A FIELD SYSTEM AT DINDER IN SOMERSET

BY G. WHITTINGTON

In volume 39 of *Antiquity* a paper was published putting forward a suggestion that would place the origin of strip lynchets firmly in the Iron Age — Roman Period [1] This claim was vigorously refuted by C. C. Taylor in volume 40 of the same journal. [2] The present author, as a result of many years work on these features, is convinced that all the evidence supports Taylor's contentions that strip lynchets belong to a system of agriculture operative in the medieval period. Both of these papers however contained statements and contentions that have never been examined fully and on which detailed published material does not exist. The major points on which the early date of origin for strip lynchets was based were:

1) That severe erosion on the Celtic Fields had reduced productivity to such a point that new land sources were needed.

2) That these sources needed to have soils transitional between those of the heavy clay lowlands and the light chalk and limestone uplands and therefore that the escarpment zones were most frequently suitable, especially as they occur immediately below the zones of Celtic Field development.

3) That the terrain of the escarpment encouraged long narrow fields and that such narrowness, coupled with the positive lynchet, would prevent erosion of the severity experienced on the block shaped fields of the downland.

On some of these points fuller evidence than that produced in the *Antiquity* articles has since become available. The argument that soil erosion of a severe nature occurred on the downlands has been borne out by many recent workers.[3] Whether the effect of that was to seriously decrease food production is not however yet established. If it did, then an incentive for the Iron Age and Romano-British farmers to seek alternative land certainly existed. However, such land was either not on the escarpments or, if it was, it did not bring strip lynchets into existence. According to its protagonist the ultimate test of this early date hypothesis is that 'strip lynchets in southern Britain will normally be found on escarpments below "Celtic Fields"' and 'conversely strip lynchets would not be located on escarpments below areas covered with heavy soils' thus explaining 'their absence from the North Downs and the Chilterns where the heights abound with heavy clay with flint soils'.[4] When the distribution of strip lynchets is used as a final test the hypothesis is not confirmed.[5] On the one hand there are many places where Celtic Fields occur and where the escarpments, with suitable soils and slope values, bear no evidence of strip lynchets, either extant or ploughed out: the Mendips and their geologically associated outliers provide good examples of this. On the other hand strip lynchets do occur on slopes below heights which are covered with heavy soils. Indeed the chalk escarpment in the area around Luton and Dunstable *in the Chilterns* supports 8% of all strip lynchet flights recorded in Lowland Britain, while the dip slope above is covered with clay with flints.

Those points perhaps finally dispose of the early date for strip lynchets but in the two articles there are references to a feature of strip lynchets which has never been carefully examined, the relationship of the terrace to the direction of the slope. In his rebuttal article Taylor wrote, 'Mr. Macnab assumes that by definition, strip lynchets are always terraces along the contours. Though the majority are, and, because of their form, are extremely obvious, there are many strip lynchets which run at right-angles to the contours directly up and down the slopes and which have no possible connection with ploughing to prevent erosion.'[6] He gave several examples of this in order to support his statement. Macnab replied, 'I did not assume that strip lynchets were always terraces along the contours. I stated that terraces tended to be parallel to the scarp shoulders and that these sometimes dipped.'' But he missed Taylor's point completely. It is not a matter of the terraces dipping but the fact that they occur at *right-angles* to the dominant slope direction. These transverse strip lynchets are not as common as the contour-paralleling variety (and even these cross the contour obliquely) but they can in addition to Taylor's sites be found at Abbotsbury, Nether Cerne, Portesham, Worth Matravers and Wynford Eagle in Dorset, Croscombe, Dinder, Loxton, Milton Clevedon and Whatley in Somerset, Cold Ashton and Wotton under Edge in Gloucestershire and Mere in Wiltshire.

There are several features of these transverse terraces which have never been examined. Firstly they have always been *assumed* to be strip lynchets because they lie in association with horizontal strip lynchets; but association is no proof. There is a need to excavate examples of these terraces to see if they show the constructional features of strip lynchets. Furthermore, why was the ploughing done at right angles to the dominant slope when the more usual ploughing direction on steep slopes, which brought strip lynchets into existence, was done at an oblique angle to the contour? In excavating an example of these terraces it was hoped to recover some evidence of their use; this would be done by applying the technique of pollen analysis to the soil in the lynchet accumulation.

For a thorough examination of transverse strip lynchets several features were needed in conjunction: transverse terraces and normal strip lynchets lying side by side for comparison purposes, an accessible site, soil which was acid and heavier than that found on the chalk escarpments and most importantly, a co-operative land owner. These attributes came together at a site near the village of Dinder, about 9 km ESE of Wells in Somerset (ST 580442). South of the Mendips several outliers of the Carboniferous Limestone occur, giving steep hills which are fringed by Dolomitic Conglomerate. On this latter outcrop soils of the Lulsgate and Wrington series have developed. They vary in depth but generally reveal a reddish-brown A horizon with a clay-loam or silty-clay texture about 13 cm in thickness. The B horizon is also reddish-brown but coarser in nature and with a well marked stone layer. Below this and above the bedrock at the Dinder site is a layer of clay of variable thickness and colour, although mainly yellowish or pink. These soils developed on steep slopes, the steepest of which are under woodland and which in the past supported a dense cover of oak, ash and elm. The area above the escarpment at Dinder has been largely destroyed by quarrying but there are no signs of Celtic Fields in the remaining immediate area. At the base of the escarpment runs the River Sheppey, the valley of which is occupied by soils of the Compton series — a ground water gley affected by a fluctuating water table but which, in this area, is infrequently inundated.

Dinder parish straddles the river valley and thus, on either side of it, has potential rough grazing on the thin, rock-outcropping soils of the Carboniferous Limestone, arable land on the Dolomitic Conglomerate soils of the lower slopes and meadow land on the valley alluvium. The past arable usage of the Wrington and Lulsgate soil series is borne out by extensive extant strip lynchet systems and evidence from those which have been ploughed out but which are still visible on air photographs. None of the separate flights of strip lynchets in any instance cross the medieval parish boundary, thus confirming another of Taylor's points.[8]

Fig. 1 shows the flight of strip lynchets chosen for the excavation in 1975. The main examinations were carried out in trenches A, B and C. Trench B was cut through the positive lynchet of a normal contour aligned terrace; the trench was extended in order to reveal part of a tread and a negative lynchet. Fig. 2a shows the internal stratigraphy of the lynchet which conforms with those excavated in other areas. The bedrock of the hillside is masked by a clay band of variable thickness over which lies the stone layer. Both of these latter layers have been cut away at the negative lynchet

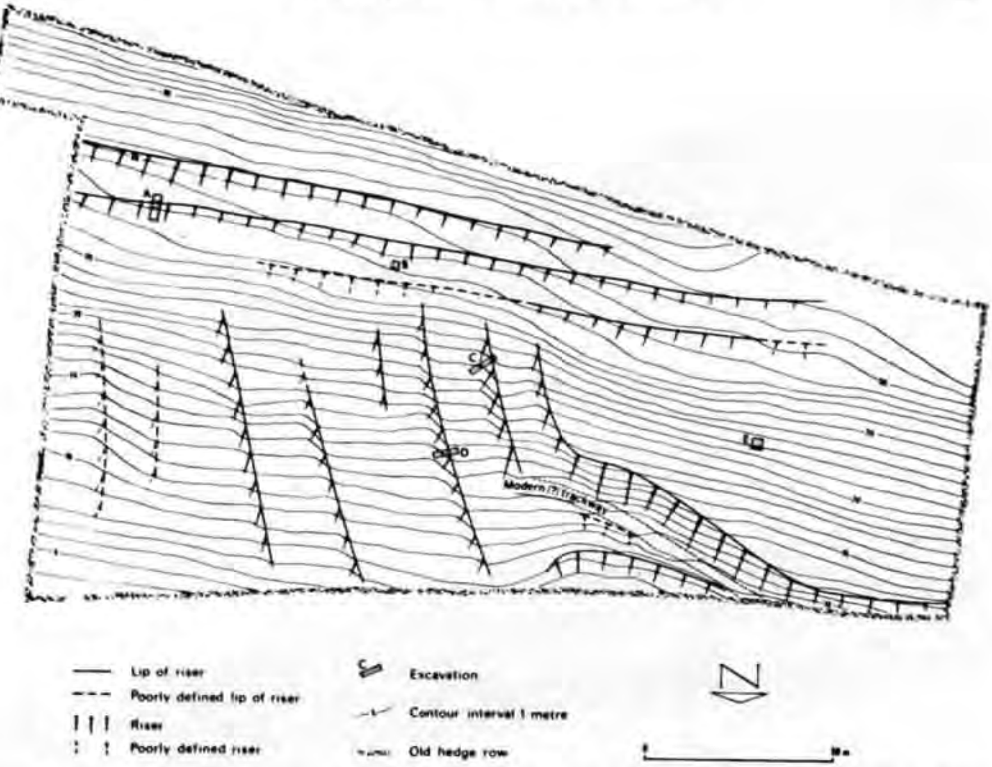

Fig. 1. The flight of strip lynchets at Dinder. The contours, drawn at one metre intervals, refer to the present declination of the surface.

while the bedrock has not only been cut into deeply at the back of the negative lynchet, but has also been greatly shattered, probably resulting from a thin soil cover which gave the rock little protection from heavy chemical weathering and frost action. The present thick topsoil in the negative area results from the slumping of material down the riser: this has occurred as a natural process but has been accelerated by the passage of cattle. According to local information the land has been unseeded pasture throughout living memory.

The next stage of the investigation was to excavate the transverse terraces. Fig. 2b shows the section revealed in Trench C. The familiar form of the normal strip lynchet is to be seen. The positive lynchet is not as large but that is only to be expected given its relation to the slope. More important however is the form of the negative lynchet. It again shows the very broken and uneven bedrock where the plough has been operating in a zone of originally thin soil cover. The riser and negative lynchet in this section have again been heavily affected by natural and cattle-induced slumping. The evidence gained from the excavation shows quite clearly that on this site at least it is correct to class these transverse terraces as strip lynchets.

A further question regarding these features is why the cultivators ploughed at right angles to the dominant direction of slope. In an attempt to elucidate this question the land on which the strip lynchets occur was surveyed to produce a map with a close contour interval (Fig. 1). It was felt that different slope values might have affected the distribution of the various hillside features — horizontal strip lynchets, transverse strip lynchets and non-lynchetted (uncultivated) land. The average slope value in the

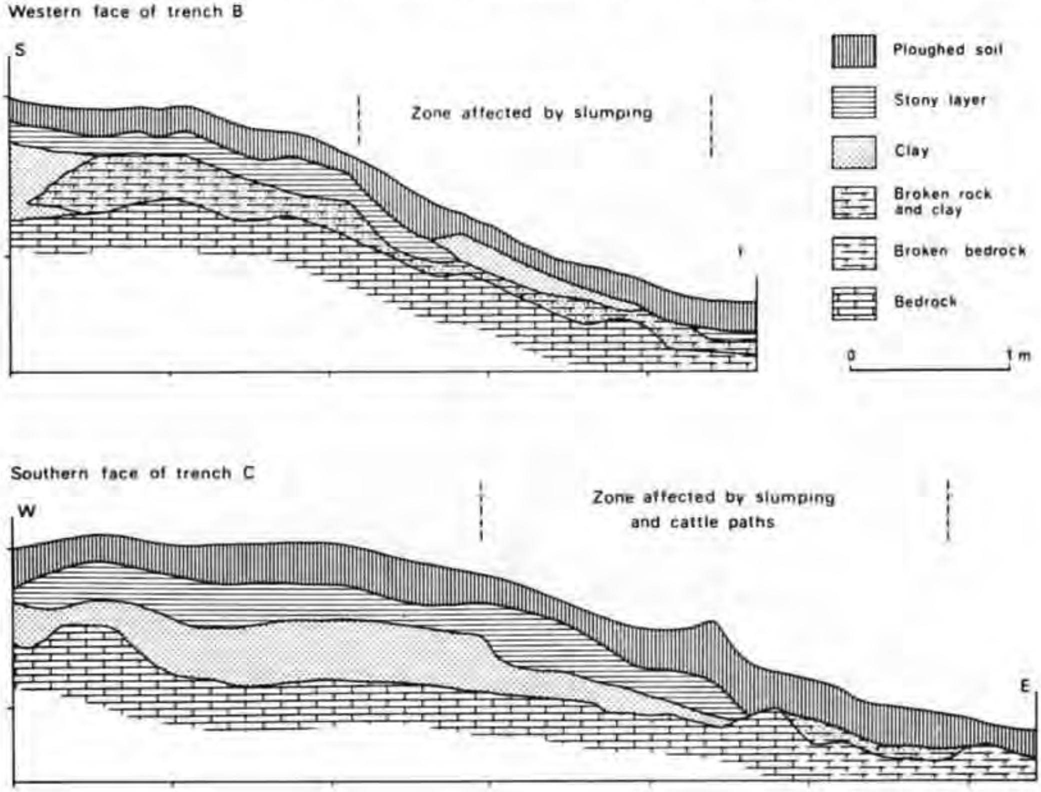

Fig. 2. Stratigraphy of the strip lynchets as revealed by excavation. The upper section (2a) is cut through the more frequently encountered horizontal strip lynchet while the lower section (2b) is through a transverse form. The scale refers to both the horizontal and the vertical.

area of horizontal strip lynchets is now about 6°, in the area of the transverse lynchets 13° and in the uncultivated zone 17°. This appears to answer one problem, that of why the uncultivated zone did not enter into the local arable system. The average slope of 17°, which increases in certain places to over 25°, was felt to provide too great an obstacle to ploughing. The slope values for the lynchetted areas need to be looked at closely. The average slope of 13° in the area of the transverse lynchets is obviously closely related to the slope originally existing before the ploughing which produced the lynchets occurred. The average slope of 6° in the area of the horizontal strip lynchets is however virtually meaningless because the original slope has been severely modified by the cutting action of the plough on large areas of bedrock and the accumulation of downwashed material in the positive lynchets. To get an idea of the original hill-slope angle it is necessary to examine the area of bedrock which underlies the positive lynchet and which would as a result have suffered the least modification. When this is done a value of 20° is obtained. Thus the layout of the lynchets appears to accord with slope values. Where the slope was really strong and very variable (17° — 25°) no cultivation occurred and no lynchets appeared. Where the slope was relatively gentle (in this case 13°) ploughing down the slope was possible. Where the slope was of an intermediate value (here 20°) ploughing at a slight angle to the contours was feasible and this brought into existence strip lynchets of the more usual kind.

It was hoped that the excavation might shed some further light on the possible date and use of the strip lynchets. The possibility of previous uses of the site having been masked by the lynchetting (as in Horton in Wiltshire[9]) needed to be kept in mind, while artifacts and the use of pollen analysis held further possibilities. Some artifacts were found: clay pipe fragments and pottery sherds of 18th or 19th century crockware being most prominent. These could have occurred as refuse in manure or alternatively the sherds could have been carried on to the lynchets in the hooves of cattle. As evidence of the origin and use of the lynchets the pottery is of little value. It was not in a sealed horizon and could have got into the soil at the depths at which it was found (from 8-30 cm) either by ploughing or earthworm activity and could therefore be related to a late cultivation or a totally pastoral phase. The excavation in fact shed no light on a possible date of origin. It is interesting to note however that the dimensions of the strip lynchets here amount to about one third of an acre. The lynchets show no sign of having been modified at any time and thus in terms of size and layout show no features which would rule out a medieval origin.

Despite the frequent assertion that strip lynchets were merely ordinary strip units of agriculture which happened to be located on a slope and which would therefore have supported a grain crop, claims have been made that they were specially constructed to grow specialized crops, flax and the vine being the most common suggestions. By choosing a flight of lynchets based on the Lulsgate and Wrington soils it was hoped that pollen analysis might afford some insight into the use to which the lynchets were put. This technique is only useful where acidic or anaerobic conditions obtain and as most strip lynchets occur on rock with a high calcareous content, palynological investigations have been thought to be inappropriate. Pollen had survived but mostly in a poor, degraded state. From the identifiable pollen grains it was clear that differential preservation had occurred. Pollen of the *Compositae* family was dominant although *Gramineae* were also present, the latter in large numbers. One *Cerealia* grain also occurred but too damaged to allow species recognition. The soil pollen is certainly unrepresentative of the present plant cover on the site and this together with the corrosion and degradation of the pollens which have survived means that no great store can be set by the pollen evidence. Just as with the date of origin, absolute proof of the use to which strip lynchets were first put seems to be irrecoverable.

CONCLUSIONS

The investigation of the Dinder strip lynchets has provided some clearer understanding of this phenomenon. Examination of this site has confirmed some of the arguments used by Taylor to rule out a prehistoric date for strip lynchets. The excavations have shown that the stratigraphy and profile of the horizontal lynchets confirm the findings of the few excavations carried out elswhere.[10] The classification of transverse strip lynchets with the horizintal form based on grounds of proximity alone can now be accepted with certainty in that the former show a construction form identical to that of the latter. The transverse form exists as a result of the local cultivators' assessment of arable potentialities on less steep slopes. Other cultivators elsewhere may have assessed similar sites differently and therefore farmed differently. Thus while it is possible to use findings from individual sites to further our understanding of similar occurrences elsewhere, it must always be borne in mind that locally taken decisions can always cause variations.

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