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Report on Field Visits Concerning Valley Sediments in the Area of the Stonehenge Environs Project

by

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Valley sediments in the area of the Stonehenge Environs Project have been investigated by Julian Richards (Wessex Archaeological Committee) in the hope that they may preserve stratified archaeological evidence and environmental sequences as they have in other areas (Bell 1981). Fortunately soils in the area of the project have been mapped as part of the Soil Survey's national map programme (Colborne and Cope 1983). During the course of mapping a small number of auger observations were made on dry valley floors at the following locations:

SU 12804270 Soil depth 32 cm., shallow brown subsoil, base hard and stony. Coombe series?[1]

SU 12304305 Auger stopped at 45cm., very calcareous, pale coloured subsoil. Coombe series?[1]

SU 12354010 Auger stopped at 40cm. Thin dark brown subsoil with abundant stones. Coombe series?[1]

SU 11304352 Auger stopped at 38cm. Thin dark brown subsoil rather flinty. Coombe series?[1]

SU 11374405 Auger stopped at 55cm. Dark brown flinty subsoil possibly with rather more chalk. Coombe series?[1]

SU 10304392 Auger stopped at 38cm. Thin dark brown subsoil at the base of slope,? lynchet. Coombe series?[1]

SU 11634615 Auger stopped at 25cm. Non-calcareous flinty soil. Charity series?[2]

SU 10704670 Auger stopped at 44cm. Non-calcareous, very stony. Charity series?[2]

Notes:

1: Panholes series if chalk rock within 80cm.

2: Garston series if chalk rock within 80cm.

The method of investigation used by Julian Richards was the excavation of a number of soil pits, largely in the centre of dry valleys. These pits were excavated and backfilled intermittently over winter/summer 1982 but it was possible for one or both of the writers to see four of the pits open and make certain observations on the soils.

Greenland Farm, Soil P W23 SU 09804375

0-20cm. Ap	Dark humose, very calcareous silty clay loam with a few flints and chalk fragments.
20-50cm BC	Brown, extremely calcareous silty clay loam colluvium with small chalk fragments. Brick and other anthropogenic debris extends from 0-c. 40cm.
50-60cm. bBC	Very stony, brown, extremely calcareous silty clay loam with abundant medium to large flint nodules. Probable palaeosol.
60-90cm. 2bBC	Very pale brown, extremely calcareous silt loam, stone-free and without distinct chalk granules. Probable palaeosol predating later colluvium.
90-120cm. 3bBC	Dark brown very stony calcareous silty clay loam with common dak brown mottles; gley mottles and moisture films on flints show that it is subject to periodic waterlogging. Probable palaeosol predating colluvium.
120-130cm 4bCu	Dark brown, very stony, very calcareous silty clay loam with many chalk fragments. May represent a remnant of an earlier soil, presence of tongues penetrating the underlying deposit suggests that the palaeosol weathered from the underlying coombe deposit.
130cm +	Light grey, extremely stony extremely calcareous (chalky silt). Pleistocene coombe deposit.

This profile would be classified as Gore series (Cope 1976).

Stonehenge Bottom, Soil Pit W22 SU 12754218

0-20cm Ah.	Dark humose, very slightly stony, calcareous silty clay loam.

13-32cm. AC — Extremely stony, dark, humose calcareous silty clay loam with extremely abundant medium and large flint nodules; many of these are frost pitted and shattered, the layer is not, however, an in situ Pleistocene deposit because it also contains a high proportion of flint flakes. Its present form must partly relate to the earthworm sorting of flints from the overlying largely stone free horizon.

32-35cm. BC — Pockets of dark brown very flinty calcareous silty clay loam are present in places down to c. 35cm.; these represent weathered B horizon material which probably relates to an earlier episode of soil formation; one pocket penetrated to 1m and seems likely to represent a solution feature.

35-40cm. Cu1 — Extremely stony small rounded chalk fragments with a light grey extremely calcareous (chalky) matrix.

40cm. + Cu2 — Pleistocene coombe deposit.

This profile would be classified as Icknield series.

Valley below Durrington Down, Soil Pit W19 SU 11954373

0-20cm. Ap — Dark brown silty clay loam with few flints.

20-35cm. AC — Dark brown silty clay loam with extremely abundant flints and small chalk granules. Tongues of this sediment into the underlying deposit are likely to represent solution features or tree root holes.

35cm. + Cu — Pleistocene coombe deposit.

This profile would probably be classified as an Icknield-Andover intergrade. Two other pits were examined on the sides of the same valley. Both produced shallow plough rendizina soils of the Icknield series, that to the west was flint free, that to the east somewhat disturbed by a ditch.

Discussion

It is interesting that pockets of B horizon material, possibly representing remnants of earlier soil types, have been located below the colluvial sediments at Greenland Farm and at the base of some of the Icknield and Andover profiles. Though these pockets of B horizon material and the overlying soils have not been ivestigated in any detail they are suggestive of a degree of Post-glacial soil change. However, unlike other study areas on the chalk (Bell 1981) these soil changes do not seem to have been associated with large-scale colluviation. When present, colluvial deposits appear to be faily localized, e.g. Greenland Farm; within the Durrington Walls Henge (Wainwright and Longworth 1971); very locally within the slight hilltop saddle occupied by Coneybury Henge (Keeley 1981). Apart from these we may infer local colluvial deposits associated with numerous lynchets (Royal Commission on Historical Monuments 1979) and with Medieval field systems in the Wylye valley (Cope 1976).

The problem of explaining the paucity of similar deposits on dry valley floors in the study area, is not, however, a simple one. Where chalk valley floors are filled by coombe deposits the soil profile has a dark brown or grey chalky subsoil over coombe rock (see descriptions of auger borings). The problem then is to decide whether the brown or grey subsoil is formed in situ or in colluvium. Here there is only one profile with a moderately deep subsoil. This is evidently in chalky colluvium over pockets of brown soil formed in a coombe deposit. The other profiles lack a well developed subsoil, thin brown subsoil horizons being confined to pockets of coombe rock. So in these cases (W19, W22, W2) either the valley floor coombe deposits were highly eroded around the time of deposition only leaving pockets of coombe deposits and associated brown subsoils, or else brown subsoils and thin coombe deposits were removed by soil erosion but were not in turn overlain by deep colluvium.

One possible explanation for the lack of colluvium is that for reasons of land-use little widespread soil erosion occurred over much of this gently sloping area. It has also been suggested that the position of the study area on the gently sloping dip slope may, together with the limited extent of superficial deposits on rounded slopes, account for thinner colluvial deposits than have been reported from escarpment valleys or those lower on the dip slope. A third possibility is that colluvial sediments may, to some extent, have been removed or thinned by the action of seasonal streams at times of higher water-table. This idea is attractive in view of the very flinty nature of some of the valley floor deposits and the evidence for periodic waterlogging found in the Greenland Farm profile but too much weight should not be given to this hypothesis because sediments are equally thin near the heads of dry valleys (e.g. below Durrington Down) where stream activity is unlikely. Furthermore, extensive valley floor erosion seems to be ruled out by the excellent preservation of the Stonehenge Cursus where it crosses Stonehenge Bottom close to soil pit W2. However, auger observations in more incised, valley floors adjacent to the present study area, do show deeper soils and perhaps it is here that one may expect to find evidence of more extensive colluvial deposition.

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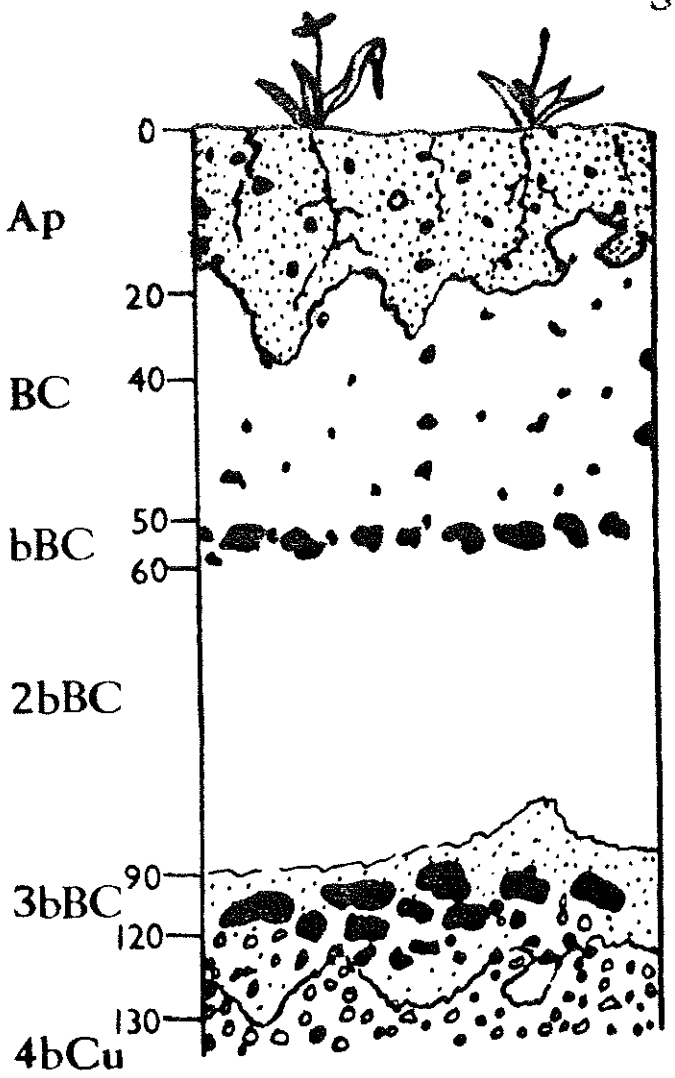
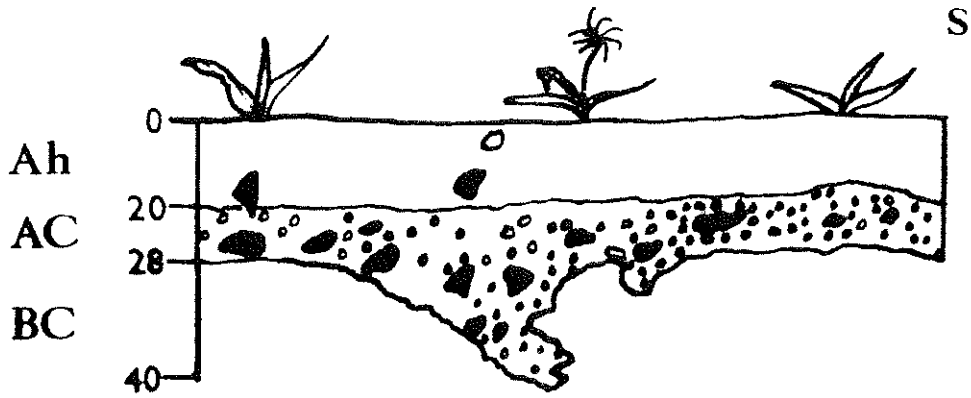
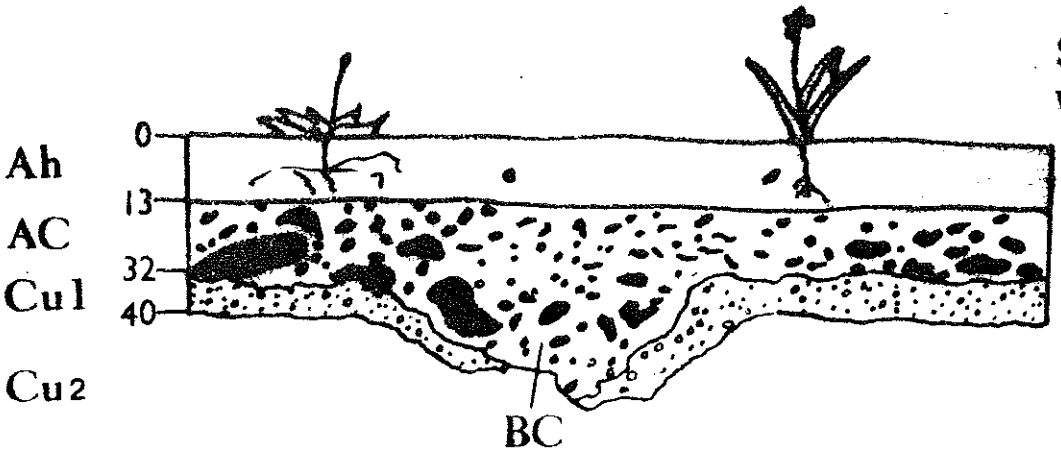
Soil Pit W 23



Soil Pit W 22




Soil Pit
W 21
Ah
AC
Cu1
Cu2
0
13
32
40
BC

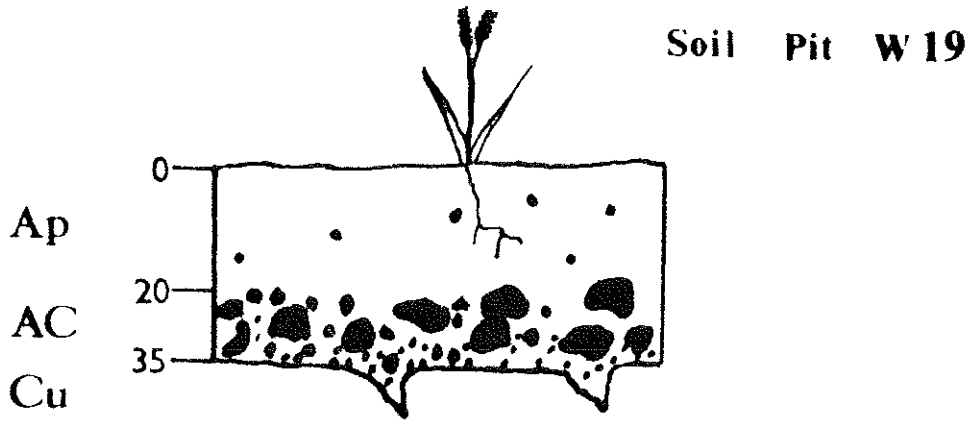

Soil Pit W 19
Ap
AC
Cu
0
20
35

Plate I. Greenland Farm, Soil Pit N23

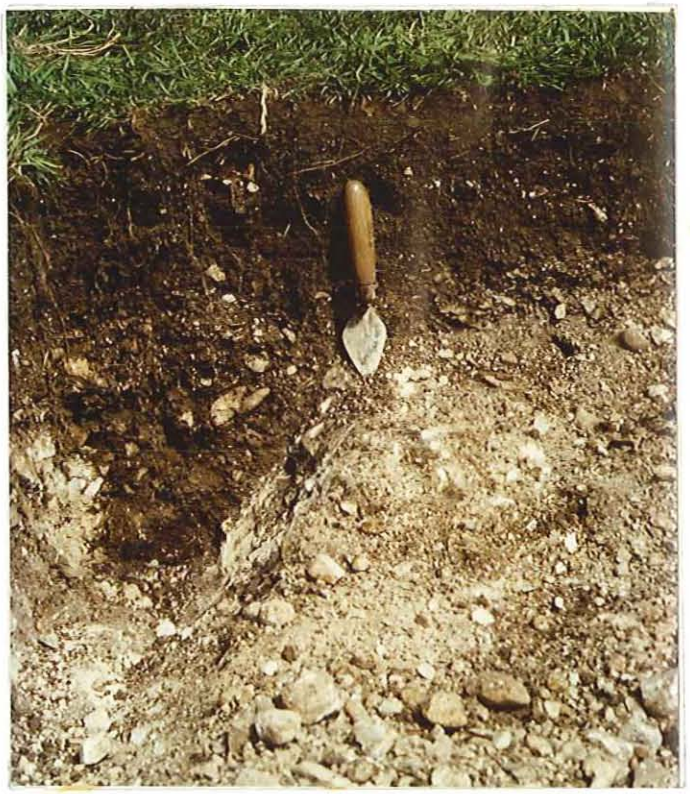


Plate II. Stonehenge Bottom, Soil Pit W22

Plate III. Stonehenge Bottom, beside cursus, Soil Pit W2

Plate IV. Valley below Durrington Down, Soil Pit W19.