Environmental Report No. 31/78

ANCIENT MONUMENTS LABORATORY
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ANL Report 2548

SITE NO? 5

Mr. R. White
Gwynedd Archaeological Trust,
Deiniol Road,
Bangor
Gwynedd.

Your reference

Our reference

Date 12/6/78

Dear Richard,

Please find enclosed your Interim Soil report(s) for the site(s) of Cefn Graenog. Alterations may be made later.

I would be most grateful if you could send me a draft copy of any proposed publication which includes the report(s) or extracts from the report(s).

Please acknowledge receipt of this communication.

Yours sincerely,

Helen C. M. Keeley

ANCIENT MONUMENTS LABORATORY

INTERIM REPORT /

A.M. No.

This report is sent to keep excavators informed of the progress of work on their material and is not to be considered as necessarily representing the final conclusions on the work reported. Thus the Chief Laboratory Officer should be informed of any intention to publish information given in an A.M.L. Interim Report so that he may advise as to its suitability for publication.

On completion of an investigation, a formal report, correlating the information notified in any Interim Report will be prepared by the Laboratory. This report may include a revision of conclusions previously notified.

SITE CEFN GRAEANOG, GWYNEDD

EXCAVATORS RICHARD WHITE AND RICHARD KELLY, GWYNEDD ARCHAEOLOGICAL TRUST

Summary:

Buried soils underlying walls of buildings of the native settlement (Roman period) and platform houses (Medieval) were examined and compared with present-day soils surrounding the sites.

The soils appeared to be similar to the Arvon series and showed evidence of podzolisation and local variations in soil drainage. The buried soils had apparently been cultivated and this was confirmed by preliminary results of pollen analyses.

Further conclusions may be drawn when all results are available from the archaeobotanical stuides.

H.C.M.KEELEY
Ancient Monuments Laboratory

12th June 1978

THE SOILS OF CEFN GRAEANOG, BRYNCIR, GWYNEDD

BY HELEN C M KEELEY

Introduction

Several sites have been excavated at Cefn Graeanog by the Gwynedd Archaeological Trust in advance of gravel quarrying by Croxden Gravels Ltd. Work has been carried out by the author on the 2 major sites, ie I.a native settlement of the Roman period and II.Medieval platform houses. Location of sites is shown in Figure 1.

I.A native settlement of the Roman period

The site was excavated by G.A.T.under the direction of Richard White. Three phases of stone building have been recognised, with no evidence of any timber phase, all falling within the period 0-500 AD. The site plan is shown in Figure 2.

Phase I c.0AD.

Part of the wall of a round house, sealed in part by a rubbish layer containing sherds of black coarseware and unassignable Samian. A distinct buried "turf" had formed over the ruined wall before this rubbish was deposited.

Phase II 1-2 Centuries

A curving enclosure wall, faced predominantly with orthostats, was built over the ruins of Phase I, with at least one building (G) attached to it. There was a single central hearth and a stone mortar set into the floor; a slab-covered drain ran close to the walls and out through the doorway.

Phase III 3-5 Centuries

Much of phase II was cleared, the narrow entrance blocked and a large enclosure built with a single entrance through a substantial wide barn (Buildings E & F). Circular buildings (domestic) occupied three of the corners with three outbuildings, roughly rectangular, making an almost continuous range of buildings along the N and E sides of the enclosure. The "courtyard" was subdivided into three parts - one garden plot and two smaller yards. The prime

CEFN GRAEANOG

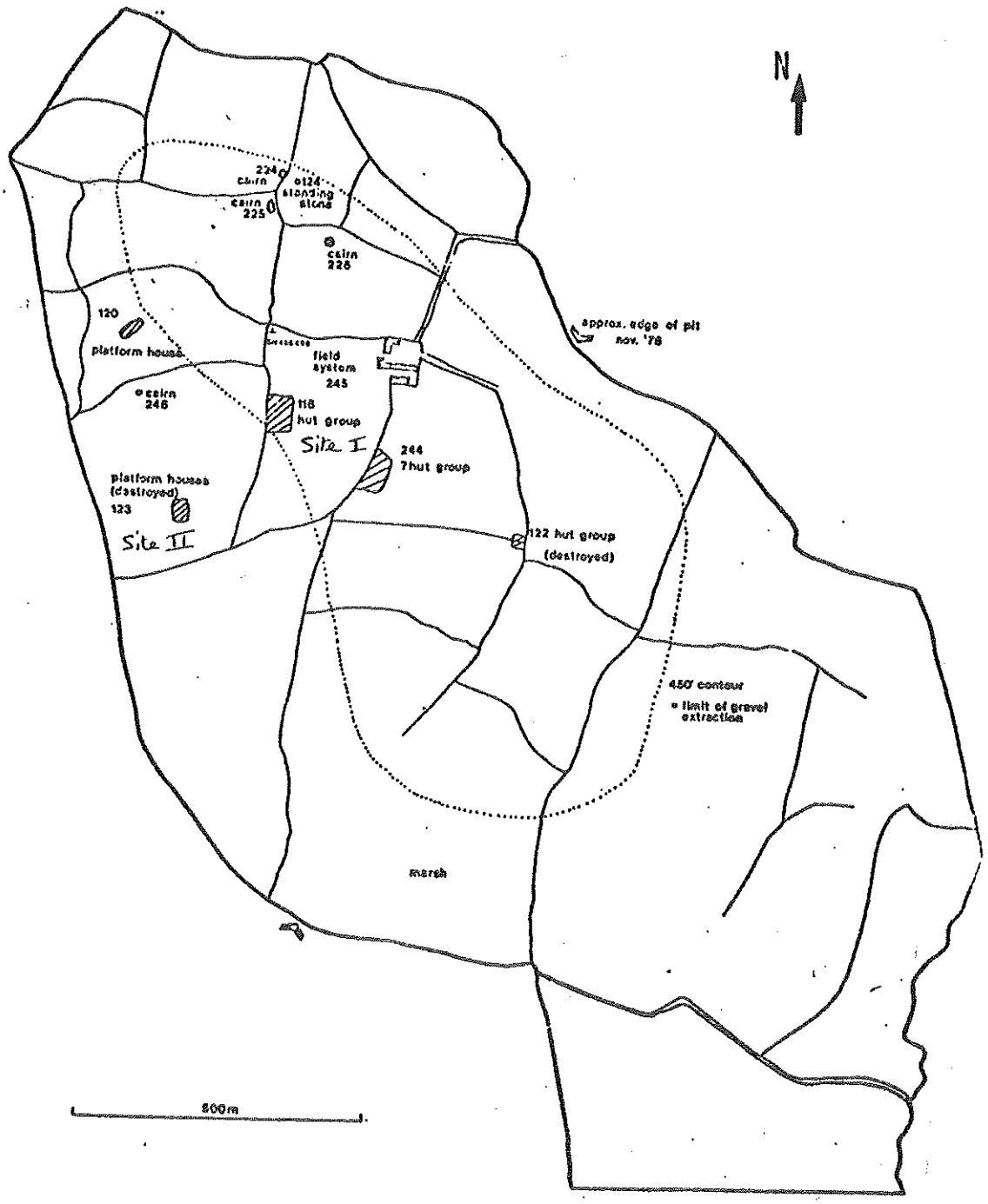


Figure 1. The Archaeological Remains at Cefn Graeanog.

CEFN GRAEANOG

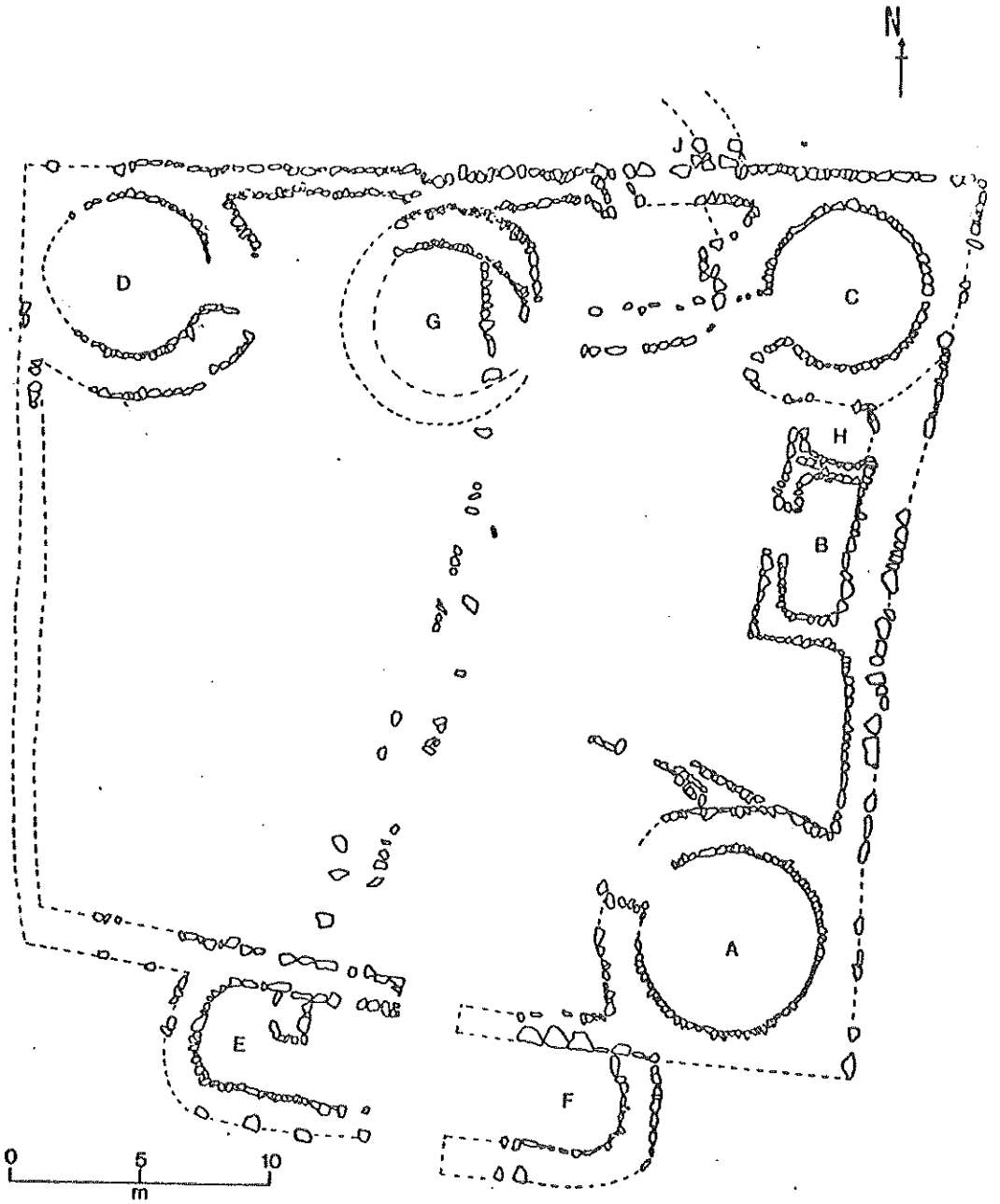


Figure 2. A native settlement of the Roman period.

cereal appears to have been Spelt wheat and six-rowed hulled barley with some Emmer wheat mixed with the Spelt; rye and oats are also present (identifications by Gordon Hillman, Department of Botany, UC Cardiff).

The farm did not come to a catastrophic end but the barn burned down at some stage and was not rebuilt. Building C continued in use to the very end.

II. The Platform Houses

The site was excavated by G.A.T. under the direction of Richard Kelly and the plan is shown in Figure 3.

The platform lay along an axis NE-SW with the four buildings placed NW-SE. The two central and larger buildings (B and C) were at a slightly lower level than the two smaller, outer structures (A and D). The walls were of rounded, undressed boulders arranged to give an inner and outer face with a core of gravel and soil. Floors, where they survived, were of rammed earth and gravel, with that in the large domestic building (C) tempered with clay. Entrances to the two central buildings were effected by stone steps along the front.

Building C was preceeded by an earlier timber building, represented by a number of post and stake holes found beneath the floors and walls. The "aelwyd" (hearth stone) in Building C gave a remnant magnetic date of last firing of 1240 $\bar{+}$ 30 AD.

The settlement is interpreted as a farmstead dependent on the cultivation of the surrounding land. Oats was the main crop, with barley and wheat as weeds (identified by G Hillman).

CEFN GRAEANOG 120

Figure 3. Site II - The Platform Houses.

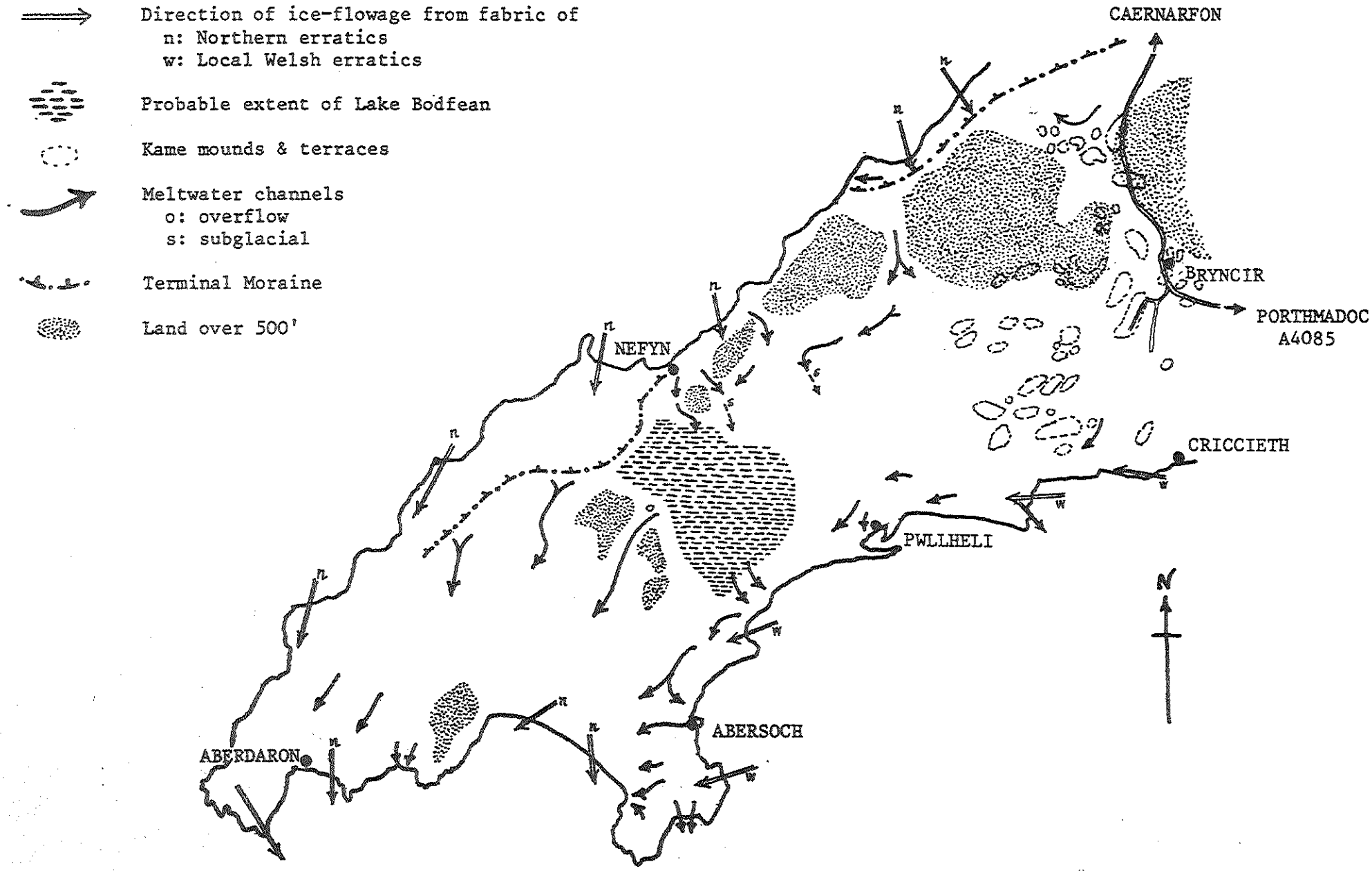
Soils and Geomorphology

Ridges of variously sorted sands and gravels in the Bryncir area have been interpreted as fluvioglacial deposits (kame mounds, terraces, ? eskers) associated with the second phase of the last (Devensian) glaciation (Saunders, 1968; Whittow and Ball, 1970), as shown in Figure 4. The rock material is mostly Snowdonian in origin(rhyolites, tuffs, sandstones, slates, etc) although occasional "Northern" erratics can also be found; similarly the heavy mineralogy of the fine sand fractions (ie 200-63 μm; SG 2.95) reveals traces of Northern material (eg rare staurolite, kyanite and glaucophane) in a dominantly Snowdonian assemblage (information supplied to the Welsh Soils Discussion Group by David Jenkins, U.C.N.W. May 1978).

The soils of the Cefn Graeanog area have been mapped by A.D.A.S.(date uncertain) and part of the map is shown in Figure 5. An extended podzol section at Glan Dwfach (National Grid Reference SH 479435) some 25m long has been exposed in a ridge of sand and gravel in a quarry recently worked by Croxden Gravels Ltd. and a sketch is shown in Figure 6, which gives an impression of the main soil horizons along the side of an esker-like ridge, the crest of which has been cut away. The profile was described in detail by R.Hartnup and C.Rudeforth (Soil Survey of England and Wales, Aberystwyth) in April 1978 - the full description is given in Appendix I.

The soils associated with the archaeological sites at Cefn Graeanog are predominantly Arvon series, as indicated by the soil map (Figure 5), but local variations were noted: shallow brown ranker profiles, with the Ah horizon resting directly over an unconsolidated stony Cr in sand and gravels, occur more commonly in convex sites; there are also sporadic signs of podzolisation giving Ah/Bs and Ah/E(g)/Bs(h) profiles. A soil pit was dug to confirm the presence of the Arvon series and the profile is described below:-

Figure 4. GLACIAL FEATURES OF THE LLEYN



After G. E. Saunders (1968)

Key to soil series :-

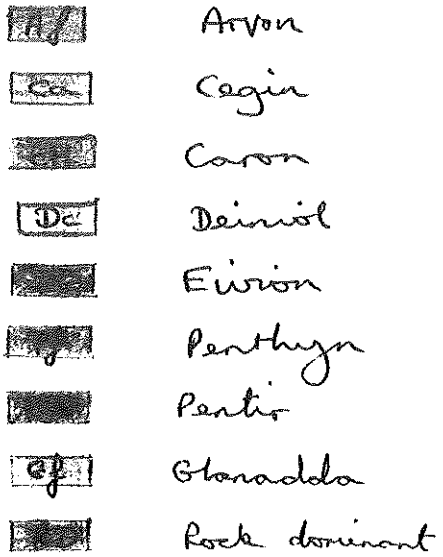
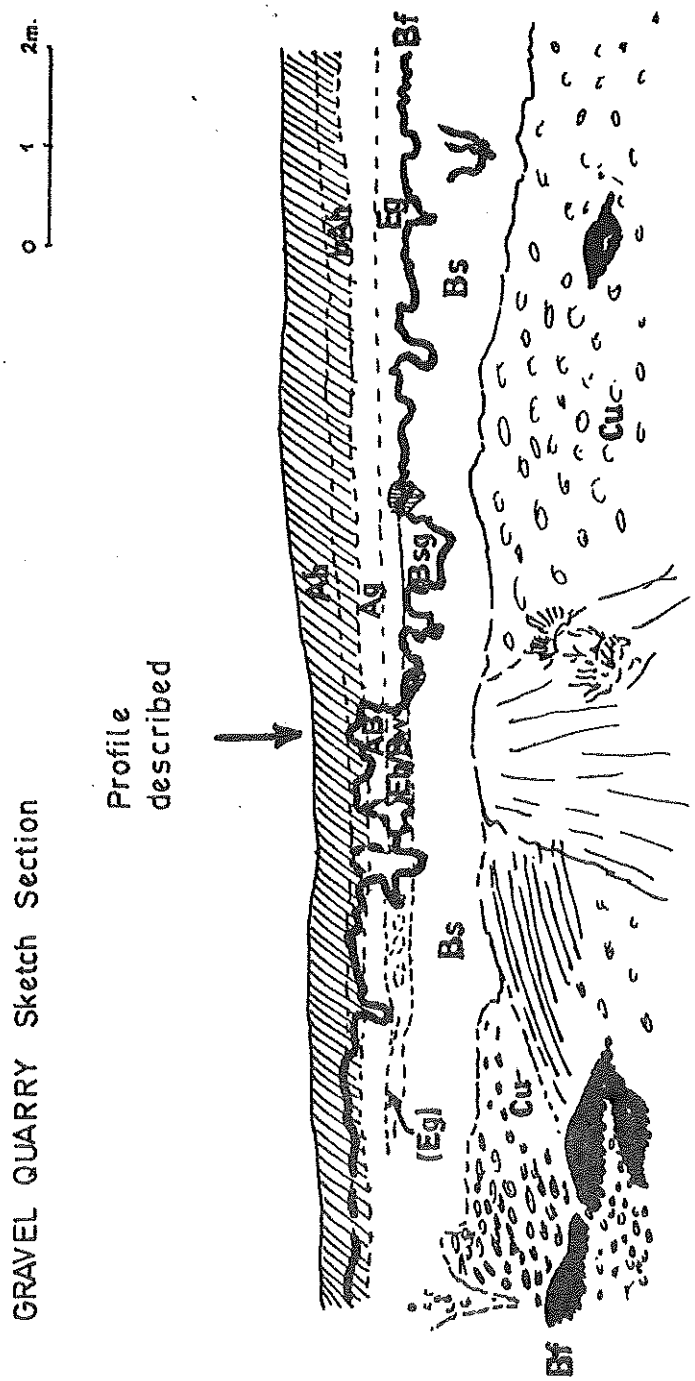


Figure 5. The soils around Cefn Graeanog.

Printed on "W and Silverstone Paper"

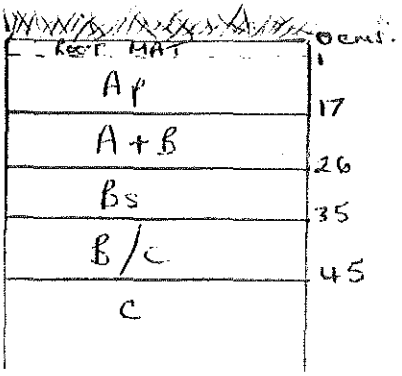
Taken from a map made by A.D.A.S. (date uncertain).

Figure 6. Podzol section at Glan Dwyfach, Bryn Gwynedd (SH. 479435).



The Soil Profile at D7 - Arvon series

Samples
1
2
3
4
5



The profile was dug at the top of the slope above the Platform site (about half way between the Roman site and the Medieval Platform houses). Site and profile drainage were good; slope 0^{o}. Vegetation - grasses, clover and various weed species. Earthworms were present to a depth of 35 cms.

0-17 cms was dark brown (10YR3/3) sandy (clay) loam with moderate medium subangular blocky structure, moderately friable, containing abundant medium to fine fibrous roots and many shale fragments (stones gravel to medium 20%). Mottles absent.

17-26 cms was brown (10YR4/3) friable coarse sandy (clay) loam with patches of strong brown material similar to that in the horizon below. Structure was moderate medium subangular blocky. Roots were abundant, fine fibrous and stones abundant (40%) gravel to large.

26-35 cms was strong brown (7.5YR5/8) friable gravelly (clay) loam with weak medium subangular blocky structure, containing common fine fibrous roots and many stones (30%) gravel to medium. Occasional pockets of material from above occurred, presumably due to earthworm activity.

35-40 cms was yellowish brown (10YR5/6) friable structureless gravelly loam containing abundant stones (60% gravel to medium) and few fine fibrous roots.

Below 45 cms was yellowish brown (10YR5/4) moderately friable structureless gravelly loam containing extremely abundant stones (gravel to large). Roots were absent.

Comment

This soil may have been a brown podzolic soil which has been improved by constant cultivation and fertilisation over a long period.

Sample No	Depth (cm)	Mechanical analysis Sand > 50μ	Silt 50-20μ	Clay <2μ	Pyrophosphate extraction Fe mg/100g	Al mg/100g	% Fe+AL	Fe+AL as % of clay fraction
1.	0-17	60	28	12	310	160	0.47	3.92
2.	17-26	52	32	16	460	230	0.69	4.31
3.	26-35	60	28	12	370	330	0.70	5.83
4.	35-45	68	24	8	80	160	0.24	3.00
5.	Below 45	76	16	8	50	97	0.15	1.88

Texture sandy loam throughout
according to Hodgson (1976)

Pyrophosphate - extractable iron and aluminium determinations confirmed that the 26-35 cms horizon was a Bs rather than a Bw (ie Fe + Al > 5% of clay fraction, after Bascomb, 1974).

* Analyses carried out by Mr. J. Conway (U.C.N.W.).

DM

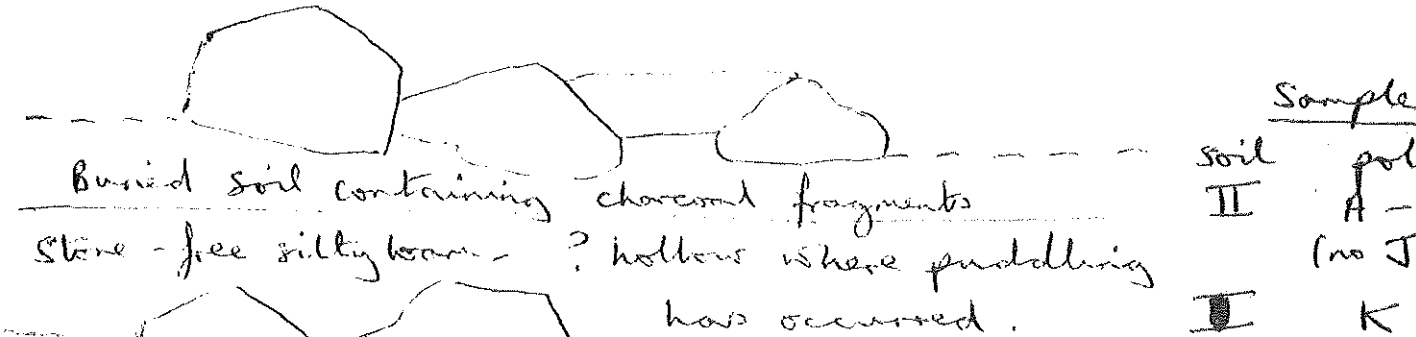
Soil Studies carried out during excavation of the Native Settlement of the Roman Peri

At present the land around Cefn Craeonog is under grass but carbonised cereal remains extracted from archaeological deposits indicated that in Roman times cereals were grown, which formed the basis of the agricultural economy of the settlement.

Soils buried beneath walls of the settlement were therefore examined to look for evidence of cultivation and to compare with present-day soils, as an indication of relative agricultural potential. Samples were taken from below Building A, adjacent to Building C and below Building C and determinations of particle size and pyrophosphate - extractable aluminium (Al) and iron (Fe) carried out. The pollen content of the buried soils was examined by F Chambers (UC Cardiff). The buried soils are described below:-

Site 1.925 Building A

Pollen samples were taken from this site.



II (the buried soil under the wall) was very dark greyish brown (10 YR 3/2) friable coarse sandy loam with moderate medium subangular blocky structure containing abundant fine fibrous roots and common stones (10%) gravel size. Charcoal fragments were common and there were occasional fine rusty mottles in root channels.

I was dark greyish brown (10 YR 4/2) friable sandy (silty) loam with moderate medium angular blocky structure, containing common fine fibrous roots. Stone were absent. The soil was very organic in appearance and contained occasional

rusty mottles. This may be a silted-up hollow.

Yellowish brown stoney subsoil was encountered below.

Sample No.	Mechanical analysis			pyrophosphate-extraction				
	sand 50	silt 50-20	clay 2	Fe	Al	%		
				mg/100g	mg/100g	Fe+Al	Fe+Al as % of clay fraction	
II	65	24	11	550	550	1 10	10.0	BS
I	63	20	17	730	590	1 32	7·76	BS

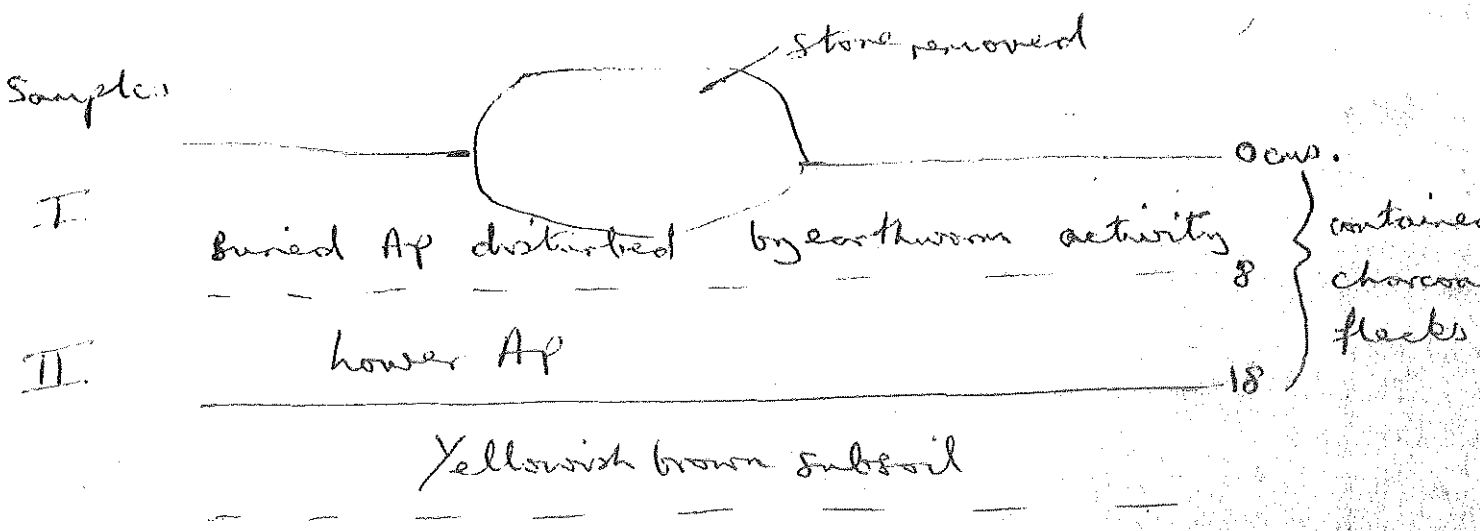
Texture for both: sandy loam

In both samples granules of ? silt or clay were retained on the sieves - these were not dispersed by either prolonged stirring or ultrasonic treatment.

Comment

The upper layer appeared to be disturbed, presumably cultivated; both horizons qualified as a Bs, although one would not classify them as such, suggesting that post-depositional downward movement of iron and aluminium had occurred (probably a drainage phenomenon). The lower horizon contained sedge pollen and this helps to confirm that this was a wet area where silting occurred. The upper layer contained cereal pollen, confirming that this was a cultivated soil.

Site 2.926 Adjacent to Hut C



0-8 cms was dark brown (7·5 YR 3/2) friable, stone free sandy (clay) loam with weak granular structure, containing abundant coarse to fine fibrous roots. Mottles absent Occasional charcoal fragments and pieces of burnt clay were noted.

8-18 cms was dark brown (7·5 YR 4/4) friable sandy clay loam with weak medium subangular blocky structure, containing many stones (25%) gravel to medium and common fine fibrous roots. Many charcoal and burnt clay fragments occurred.

This was underlain by yellowish brown gravelly subsoil.

Sample No.	Depth (cms)	Mechanical analysis: sand >50 μ	silt 50-20 μ	clay <2 μ	pyrophosphate-extraction: Fe	Al	%		
					mg/100g	mg/100g	Fe+Al	Fe+Al as % of clay fraction	
I	0-8	55	34	11	960	510	1·47	13·36	Bs
II	8-18	55	26	19	730	400	1·13	5·95	

Sample textures I sandy loam

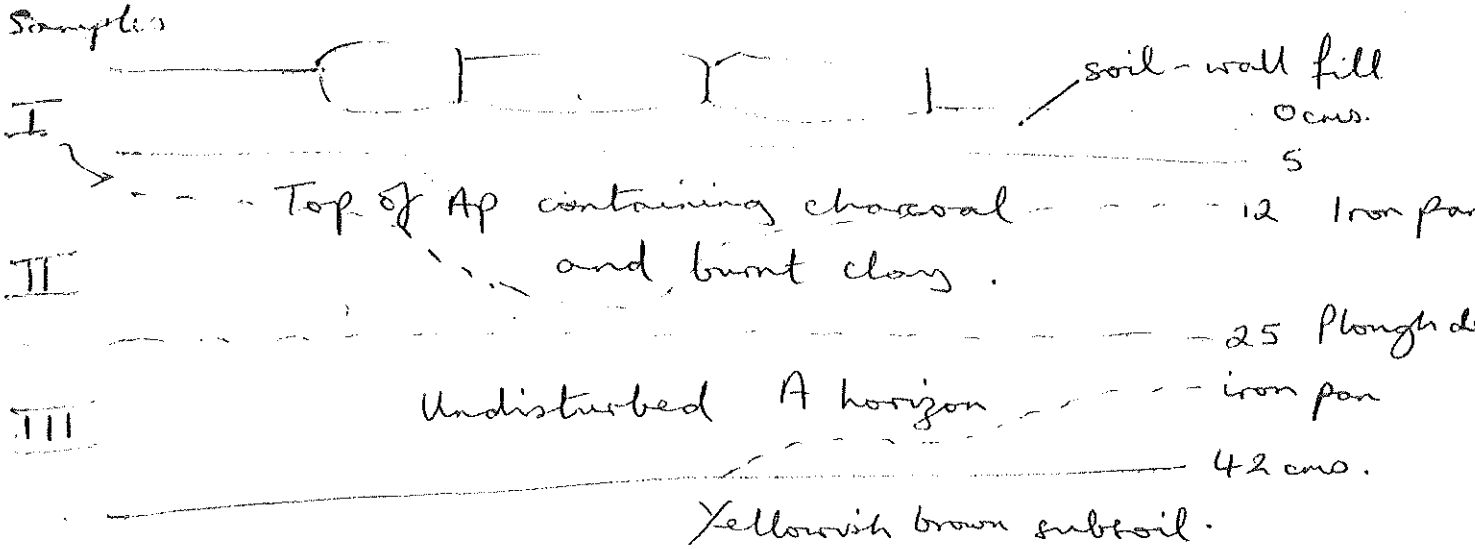
II sandy clay loam

The upper sample contained granules of ? silt or clay which were retained on the sieves - these were not dispersed by either prolonged stirring or ultrasonic treatment.

Comment

The buried topsoil appeared to be disturbed and the presence of cereal pollen confirmed that it was a bAp horizon (although qualifying as a Bs_A^{es} in the profile at 925).

Site 3, 927 Building C



0-5 cms was the soil fill of the wall which was dark brown (10 YR 3/3) warm disturbed friable silty loam with weak medium subangular blocky structure; stone free. Roots were abundant medium to fine fibrous.

5-20 cms (maximum) was friable coarse sandy loam which was dark greyish brown (10 YR 4/2) with occasional rusty mottles and had moderate medium subangular blocky structure. Roots were few fine fibrous and stones common (10%) gravel to medium. Many charcoal fragments were noted. This horizon was underlain by an iron pan at variable depth.

Iron pan - 25 cms was dark yellowish brown (10 YR 4/4) friable coarse sandy loam with weak medium subangular blocky structure. Mottles absent; charcoal fragments noted. Roots were few fine fibrous. Apart from the colour, this material was similar to that immediately above the iron pan.

25-42 cms was brown (7 5 YR 4/4) friable coarse sandy clay loam with moderate medium subangular blocky structure, containing common (5%) strong brown mottles, few fine fibrous roots and common stones (15%) gravel to medium.

Below 42 cms was yellowish brown (10 YR 5/6) friable clay loam with weak medium granular structure containing common (5%) strong brown mottles associated with old root channels. Manganese concretions and mottling on stones was noted. Roots were few medium to fine fibrous and stones many (30%) gravel to medium (some rounded pebbles). The iron pan at this level was much stronger, than the upper pan and corresponded with an increase in stone content of the soil.

Sample No. Depth (cms)	Mechanical analysis: sand >50 μ	silt 50–20 μ	clay < 2 μ	pyrophosphate-extractable: Fe	Al	%		
				mg/100g	mg/100g	Fe+Al	Fe+Al as % of clay fraction	
I 5–20	57	26	17	960	370	1·33	7·82	Bs
II 20–25	53	30	17	1020	360	1·38	8·12	Bs
III 25–42	55	28	19	970	440	1·41	7·42	Bs

sample textures: I, II — sandy loam; III — sandy clay loam

The upper horizon contained granules of ? silt or clay which were retained on the sieves - they were not dispersed by either prolonged stirring or ultrasonic treatment.

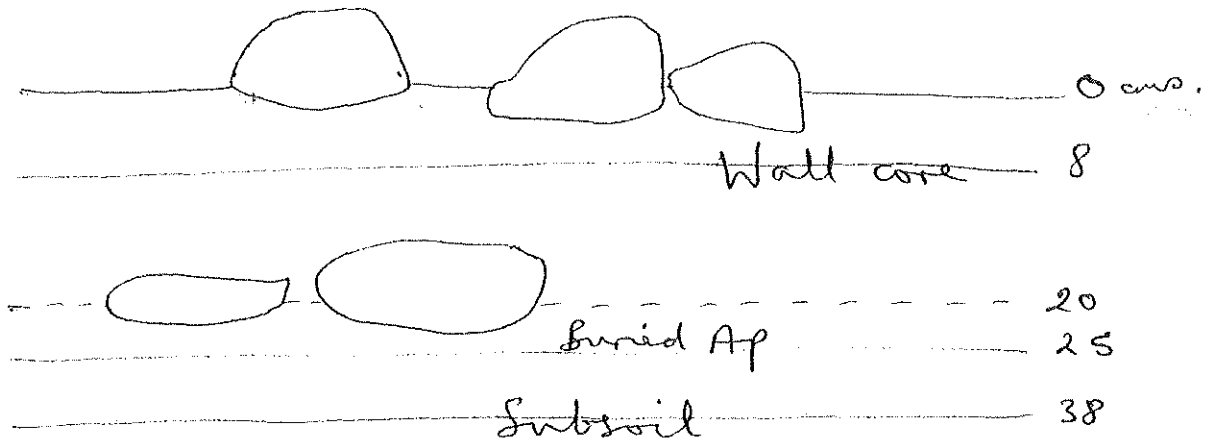
Comment

All upper layers qualified as a Bs as in 925 and 926. The upper part of the bAp horizon (samples I and II) appeared to be considerably disturbed, the lower part (sample III) less so, and this was reflected in the pollen analysis, the lower part containing considerably more (25%) tree pollen than the upper. All samples contained corn spurry, suggesting that 5-42 cms represents a bAp horizon.

DM

Two further buried soils were examined but not sampled and these are described below:-

Site 4



The buried soil appeared to have been cultivated and gleying phenomena indicated that this part of the site was wet. 0 to 8 cms was dark brown (7·5 YR 3/2) friable coarse sandy loam, very organic and with weak granular structure. Roots were abundant, coarse to fine fibrous; apart from stones of the wall, stones were common (5%) gravel to small.

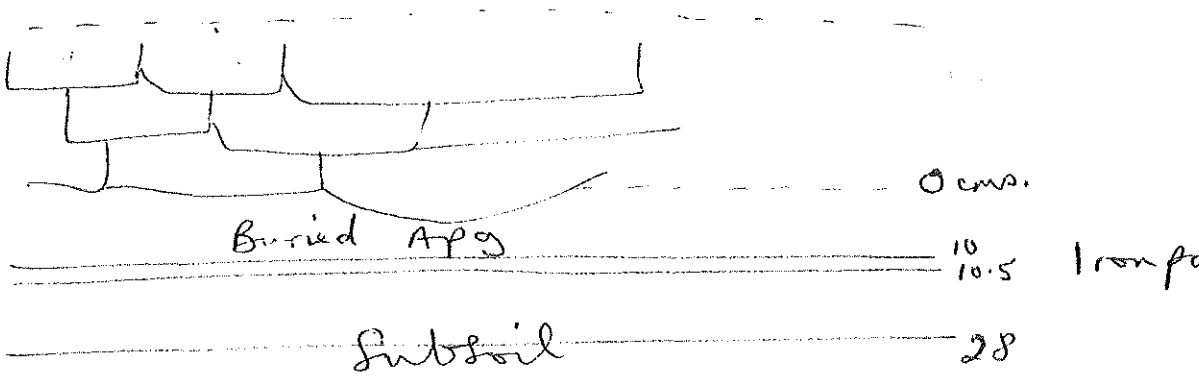
8 to 20 cms was dark brown (10 YR 3/3) friable coarse sandy loam with weak medium subangular blocky structure, less organic than the layer above. Stones were common (10%) gravel to small and roots common coarse to fine, fibrous.

20 to 25 cms was the buried topsoil, which was dark greyish brown (10 YR 4/2) friable coarse sandy loam, containing charcoal and burnt clay. Roots were common, coarse to fine fibrous; structure weak medium subangular blocky and stones common(5%) gravel to medium.

25 to 38 cms was dark yellowish brown (10 YR 4/6) friable coarse sandy loam containing common (5%) rusty mottles and some dark material from above. Structure was weak medium subangular blocky. Roots were common coarse to fine fibrous and stones common (5%) gravel to medium.

Below 38 cms was yellowish brown (10 YR 5/6) moderately friable coarse sandy clay loam with moderate medium subangular blocky structure. Stones were many (15%) gravel to medium and roots few, fine fibrous. There were abundant rusty mottles and many manganese oxide stains on stones, plus occasional concretions.

Site 5



The buried soil appeared to have been cultivated. It was shallow and gleyed with an iron pan, which seemed to be post-depostional and generally indicated a wet part of the site.

0 to 10 cms was the buried Ap horizon containing charcoal fragments and burnt clay. It was greyish brown (10 YR 5/2) friable coarse sandy loam containing common (5%) distinct fine strong brown mottles. Structure was weak medium subangular blocky. Roots were common medium to fine fibrous and stones common (5%) gravel to medium.

10 to 10·5 cms was a continuous iron pan (not indurated).

10·5 to 28 cms was dark yellowish brown (10 YR 4/6) friable coarse sandy loam with weak medium subangular blocky structure, containing few rusty mottles. Roots were common medium to fine fibrous and stones many, gravel to medium.

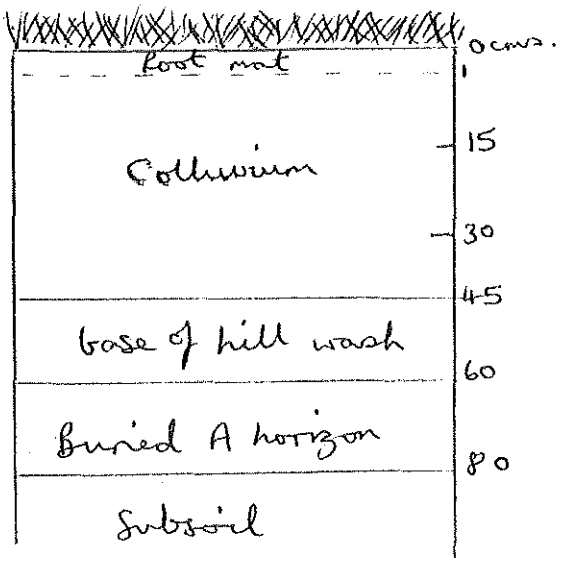
Below 28 cms was strong brown gravel and coarse sandy loam.

Comment

Intensity of gleying phenomena indicated that site 5 was more waterlogged than 4.

BURIED SOILS ASSOCIATED WITH SITE II, THE PLATFORM HOUSES

In the upper part of the site (87) a buried soil was examined under a considerab build-up of hill wash and the section is shown below:-



A similar soil profile (Arvon variant: colluvial brown earth) was described by R Hartmup and C Rudeforth (Soil Survey of England and Wales, Aberystwyth) in April 1978 and the full description is given in Appendix II.

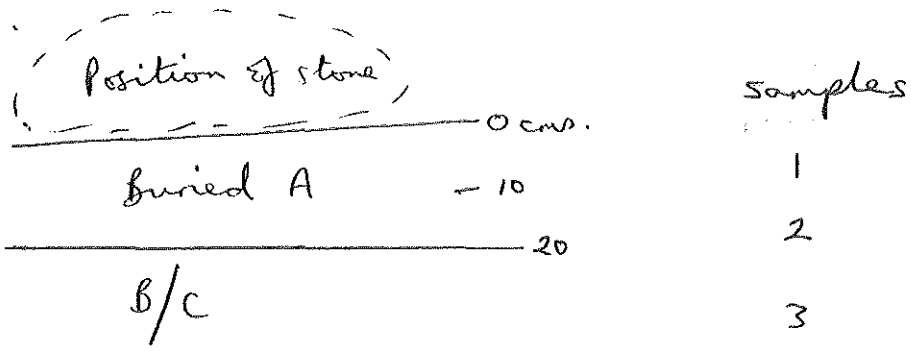
Samples 1 to 6 were collected and particle size determined. The results are given below:-

Sample No.	Depth (cm)	% Sand > 50 μ	% Silt 50-2 μ	% Clay < 2 μ	Texture
S71	0-15	70	24	6	Sandy loam
2	15-30	70	22	8	Sandy loam
3	30-45	70	20	10	Sandy loam
4	45-60	66	26	8	Sandy loam
5	60-80	58	26	16	Sandy loam
6	80 +	62	24	14	Sandy loam

The buried A horizon contained occasional charcoal fragments and had a slightly higher clay content than the overlying colluvium.

S8.

A large stone was removed from the wall and the underlying soil examined and sampled.



0 to 20 cms was dark brown (7½ YR 4/4) coarse sandy (clay) loam, moderately friable and with weak medium subangular blocky structure. Occasional district medium strong brown mottles were noted. Abundant coarse to fine fibrous and woody bracken roots were present and stones were many (15%) gravel to large.

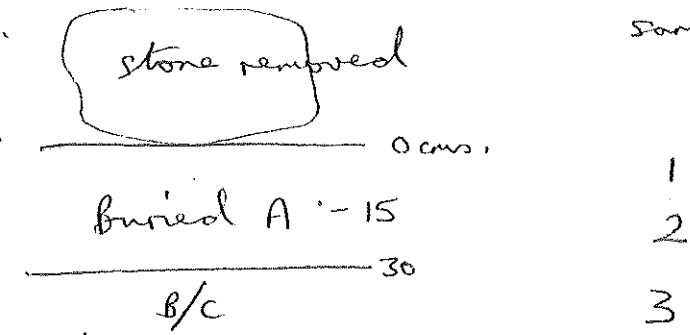
Below 20 cms was dark yellowish brown (10 YR 4/6) moderately friable structureless coarse loamy sand. Roots were absent; stones extremely abundant (70%) gravel to large. There were common medium district strong brown mottles and manganese oxide staining on stones.

Particle size determinations were carried out and results are shown below:-

Sample No.	Depth (cms)	% sand >50μ	% silt 50-2μ	% clay <2μ	Texture
1	0-10	73	24	3	Sandy loam
2	10-20	83	16	1	Loamy sand
3	20	83	16	1	Loamy sand

S9.

A large stone was removed from the wall and the underlying soil examined and sampled.



0 to 30 cms was dark brown (7½ YR 3/4) moderately friable coarse sandy (clay) loam with weak medium subangular blocky structure. Roots were abundant coarse to fine fibrous, plus some woody bracken roots, and stones abundant (40%) gravel to large. Mottles absent. Below 30 cms was dark yellowish brown (10 YR 4/6) moderately friable coarse sandy (clay) loam with moderate medium angular blocky structure. Roots were absent; stones abundant (40%) gravel to large. There were occasional medium distinct strong brown mottles and manganese oxide staining on stones. Particle size was determined and results are shown below:

Sample No.	Depth (Cm)	% sand >50μ	% silt 50-2 μ	% clay <2 μ	Texture
1	0-15	67	26	7	Sandy loam
2	15-30	59	28	13	Sandy loam
3	30	61	26	13	Sandy loam

Conclusions.

Examination of soils buried beneath walls of the Roman settlement and the medieval platform houses, and comparison with present-day soils, indicated that the buried soils are very similar to the dominant Arvon series which occurs in this area. Buried soils showed evidence of podzolisation, as did the "natural" soil profile, and indicated variations in site drainage. There was also evidence of post-burial iron movement in some of the soils underlying walls of buildings, suggesting that the presence of buildings may have affected the drainage regime locally.

Results of preliminary pollen analyses conformed to conclusions drawn from the soil studies, ie that the buried soils had been cultivated, but further conclusions may be drawn when all the archaeobotanical work has been completed.

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Ed.C.A.Lewis.

Appendix I. The podzol section at Glan Dwyfach (SH. 479435), described by R. Hartnup and C. Rudeforth (Soil Survey of England and Wales, Aberystwyth).

Profile No: SH 44/

Date: 21 April 1978

Grid reference: SH 479435

Elevation: 110m

Cefn Graianog - Quarry face

Slope: level top of ridge cut away for gravel extraction

Land use: Gravel quarry

Horizons
depth (cm)

0-19
Ah — Moist soil, ped face and rubbed colours dark brown (10YR 3/3); medium sandy loam; slightly stony with medium and small subrounded rhyolite stones; moist; strongly developed medium granular peds; low packing density; very porous with medium fissures and fine macropores; soil and peds very weak; slightly sticky; slightly plastic; many fine and very fine fibrous roots; no coats or nodules seen; clear smooth boundary.

19-41
Ah2 — Moist soil, ped face and rubbed colours dark brown (10YR 3/3); medium sandy loam; stones as above becoming very stony at 47 cm; moist; moderately developed medium subangular blocky peds breaking to medium granular; medium packing density; moderately porous with medium fissures and fine macropores; soil and peds moderately weak; slightly sticky; slightly plastic; many very fine fibrous roots; no coats or nodules seen; abrupt smooth boundary.

41-60
bAh — Moist soil, ped face and rubbed colours dark greyish brown (10YR 4/2); medium sandy loam; very stony with small subrounded rhyolite stones; moist; weakly developed medium angular blocky peds; medium packing density; voids as above; soil and peds moderately weak; slightly sticky; slightly plastic; roots as above; sharp irregular boundary.

60-61
bBf — Moist soil colour dark red (2.5YR 3/6); rubbed colour yellowish red (5YR 4/6); thin (3-8 mm) continuous ironpan coating harder stones and passing through softer and weathered stones; moist; apedal, massive; high packing density; very slightly porous; with very fin macropores; soil strength moderately strong; few very fine fibrous roots; sharp irregular boundary.

61-80 $_{b}$Bs — Moist soil, ped face and rubbed colours strong brown (7.5YR 4/5); sandy clay loam; very stony with medium and small subrounded rhyolite stones; moist; weakly developed medium angular blocky peds; medium packing density; moderately porous with fine macropores and fissures; soil and peds moderately weak; moderately sticky; slightly plastic; common very fine fibrous roots.

80-94 $_{b}$Eb/Bw — Moist soil, ped face and rubbed colours yellowish brown (10YR 5/8); sandy clay loam; stones as above; moist; moderately developed fine granular peds; medium packing density; moderately porous; roots as above.

94-135 $_{b}$Bs2 — Colours variable in upper part of horizon where paler areas of about 100 cm^2 occur, but mainly moist soil, ped face and rubbed colour of strong brown (7.5YR 4/6); medium sandy loam; stones as above; moist; peds voids and roots as above.

Note: The Ah and Ah2 horizons are developed in overburden which was placed on top of the profile. (Information from the farmer backed up by observation of the profile.)

Appendix II. The Hill Wash Section at the Platform Houses site (Cefn Graianog), 57, described by R. Hartnup and C. Rudeforth (Soil Survey of England and Wales, Harpenden).

Profile No: SH44/ Arfon Variant. Subgroup: Colluvial brown earth.
Grid reference: SH 454490
Location: Cefn Graianog
Elevation: 140 m
Land Use: Permanent pasture

Horizons (cm)	
0–26 Ah	(Moist) Dark yellowish brown (10YR 3/4) clay loam containing some coarse sand; slightly stony to moderately stony at base; with mainly (sub) rounded greenish grey medium and fine grained acid and intermediate medium sized igneous, reddish and brown stained quartz, occasional dark red small pebbles, small dark grey slate fragments; a few of the igneous stones are weathering strongly with outer ferric oxide staining, some large stones at base; moderate medium and fine subangular and angular blocky peds breaking to granular (crumb); soil and peds moderately weak; very porous, medium packing density; abundant fine macropores, fine and very fine fissures; many very fine fibrous (occasional fleshy) roots; earthworms; enchytraeids and springtails noted; gradual boundary.
26–65 Ah2	(Moist) Dark yellowish brown (10YR 3/4) coarse sandy silt loam; moderately stony as above, including some large stones; moderate coarse and medium subangular and angular blocky peds breaking to medium and fine crumb; weak stress cutans around stones; many very fine fibrous (and some fleshy) roots slightly concentrated in worm channels and around stones; other properties as above; clear boundary.
65–95 AB	(Moist) Dark brown (7.5YR 3/4) coarse sandy silt loam; weak ped strength, other properties as above; gradual boundary.
95–123 bAh	(Moist) Dark brown (7.5YR 3/4) (but seems slightly darker than above) gritty clay loam; moderately weak soil and peds; moderately coalescent; few roots; no fauna noted; other properties as above; gradual boundary.
123–145 bBw	(Moist) Strong brown (7.5YR 4/6) gritty sandy clay loam; weak medium subangular blocky peds breaking to moderate medium and fine crumb; moderately coalescent; very few very fine fleshy roots; other properties as above.