Soil Report on Beeston Castle, Cheshire

1.64.12

21.11.80

ALL ARTICLES

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During the summer of 1980 excavations of the Guardianship site of Beeston Castle were carried out by Mr. Peter Hough of the Inspectorate. Areas had been exposed within the Outer Ward and at the main Gatehouse (Square Tower) to investigate the pre-Medieval soil, and prehistoric surfaces.

L. TROSPON

A.A

Beeston Castle was built in the 13th Century on Beeston Crag, on the edge of the Peckforton Hills, overlooking the Cheshire Plain. Beeston Crag is comprised of coarse Permo-Triassic sediments, such as the Keuper Sandstone, Keuper Sandstone Conglomerate and Bunter Upper Mottled Sandstone. These freely-draining deposits have given rise to humo-ferric podzols of the Delamere series (Furness, 1978).

The upper site (in the Outer Ward), which has a large number of prehistoric artifacts, and postholes and their associated packing is characterised by a humo-ferric podzol. This soil contains weakly formed Bh and Bs horizons, and also the eluvial Ea horizon is only partially leached. The lack of Medieval finds and the shallow nature of the Ah and eluvial horizons suggests that the soil may well have been affected by erosion. Finds from the Victorian period in the upper part of the soil indicate some disturbance in more recent times, perhaps during the Fairs held there (Peter Houth, pers. comm.).

It may be argued that the prehistoric soil has been preserved even though the upper part of the soil profile has been eroded off. Perhaps later artifacts, especially of the Medieval period when the site was in heavy use, were removed at this time. Both the lack of a deeply formed Ah horizon, and a deeper Ea horizon is strongly indicative of the soil being truncated. The present day ease with which the soil is disturbed and eroded, and the particular slope unit position of the soil in question are further indicative of erosion being an equally important process in the past.

The lack of eluviation in the Ea horizon is probably related to mobile organic matter and sesquioxides enriching this shallow soil from upslope. In addition, soil material in general may have been received from soils further upslope. However, this latter process has not affected the lower soil because the positioning of the stone packing is still correlatory with the positions of the postholes. An investigation of the soils upslope may help reveal whether the prehistoric levels are more deeply buried upslope.

Secondly, the soil occurring beneath the Square Tower and within the berm before the oversteepened, scarped face of the castle ditch, is a humo-ferric podzol probably formed in Head material of sand and sandstone fragments of the Keuper sandstone (See Soil Descriptions and Analytical Data). The natural, post-glacial soil is a more degraded soil than that present in the interior of the castle, and although truncated as far as the Ea horizon, this is very eluviated, and overlies Bhs and Bs horizons. Above are at least two lenses of sandy colluvium which contain charcoal. These are buried by a much more deep and stony dark coloured contemporary upper soil. pH values are anomalously high and reflect a super-imposition of base rich material most probably from the use of mortar above. Original pH of the humoferric podzol would have been very much lower (pH 4-5). This present higher pH may also be responsible for the rather low quantities of alkali extractable humus in the Bh horizon, as under base rich conditions oxidation of organic material is accelerated. Under such a regime pollen preservation is likely to be poor.

Refs.

Furness, R.R. 1978 Soils of Cheshire Soil Survey Bulletin No 6 Soil Survey of England and Wales, Harpenden. On Berm, beneath Square Tower, Beeston Castle.

Soil Profile Description:

Soil Type: Humo-Ferric Podzol. Slope: 2-3°, increasing outwards to 10°- 28° Sou Depth, cm.

116-46	Very dark grey ($10YR 3/1$) latest rubble and fill.
46-22	Brown (7.5YR 5/2) sandy "2nd fill", charcoal present.
22- 0	Greysish brown (10YR $5/2$) sandy "2nd fill", charcoal present

truncation surface

Ea	Reddish grey (5YR 5/2) narrow organic matter band, overlying an upper pinkish grey (5YR 6/2) upper eluvial zone, and lower light reddish brown (5YR 6/3) eluvial zone; sandy, loose, structureless; common organic matter laminations; gradual, irregular boundary.
Bhs 37-40	Dark reddish grey (5YR $4/2$) slightly cemented, massive, sandy; clear, wavy boundary
Bs	yellowish red (5YR 5/8) slightly cemented, massive, sandy; develop

40-60+ yellowish red (5YR 5/8) slightly cemented, massive, sandy; develous 40-60+ into very large stony Keuper Sandstone Head.

Analytical Data

Horizon	$_{ m pH}$	Alkali Extractable Humus
upper Ea	6, 8	18.0
lower Ea	6,7	4.7
Bhs	7.0	72.0
$B\mathbf{s}$	7.4	65.0

N.B. Alk. Ext. Humus, mgms. per 100 gms. dry soil