crosswood Deeds* (Cardiff, 1927), 246–48.

[5] See below.

[6] G. Williams, 'Unpublished notes on mounds at Bryn Cysegrfan', Dyfed Archaeol. Trust: Sites and Monuments Record (Carmarthen).

[7] M. Stuiver, 'A high-precision calibration of the AD radiocarbon time-scale', *Radiocarbon*, 24, no. 1 (1982), 1–26.

[8] For example, G. R. J. Jones, 'Agriculture in north-west Wales during the later Middle Ages', 47–53 in J. A. Taylor (ed.), *Climatic Change with Special Reference to Wales and its Agriculture* (Aberystwyth, 1965), 44; C. B. Crampton, 'Ancient settlement patterns in mid-Wales', *Archaeol. Cambrensis*, 116 (1967), 57–70.

[9] For example, E. Davies, 'Hendre and hafod in Denbighshire', *Denbighshire Hist. Soc. Trans.*, 26 (1977), 49–72.

[10] T. J. Pierce, 'Landlords in Wales. A. The nobility and gentry', 357–80 in J. Thirsk (ed.), *The Agrarian History of England and Wales, vol. IV, 1500–1640* (Cambridge, 1967).

[11] J. G. Thomas, 'The distribution of the commons in Arwystli at the time of the enclosure', *Montgomeryshire Coll.*, 54 (1957), 27–33.

[12] For example, R. U. Sayce, 'The old summer pastures 1: a comparative study', *Montgomeryshire Coll.*, 54 (1956), 117–45; R. U. Sayce, 'The old summer pastures 2: life at the hafodydd', *Montgomeryshire Coll.*, 55 (1957), 37–86; M. Richards, 'Hafod and hafoty in Welsh place-names', *Montgomeryshire Coll.*, 56 (1959), 13–20; Pierce, op. cit. in note 10; E. Davies, op. cit. in note 9; E. Davies, 'Hafod, hafoty and lluest: their distribution, features and purpose', *Ceredigion*, 9 (1980), 1–41.

[13] For example, C. Fox, 'A settlement of platform houses at Dyrysgol, St Harmon, Radnorshire', *Archaeol. Cambrensis*, 94 (1939), 220–23; C. and A. Fox, 'Platform house sites of South Wales type in Swydd Budugre, Maelienydd, Radnorshire', *Archaeol. Cambrensis*, 100 (1948), 104–06; C. A. Gresham, 'Platform houses in north-west Wales', *Archaeol. Cambrensis*, 103 (1954), 18–53; L. A. S. Butler, 'The study of deserted medieval settlements in Wales (to 1968)', 249–76 in M. W. Beresford and J. G. Hurst, *Deserted Medieval Villages* (London, 1971).

[14] For example, F. Lynch, 'Brenig Valley excavations, 1973', *Trans. Denbighshire Hist. Soc.*, 23 (1974), 9–64; C. B. Crampton, 'Hafotai platforms on the north front of the Carmarthen Fan', *Archaeol. Cambrensis*, 117 (1968), 121–26; L. A. S. Butler, 'The excavation of a long hut near Bwlch yr Hendre', *Ceredigion*, 4 (1963), 400–07.

[15] I. C. Peate, *The Medieval Welsh House* (Cardiff, 1936), 61–73.

[16] Davies, op. cit. in note 12, 7.

[17] Fox and Fox, op. cit. in note 13.

[18] Lynch, op. cit. in note 14.

[19] Butler, op. cit. in note 14.

[20] R. S. Kelly, 'The excavation of a medieval farmstead at Cefn Graeanog, Clynnog, Gwynedd', *Bull. Board Celtic Stud.*, 29 (1982), 859–908; see also L. A. S. Butler, 'Domestic buildings in Wales and the evidence of the Welsh laws', *Medieval Archaeol.*, xxxi (1987), 47–58.

[21] T. J. Pierce, 'Aber Gwyn Gregin', *Trans. Caernarvonshire Hist. Soc.*, 23 (1962), 37–43; I am grateful to Lawrence Butler for pointing out this reference to me.

[22] For example, E. M. Veale, 'The rabbit in England', *Agricultural Hist. Rev.*, 5 (1957), 85–90.

[23] G. E. H. Barrett-Hamilton, 'The rabbit or cony', 176–228 in G. E. H. Barrett-Hamilton and M. A. C. Hinton, *A History of British Mammals*, vol. 2, pt 1 (London, 1920–21).

[24] J. Sheail, *The Rabbit and its History* (Newton Abbot, 1971), 110–11.

[25] C. Matheson, 'The rabbit and hare in Wales', *Antiquity*, 15 (1941), 371–81.

[26] Veale, op. cit. in note 22, 88.

[27] S. Moorhouse, 'Dovecotes and rabbit warrens', 752–57 in M. L. Faull and S. Moorhouse (eds), *West Yorkshire: An Archaeological Survey to A.D. 1500, vol. 3 The Rural Medieval Landscape* (Wakefield, 1981), 755.

[28] C. J. Spurgeon, 'Rabbit warrens and pillow mounds', 313–47 in Royal Commission on Ancient and Historical Monuments in Wales, *An Inventory of the Ancient Monuments in Glamorgan: vol. 3, part II, Medieval Non-fortified* (Cardiff, 1983).

[29] O. G. S. Crawford, 'Barrows', *Antiquity*, 1 (1927), 419–34.

[30] T. Williamson and R. Loveday, 'Rabbits or ritual? Artificial warrens and the long mound tradition' (forthcoming). I am grateful to Tom Williamson for sight of this paper in advance of publication.

[31] R. C. Bosanquet, 'Pillow mounds', *Antiquity*, 2 (1928), 205–06.

[32] Spurgeon, op. cit. in note 28, 321–22.

[33] Sheail, op. cit. in note 24, 41.

[34] F. Villy, 'A preliminary note on certain earthworks at Sutton, near Keighley', *The Bradford Antiquary*, 5 (1912), 335–42.

[35] Ibid., 337.

[36] C. J. Spurgeon, 'Llanelwedd, Radnorshire', various entries in *Archaeology in Wales*, 6 (1966), no. 23; 7 (1967), no. 18; 8 (1968), no. 32, 9 (1969), no. 34; 10 (1970), no. 55.

[37] B. E. Vyner, 'Archaeology and the M4 Bridgend Northern Bypass II. A group of pillow mounds on Cefn Hirgoed, Bridgend, Glamorgan', *Bull. Board Celtic Stud.*, 29 (1982), 850–58.

[38] R. G. Haynes, 'Vermin traps and rabbit warrens on Dartmoor', *Post-Medieval Archaeol.*, 4 (1970), 147–64.
[39] Ibid., 155 and 164.
[40] T. J. Pierce, 'Medieval Cardiganshire — a study in social origins', *Ceredigion*, 3 (1959), 265–83.
[41] Pierce, op. cit. in note 10.
[42] W. J. Lewis, *Lead Mining in Wales* (Cardiff, 1957), 106, 171 and 174.
[43] J. Turner, 'The anthropogenic factor in vegetational history. I. Tregaron and Whixall Mosses', *New Phytologist*, 63 (1964), 73–90.
[44] H. Gundlach, 'Tupfelmethode auf Phosphat augewandt in Praehistorischer Forschung', *Mikrochemika Acta*, 5 (1961), 735–37.
[45] R. C. Eidt. 'A rapid chemical field test for archaeological site surveying', *Amer. Anthropol.*, 38 (1973), 206–10; R. C. Eidt, 'Detection and examination of anthrosols by phosphate analysis', *Science*, 197 (1977), 1327–33.
[46] D. Austin and B. C. Burnham, 'A new milling and processing complex at Dolaucothi: some recent fieldwork results', *Bull. Board Celtic Stud.*, 31 (1984), 304–13.

This report is published with the aid of a grant from Cadw/Welsh Historic Monuments.