

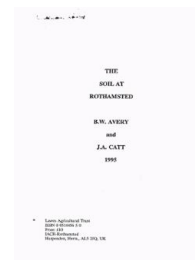
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## The Soil at Rothamsted

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### Appendix A: Descriptions of Sampled Profiles

#### Rothamsted Research

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## Appendix A: Descriptions of Sampled Profiles

### Profile 1 (B.W. Avery, 1945)

Location: Park Grass (TL 122130)  
Land use: old grass  
Soil series: Batcombe (intergrading to Hook)  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth.  
U.S.D.A. (1992): Aquic Paleudalf  
F.A.O. (1990): Chromic Luvisol (or Alisol)

Horizons (cm):  
0 - 20 Ah Thin turf mat over dark greyish brown, very slightly flinty silty clay loam. (U.S. silt loam)  
20 - 45 Eb Brown to yellowish brown, very slightly flinty silty clay loam (U.S. silt loam)  
45 - 69 2Bt(g)1 Strong brown, slightly or very slightly flinty silty clay loam (U.S. silty clay loam) with common paler mottles  
69 - 90 2Bt(g)2 Strong brown, slightly flinty silty clay (U.S. silty clay loam) with common reddish, greyish and paler brown mottles.

### Profile 2 (B.W. Avery, 1945)

Location: High Field (TL129131)  
Land use: old grass  
Soil series: Batcombe  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth  
U.S.D.A. (1992): Aquic Paleudalf or Paleudult  
F.A.O. (1990): Chromic Luvisol (or Alisol)

Horizons (cm):  
0 - 18 Ah Dark greyish brown flinty silty clay loam (U.S. silt loam)  
18 - 30 Eb Brown flinty silty clay loam (U.S. silty clay loam)  
30 - 60+ 2Bt(g) Strong brown slightly flinty clay (U.S. clay) with paler and redder mottles becoming more prominent with depth

### Profile 3 (B.W. Avery, 1945)

Location: Sawyers III (TL122142)  
Land use: arable  
Soil series: Hornbeam  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth  
U.S.D.A. (1992): Typic Paleudalf  
F.A.O. (1990): Chromic Luvisol

Horizons (cm):  
0 - 20 Ap Dark greyish brown, very slightly flinty clay loam (U.S. loam)  
20 - 38 Eb Brown, slightly flinty clay loam (U.S. loam)  
38 - 90 2Bt(g) Strong brown to yellowish red, slightly flinty clay (U.S. clay) with paler and redder mottles

**Profile 4 (B.W. Avery, 1945)**

Location: Harwood's Piece (TL134132)  
Land use: arable  
Soil series: Notley  
Classification: England and Wales (1980): colluvial brown earth  
U.S.D.A. (1992): Typic Hapludalf or Paleudalf?  
F.A.O. (1990): Chromic Luvisol?

Horizons (cm):  
0 - 20 Ap Dark greyish brown, flinty, slightly calcareous clay loam to silty clay loam (U.S. clay loam)  
20 - 51+ Bw Brown, flinty silty clay loam (U.S. silt loam); few chalk fragments (augering proved brighter brown silty clay or clay at 80 cm)

**Profile 5 (B.W. Avery, 1951)**

Location: Knott Wood (TL117133)  
Land use: woodland (hazel with ash and brambles)  
Soil series: Winchester  
Classification: England and Wales (1980): typical paleo-argillic brown earth  
U.S.D.A. (1992): Typic (or Vertic) Hapludalf  
F.A.O. (1990): Chromic (or Vertic) Luvisol

Horizons (cm):  
0 - 10 Ah Very dark greyish brown (10YR3/2) flinty silty clay loam (U.S. silty clay loam)  
10 - 23 Eb Brown flinty clay (U.S. clay)  
23 - 38 2Bt Strong brown (7.5 YR5/6-8) flinty clay (U.S. clay) with paler brown ped faces  
38 - 66 2Bt Yellowish red (5 YR5/8) flinty clay (U.S. clay) with brown ped faces  
66 - 76 3Bt Yellowish red (5YR5/6) clay (U.S. clay) with large unbroken flints and black manganiferous segregations  
76+ 4Cu Fragmentary Chalk with clayey inclusions

**Profile 6 (B.W. Avery, 1951)**

Location: Knott Wood (TL116133)  
Land use: woodland; clearing in hazel coppice with field layer of grass and herbs  
Soil series: Wallop  
Classification: England and Wales (1980): brown rendzina  
U.S.D.A. (1992): Typic Udorthent  
F.A.O. (1990): Eutric Leptosol

Horizons (cm):  
0 - 10 Ah Very dark greyish brown (7.5-10YR3/2) calcareous silty clay (U.S. silty clay); few chalk fragments  
10 - 23 Bw Brown to strong brown (7.5YR4/4-5/6) flinty, slightly calcareous clay (U.S. silty clay to clay); few chalk fragments



23 - 46 BC	Reddish yellow, flinty, very calcareous clay containing many soft chalk fragments
46 - 60+ Cu	Columns of hard white blocky chalk alternating with more friable chalk brush and brown clay

**Profile 7 (B.W. Avery, 1951)**

Location:	Knott Wood (TL116133)
Land use:	woodland; hazel coppice with field layer of grass and herbs.
Soil series:	unnamed, fine silty over clayey, over chalky drift
Classification:	England and Wales (1980): Typical argillic brown earth U.S.D.A. (1992): Typic Hapludalf F.A.O. (1990): Haplic Alisol
Horizons (cm):	
0 - 13 Ah	2 cm turfy (not sampled) over dark brown (7.5YR4/3) flinty silty clay loam (U.S. silt loam)
13 - 30 Eb	Brown (7.5YR4/4) flinty silty clay loam (U.S. silty clay loam)
30 - 56 Bt1	Brown, flinty silty clay loam (U.S. silty clay loam)
56 - 86 Bt2	Reddish brown, flinty silty clay (U.S. silty clay loam) resting with an irregular boundary on chalky material with clayey inclusions

**Profile 8 (B.W. Avery, 1951)**

Location:	Knott Wood (TL115135)
Land use:	woodland; hazel coppice with field layer of dogs mercury and bluebells
Soil series:	Panholes
Classification:	England and Wales (1980): typical brown calcareous earth U.S.D.A. (1992): Rendollic Eutrochrept F.A.O. (1990): Calcaric Cambisol
Horizons (cm):	
1 - 0	Litter layer (not sampled)
0 - 10 Ah	Dark brown (7.5YR3/2), very slightly flinty, calcareous, humose silty clay loam (U.S. silt loam)
10 - 36 Bw	Brown (7.5YR4/4), slightly flinty, calcareous silty clay loam (U.S. silty clay loam)
36 - 61 BC	Brown flinty, very calcareous, silty clay loam to silty clay (U.S. silty clay loam) containing abundant chalk fragments
61 + Cu	Hard blocky Chalk with inclusions of brown loamy material and fresh white-coated flints

**Profile 9 (B.W. Avery, 1951)**

Location:	Knott Wood (TL115134)
Land use:	woodland (cut-over); hawthorn scrub with elder and brambles; field layer of grass and herbs
Soil series:	Wold
Classification:	England and Wales (1980): typical argillic brown earth

	U.S.D.A. (1992): Typic Hapludalf F.A.O. (1990): Haplic Luvisol
Horizons (cm):	
0 - 10 Ah	2 cm turfy over very dark greyish brown (7.5-10YR3/1) flinty silty clay loam (U.S. silt loam)
10 - 25 Eb	Brown (7.5YR4/3) flinty silty clay loam (U.S. silty clay loam)
25 - 51 Bt	Brown to strong brown (7.5YR4/4-5/6) flinty silty clay (U.S. silty clay)
51 - 55/76 BC	Brown to pale reddish yellow, flinty, very calcareous silty clay loam to silty clay containing abundant chalk fragments
55/76 + Cu	Hard white blocky Chalk with loamy inclusions

**Profile 10 (D.W. King, 1953)**

Location:	Broadbalk Wilderness (TL121136)
Land use:	woodland; self-sown sycamore, hazel and hawthorn; field layer predominately ivy.
Soil series:	Batcombe
Classification:	England and Wales (1980): stagnogleyic paleo-argillic brown earth U.S.D.A. (1992): Aquic (or Typic) Paleudalf F.A.O. (1990): Chromic Luvisol.
Horizons (cm):	
0 - 15 Ah	Very dark greyish brown (10YR3/2), flinty, slightly calcareous clay loam (U.S. loam)
15 - 30 Eb/Bw	Brown (10YR4/3), flinty, calcareous silty clay loam (U.S. clay loam to silty clay loam); few small chalk fragments
30 - 41 Eb	Brown (7.5YR4/4), flinty, very slightly calcareous silty clay loam (U.S. silt loam)
41 - 91 2Bt(g)	Reddish brown to yellowish red (5YR4/4-5/6) flinty clay (U.S. clay) with greyish and reddish mottles becoming more prominent with depth

**Profile 11 (D.W. King, 1953)**

Location:	Broadbalk Wilderness (TL121136)
Land use:	grassland regularly mown, with hogweed and nettles.
Soil series:	Batcombe
Classification:	England and Wales (1980): stagnogleyic paleo-argillic brown earth U.S.D.A. (1992): Aquic Paleudalf F.A.O. (1990): Chromic Luvisol
Horizons:	
0 - 15 Ah	Dark greyish brown (10YR4/2), slightly flinty, slightly calcareous silty clay loam (U.S. silt loam to silty clay loam); few chalk fragments
15 - 25 Eb	Brown (9YR4/4) slightly flinty, slightly calcareous silty clay loam (U.S. silt loam to silty clay loam); chalk fragments more common
25 - 51 2Bt(g)	Brown to strong brown (7.5YR4/4-5/6), very slightly flinty, very



slightly calcareous silty clay (U.S. silty clay) with redder mottles and paler ped faces  
51 - 76 + 2Bt(g)2 Strong brown (7.5YR5/6), very slightly flinty clay (U.S. clay) with common redder and greyer mottles

**Profile 12** (B.W. Avery & A.J. Thomasson, 1956)

Location: Meadow Field, Scout Farm (TL109130)  
Land use: old grass  
Soil series: Charity (intergrading to Hamble)  
Classification: England and Wales (1980): typical argillic brown earth (possibly disturbed)  
U.S.D.A. (1992): Typic Hapludalf  
F.A.O. (1990): Haplic (or Chromic) Luvisol.

Horizons (cm):  
0 - 13 Ah Thin turfy mat over dark greyish brown (10YR4/2) slightly flinty silt loam (U.S. silt loam)  
13 - 76 Eb/Bw Brown (7.5YR4-5/4) very slightly flinty silt loam  
76 - 117 Bt1 Brown very slightly flinty silty clay loam (U.S. silt loam) with faint paler and redder mottles and clay skins on ped surfaces  
117 - 160 Bt2 Strong brown (7.5YR5/6) very slightly flinty silty clay loam (U.S. silty clay loam) with faint paler and redder mottles and clay skins on ped surfaces  
160 + Becoming gravelly

**Profile 13** (B.W. Avery and D. Mackney, 1963)

Location: High Field (TL124129)  
Land use: old grass  
Soil series: Batcombe  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth  
U.S.D.A. (1992): Aquic Paleudalf  
F.A.O. (1990): Chromic Luvisol

Horizons (cm):  
0 - 6 Ah Dark greyish brown (10YR4/2) stoneless silty clay loam (U.S. silt loam); added chalk  
6 - 20 Ah/Eb Dark greyish brown and dark yellowish brown (10YR4/4) very slightly flinty silty clay loam (U.S. silt loam)  
20 - 35 Eb Yellowish brown (10YR5/4) slightly to moderately flinty silty clay loam (U.S. silt loam) with paler ped faces  
35 - 65 2Bt(g)1 Brown (10YR5/4) to strong brown (7.5YR5/6-8) slightly flinty silty clay (U.S. silty clay) with paler and redder mottles  
65 - 125 2Bt(g)2 Strong brown (7.5YR5/6) to yellowish red (5YR5/6-8) very slightly flinty clay (U.S. clay) with pale brown and greyish mottles becoming more prominent with depth

**Profile 14 (R.G. Sturdy, 1966)**

Location: Meadow Field, Scout Farm (TL107128)  
Land use: old grass  
Soil series: Rowton? (needs deeper sampling for positive identification)  
Classification: England and Wales (1980): typical argillic brown earth or typical brown earth?  
U.S.D.A. (1992): Typic Hapludalf or Glossudalf?  
F.A.O. (1990): Haplic (or Chromic) Luvisol?

Horizons (cm):  
0 - 11 Ah Dark greyish brown (10YR4/2), very slightly flinty silty clay loam (U.S. silt loam)  
11 - 43 Bw/Eb Brown (7.5YR4/4) slightly flinty silt loam to silty clay loam (U.S. silt loam)  
43 - 56 Bw/Eb Brown (7.5-10YR4/4) moderately flinty silt loam (U.S. silt loam)  
56 - 81 2Bw/Eb Brown (7.5YR5/4), very gravelly sandy silt loam (U.S. silt loam); stones mainly rounded flint pebbles with some larger angular flints

**Profile 15 (B.W. Avery, 1966)**

Location: Scout Field, Scout Farm (TL108134)  
Land use: old grass  
Soil series: Hamble intergrading to Charity  
Classification: England and Wales (1980): typical argillic brown earth  
U.S.D.A. (1992): Typic Hapludalf  
F.A.O. (1990): Haplic Luvisol

Horizons (cm):  
0 - 18 Ah Dark greyish brown (10YR4/2-3) very slightly flinty silty clay loam (U.S. silt loam)  
18 - 38 Eb Brown (10-7.5YR4/3) silty clay loam (U.S. silt loam) with occasional flints < 5 cm  
38 - 61 Bt1 Brown (7.5YR4-5/4) silty clay loam (U.S. silt loam to silty clay loam) with occasional small flints as above  
61 - 89 Bt2(g) Brown (7.5YR5/4-6) silty clay loam to silty clay (U.S. silty clay loam) with faint mottling in shades of brown; occasional flints as above

**Profile 16 (B.W. Avery and R.G. Sturdy, 1966)**

Location: Osier Field, Scout Farm (TL109132)  
Land use: old grass  
Soil series: Maplestead  
Classification: England and Wales (1980): typical argillic brown earth  
U.S.D.A. (1992): Typic Paleudalf (or Glossudalf)  
F.A.O. (1990): Chromic Luvisol (or Eutric Podzoluvisol).

Horizons:  
0 - 10 Ah Very dark greyish brown (10YR3/2) slightly flinty sandy silt loam to clay loam (U.S. silt loam)



10 - 25 Ah/Eb	Dark greyish brown to brown (10YR4/2-3) moderately flinty (c.20%) sandy silt loam (U.S. silt loam); added chalk
25 - 48 2Eb	Brown (7.5YR4-5/4) very gravelly (mainly small angular flints) sandy silt loam (U.S. loam); wavy lower boundary
48 - 58/66 2 Eb and Bt	Strong brown to yellowish brown (7.5-10YR5/4-6) very flinty (as above) sandy silt loam (U.S. silt loam) with light yellowish brown (10YR6/4) patches; irregular lower boundary with more clayey inclusions
58/66 - 91 3Bt	Reddish yellow to strong brown (7.5YR6/8-5/6), moderately to slightly flinty silty clay loam to silty clay (U.S. silty clay loam) with redder (5YR5/6) patches and thick clay skins

**Profile 17 (B.W. Avery and R.G. Sturdy, 1966)**

Location:	Flint Field, Scout Farm (TL112132)
Land use:	old grass with rushes, buttercups and tufted hair grass
Soil series:	unnamed; fine silty over non-calcareous gravel
Classification:	England and Wales (1980): argillic humic gley soil U.S.D.A. (1992): Typic Argiaquoll F.A.O. (1990): Luvic (or Gleyic) Phaeozem
Horizons (cm):	
0 - 9 Ah1	Very dark brown (10YR2/2) very slightly flinty (mainly < 1 cm) humose silty clay loam (U.S. silt loam)
9 - 25 Ah2	Very dark grey (10YR3/1) slightly to moderately flinty (gravelly) humose silty clay loam (U.S. silt loam) with fine reddish brown (rusty) mottles, ochreous stains on flints, and paler grey lenses at base
25 - 41 bAh1	Very dark greyish brown (10YR3/2) slightly to moderately flinty (gravelly) silty clay loam (U.S. silt loam) with common fine rusty mottles
41 - 46 2bAh2	Loose flint gravel with dark grey loamy matrix and common ochreous stains on flints
46 - 71 2Eg	Loose flint gravel with yellowish red mottles and ochreous deposits on flints, concentrated at 61-66 cm
71 - 90 3Btg	Light grey to light greyish brown (10YR-2.5Y6/1) flinty sandy clay loam, sticky and plastic

**Profile 18 (R.G. Sturdy, 1966)**

Location:	Webb's Field, Scout Farm (TL113128)
Land use:	arable
Soil series:	Coombe
Classification:	England and Wales (1980): typical brown calcareous earth U.S.D.A. (1992): Rendollic Eutrochrept F.A.O. (1990): Eutric Cambisol
Horizons (cm):	
0 - 25 Ap	Dark greyish brown (10YR4/2) slightly flinty, slightly calcareous silty clay loam (U.S. silty clay loam)



- 25 - 53/58 B Brown to dark brown (7.5YR4/4) slightly flinty, very slightly calcareous silty clay loam (U.S. silty clay loam) becoming slightly more clayey towards base; wavy lower boundary
- 53/58 - 86 Cu Light yellowish brown (10YR6/4) and very pale brown (10YR8/3), compact, extremely calcareous silty clay loam (U.S. silty clay loam) containing common sub-rounded chalk fragments and brown to strong brown loamy inclusions

**Profile 19** (B.W. Avery, 1968; Profile 1 in Avery & Bullock, 1969)

- Location: Broadbalk: intersection of Sections IB/2, plots 17/18 (TL122135)  
Land use: arable  
Soil series: Batcombe  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth  
U.S.D.A. (1992): Aquic Paleudalf  
F.A.O. (1990): Chromic (or Vertic) Luvisol
- Horizons (cm):  
0 - 20 Ap Dark brown (10YR4/3-2) slightly flinty, slightly calcareous silty clay loam (U.S. silty clay loam); added chalk  
20 - 51 2Bt(g)1 Yellowish red (5YR5/6-8) and strong brown moderately flinty clay (U.S. clay) with common red and lighter brown to greyish brown mottles  
51 - 94 2Bt(g)2 Yellowish red, strong brown and red slightly flinty clay (U.S. clay) with common brown to light brownish grey (10YR6/2) mottles, mainly as vertical streaks

**Profile 20** (B.W. Avery, 1968; Profile 2 in Avery & Bullock, 1969)

- Location: Broadbalk: intersection of Sections 3/4, plots 3/5 (TL123136)  
Land use: arable  
Soil series: Batcombe  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth  
U.S.D.A. (1992): Aquic Paleudalf  
F.A.O. (1990): Chromic Luvisol
- Horizons (cm):  
0 - 20 Ap Dark brown (10YR4/3) slightly flinty, slightly calcareous silty clay loam (U.S. silt loam); added chalk  
20 - 51 2Bt(g)1 Yellowish red to strong brown (5 - 7.5YR5/6-8) very slightly flinty clay (U.S. clay) with few to common red mottles and paler brown ped faces  
51 - 96 2Bt(g)2 Yellowish red and strong brown slightly flinty clay (U.S. clay) with red and brown (10YR5/3) to light grey (10YR6/1) mottles  
96 - 142 2BC(g) Similar mottled clay containing common large, little broken nodular flints and fewer mottles

**Profile 21** (B.W. Avery, 1968; Profile 3 in Avery & Bullock, 1969)

- Location: Broadbalk: intersection of Sections 3/4 and plots 8/9 (TL123136)

Land Use: arable  
Soil Series: Batcombe  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth.  
U.S.D.A. (1992): Aquic Paleudalf (or Hapludalf)  
F.A.O. (1990): Chromic Luvisol

Horizons (cm):  
0 - 18 Ap Dark greyish brown to brown (10YR4/2-3) slightly flinty, very slightly calcareous silty clay loam (U.S. silt loam)  
18 - 48 Bt Brown (7.5YR4/4) slightly flinty silty clay (U.S. silty clay)  
48 - 71 2Bt(g)1 Strong brown to reddish yellow (7.5YR5/6-8) very slightly flinty clay (U.S. clay) with more sand than above, many red and few to common light grey (10Y7/1) mottles  
71 - 102 2Bt(g)2 Strong brown to yellowish red (7.5-5YR5/8) very slightly flinty clay (U.S. clay) with appreciable sand and common red and light grey mottles  
102 - 152 2BCt(g) Yellowish red to strong brown stoneless clay loam to clay (U.S. clay loam) with fewer red and grey mottles, platy structure

**Profile 22** (B.W. Avery, 1968; Profile 4 in Avery & Bullock, 1969)

Location: Broadbalk: intersection of Sections 2/3 & plots 7/8 (TL122136)  
Land use: arable  
Soil series: Batcombe, intergrading to Hook  
Classification: England and Wales (1980): stagnogleyic paleo-argillic brown earth  
U.S.D.A. (1992): Aquic Paleudalf (or Hapludalf)  
F.A.O. (1990): Chromic Luvisol

Horizons (cm):  
0 - 23 Ap Dark greyish brown to brown (10YR4/2-3) slightly flinty, very slightly calcareous silty clay loam (U.S. silt loam)  
23 - 41 Eb/Bt(g) Brown (7.5-10YR) very slightly flinty, very slightly calcareous silty clay loam (U.S. silt loam) with faint greyer and brighter brown mottles  
41 - 66 Bt(g)1 Brown to strong brown (7.5YR4/4-5/6) very slightly flinty silty clay (U.S. silty clay loam) with paler brown to light brownish grey (10YR6/2) mottles  
66 - 94 Bt(g)2 Strong brown (7.5YR5/6) very slightly flinty silty clay (U.S. silty clay) with mottles as above more common  
94 - 117 2Bt(g)3 Yellowish red (5YR5/8) and strong brown moderately flinty silty clay with common light brownish grey to light grey (10YR6/1) mottles

**Profile 23** (B.W. Avery, 1968; Profile 5 in Avery & Bullock, 1969)

Location: Broadbalk: south corner, headland beside plot 19 (TL124135)  
Land use: arable  
Soil series: Notley  
Classification: England and Wales (1980): colluvial brown earth intergrading to gleyic argillic brown earth.



	U.S.D.A. (1992): Aquic Paleudalf F.A.O. (1990): Chromic Luvisol
Horizons (cm):	
0 - 25 Ap	Dark greyish brown (10YR3/2) slightly flinty silty clay loam (U.S. silt loam)
25 - 41 Bw/Eb1	Brown (7.5YR4/4) slightly flinty silty clay loam (U.S. silt loam)
41 - 53 2Bw/Eb(g)	Brown (7.5YR4-5/4) moderately flinty silty clay loam (U.S. silt loam) with common, faint, paler brown (6/3) mottles
53 - 71 3Bt(g)1	Brown (7.5YR5/4) very slightly flinty (< 2%) silty clay loam (U.S. silty clay loam) with many paler brown to light grey (10YR6-7/1) mottles and black manganiferous segregations
71 - 91 3Bt(g)2	Strong brown (7.5YR5/6-8), brown, and light brownish grey (10YR6/2) prominently mottled, very slightly flinty silty clay (U.S. silty clay loam) with manganiferous segregations as above

**Profile 24** (B.W. Avery, 1971; Profile 5 in Avery *et al.*, 1972)

Location:	Barnfield: section 6, between plots 4 and 5 (TL132132)
Land use:	arable
Soil series:	Batcombe
Classification:	England and Wales (1980): stagnogleyic paleo-argillic brown earth U.S.D.A. (1992): Aquic Paleudalf F.A.O. (1990): Chromic (or Vertic) Luvisol

Horizons (cm):	
0 - 18 Ap	Dark brown (10YR4/3) very slightly flinty, very slightly calcareous silty clay loam (U.S. silty clay loam)
18 - 35 2Bt(g)1	Strong brown (7.5YR5/6) to yellowish red, stoneless clay (U.S. clay) with fine redder mottles and paler brown ped faces
35 - 55 2Bt(g)2	Strong brown very slightly flinty clay (U.S. clay) with red and paler brown mottles and paler brown ped faces
55 - 90 2Bt(g)3	Strong brown to reddish yellow (7.5YR5/8) very slightly flinty clay (U.S. clay) with many red and common light brownish grey (10YR6/2) to grey (6/1) mottles, particularly around stones and on structural faces

**Profile 25** (B.W. Avery, 1971; Profile 7 in Avery *et al.*, 1972)

Location:	Barnfield: section 3, between plots 4 and 5 (TL132134)
Land use:	arable
Soil series:	Carstens (intergrading to Notley)
Classification:	England and Wales (1980): typical paleo-argillic brown earth U.S.D.A. (1992): Typic Paleudalf F.A.O. (1990): Chromic Luvisol

Horizons (cm):	
0 - 15 Ap1	Dark brown (10YR4/3) slightly flinty, slightly calcareous silty clay loam (U.S. silt loam)
15 - 30 Ap2	Dark brown (10YR4/3) slightly flinty (more than above), very slightly calcareous silty clay loam (U.S. silt loam)
30 - 41 Bt	Brown (10-7.5YR4/3-4) moderately flinty silty clay loam (U.S. silty



41 - 70 2Bt1	clay loam) Brown to yellowish red (7.5-5YR4/4-5/6) slightly flinty clay (U.S. clay)
70 - 90 2Bt2	Yellowish red (5YR5/6-8) slightly flinty clay (U.S. clay) with few paler brown mottles

**Profile 26** (B.W. Avery, 1971; Profile 8 in Avery *et al.*, 1972)

Location:	Barnfield, section 1, between plots 4 & 5 (TL132135)
Land Use:	arable
Soil series:	Batcombe (intergrading to Givendale)
Classification:	England and Wales (1980): stagnogleyic paleo-argillic brown earth U.S.D.A. (1992): Aquic (or Vertic) Paleudalf F.A.O. (1990): Chromic (or Vertic) Luvisol
Horizons (cm):	
0 - 19/21 Ap	Dark brown (10YR4/3) slightly flinty, very slightly calcareous, silty clay loam to silty clay (U.S. silty clay loam)
19/21 - 35 2Bt1	Strong brown to yellowish red (7.5-5YR4-5/6) very slightly flinty clay (U.S. clay) with faint brownish mottles
35 - 55 2Bt2(g)	Strong brown to yellowish red, very slightly flinty clay (U.S. clay) with paler brown (7.5YR5/4) structural faces
55 - 90 2Bt3(g)	Brown and yellowish red, slightly flinty clay (U.S. clay) with common to many red (2.5YR4/6) and few to common light brownish grey to light grey mottles

**Profile 27** (B.W. Avery, 1971; Profile 11 in Avery *et al.*, 1972)

Location:	Barnfield; section 3, between plots 7 & 8 (TL133134)
Land use:	arable
Soil series:	Notley
Classification:	England and Wales (1980): colluvial brown earth U.S.D.A. (1992): Typic Hapludalf (or Paleudalf)? F.A.O. (1990): Chromic Luvisol?
Horizons (cm):	
0 - 18 Ap1	Dark greyish brown (10YR4/2-3) slightly to moderately flinty, slightly calcareous silty clay loam (U.S. silt loam)
18 - 28 Ap2	Dark brown (10YR4/3) slightly to moderately flinty, slightly calcareous silty clay loam (U.S. silt loam), more compact than above
28 - 50 Bw	Brown (7.5-10YR4/4) slightly flinty silty clay loam (U.S. silt loam)
50 - 70 2Eb/Bt	Paler yellowish brown (10YR5/4) very flinty sandy silt loam (U.S. loam to silt loam) becoming redder and finer in texture in places near lower boundary; stones mainly less than 5 cm (loamy gravel)
70 - 90 3Bt(g)	Strong brown to reddish yellow (7.5YR5-6/6) stoneless silty clay loam to silty clay (U.S. silty clay loam) with pale brown to light yellowish brown (10YR6/3-4) mottles

**Profile 28** (B.W. Avery, 1971)

Location: Stubbings Field, Scout Farm (TL114131)  
Land use: arable  
Soil series: Charity (intergrading to Notley)  
Classification: England and Wales (1980): typical argillic brown earth  
U.S.D.A. (1992): Typic Hapludalf  
F.A.O. (1990): Haplic Luvisol

Horizons (cm):  
0 - 25 Ap Dark greyish brown (10YR4/2) slightly flinty silty clay loam (U.S. silt loam)  
25 - 52 Eb Brown (7.5-10YR4/4) slightly flinty silty clay loam (U.S. silt loam)  
52 - 90 Bt Brown (7.5YR4/4) moderately flinty silty clay loam (U.S. silt loam to silty clay loam)

**Profile 29** (B.W. Avery, 1971)

Location: Stubbings Field, Scout Farm (TL114133)  
Land use: arable  
Soil series: unnamed; fine silty over clayey, on chalky drift  
Classification: England and Wales (1980): typical argillic brown earth  
U.S.D.A. (1992): Typic Hapludalf  
F.A.O. (1990): Haplic Luvisol

Horizons (cm):  
0 - 25 Ap Dark brown (10YR3/3, 4/3 rubbed); slightly flinty, slightly calcareous silty clay loam (U.S. silty clay loam)  
25 - 42/55 Bt Brown (7.5YR4/4) slightly flinty silty clay (U.S. silty clay loam); few rotting chalk fragments; fine earth mainly non-calcareous  
42/55 - 90 Cu Brown and pale brown, very slightly flinty, very calcareous silty clay loam (U.S. silty clay loam) containing many soft, weathered chalk fragments

**Profile 30** (B.W. Avery, 1971)

Location: Great Knott (TL117136)  
Land use: arable  
Soil series: Winchester  
Classification: England and Wales (1980): typical paleo-argillic brown earth  
U.S.D.A. (1992): Typic (or Vertic) Hapludalf  
F.A.O. (1990): Chromic (or Vertic) Luvisol

Horizons (cm):  
0 - 20 Ap Dark brown (10YR4/3) slightly to moderately flinty, slightly calcareous clay loam to clay (U.S. silty clay loam); added chalk  
20 - 43 2Bt1 Yellowish red (5 YR4-5/8) flinty clay (U.S. clay) with some brown (7.5-5YR4/4) faces around flints  
43 - 67 2Bt2 Yellowish red (5YR4-5/8) flinty clay (U.S. clay) with common slickensided structural faces; flints include large little-broken nodules



67 - 90 Cu Chalk fragments in a matrix of finely divided chalk with few flints and inclusions of yellowish red clay near upper boundary

**Profile 31 (B.W. Avery, 1971)**

Location: Whittlocks (TL118143)  
Land use: arable  
Soil series: Hamble  
Classification: England and Wales (1980): typical argillic brown earth  
U.S.D.A. (1992): Typic Hapludalf  
F.A.O. (1990): Haplic Luvisol

Horizons (cm):  
0 - 18 Ap Dark greyish brown to brown (10YR4/2-3) very slightly flinty silty clay loam (U.S. silt loam)  
18 - 38 Bt1 Brown (7.5YR4/4) very slightly flinty silty clay loam (U.S. silt loam)  
38 - 68 Bt2 Brown (7.5YR4/4) stoneless silty clay loam (U.S. silty clay loam) with few faint paler brown mottles  
68 - 90 Bc(g) Brown stoneless silty clay loam (U.S. silt loam) with paler brown and dark greyish brown mottles

**Profile 32 (B.W. Avery, 1973)**

Location: Little Knott (TL121135)  
Land use: arable  
Soil series: Hook  
Classification: England and Wales (1980): gleyic argillic brown earth  
U.S.D.A. (1992): Typic Paleudalf  
F.A.O. (1990): Chromic Luvisol

Horizons (cm):  
0 - 20 Ap Dark greyish brown to dark brown (10YR4/2-3) very slightly flinty, slightly calcareous silty clay loam (U.S. silt loam)  
20 - 40 Eb Brown (7.5-10YR4/4) very slightly flinty silty clay loam (U.S. silt loam)  
40 - 65 Bt(g)1 Brown (7.5YR4-5/4) stoneless silty clay loam (U.S. silty clay loam) with common fine strong brown (7.5YR5/6) mottles  
65 - 91 Bt(g)2 Strong brown (7.5YR5/6) and brown (7.5YR4-5/4), mottled, stoneless silty clay loam to silty clay (U.S. silty clay loam) with some paler brown (5/2-3) structural faces  
91 - 136 Bct(g)1 As above, with few light grey (10YR6/2) faces  
136 - 182 Bct(g)2 Strong brown stoneless silty clay (U.S. silty clay loam) with many paler brown to light grey mottles

**Profile 33 (B.W. Avery, 1973)**

Location: Little Knott (TL121135)  
Land use: arable  
Soil series: Hook (intergrading to Batcombe)  
Classification: England and Wales (1980): gleyic argillic brown earth



	U.S.D.A. (1992): Typic (or Aquic) Paleudalf F.A.O. (1990): Chromic (or Haplic) Luvisol
Horizons (cm):	
0 - 18 Ap	Dark greyish brown to dark brown (10YR4/2-3) very slightly flinty, slightly calcareous silty clay loam (U.S. silt loam)
18 - 37 Eb	Brown (7.5-10YR4/4) very slightly flinty silty clay loam (U.S. silt loam)
37 - 55/60 Bt(g)1	Brown (7.5YR5/4) very slightly flinty silty clay loam (U.S. silt loam) with few faint paler and stronger brown mottles
55/60 - 90 Bt(g)2	Brown and strong brown (7.5YR5/6-8), stoneless to very slightly flinty silty clay loam to silty clay (U.S. silty clay loam) with few light grey mottles mainly associated with structural faces
90 - 135 BCt(g)	Strong brown (7.5YR5/6) and brown (7.5YR5/4) stoneless silty clay loam (U.S. silty clay loam) with light grey mottles as above
135 - 300 BC(g)	As above, mainly strong brown with few grey to light grey sub-vertical veins and mottles

**Profile 34** (R.G. Sturdy, 1976)

Location:	Blackhorse Field, Scout Farm (TL105130)
Land use:	arable
Soil series:	Batcombe
Classification:	England and Wales (1980): stagnogleyic paleo-argillic brown earth U.S.D.A. (1992): Typic (or Glossic) Paleudalf F.A.O. (1990): Chromic Luvisol

Horizons (cm):	
0 - 27 Ap	Dark greyish brown (10YR4/2), slightly flinty, very slightly calcareous, clay loam to silty clay loam (U.S. silt loam to loam)
27 - 38 Eb	Brown (7.5YR5/4) and dark brown (7.5YR4/3) moderately flinty (including common flint pebbles) silty clay loam (U.S. silt loam)
38 - 70 Bt(g)	Brown (7.5YR4-5/4) moderately flinty (as above) silty clay loam (U.S. silt loam to silty clay loam) with reddish yellow (7.5YR6/6) mottles and pale brown (10YR6/3) inclusions extending locally to greater depths
70 - 110 2Bt(g)	Red (2.5YR3/6) moderately flinty clay (U.S. clay) with many yellowish brown (10-7.5YR5/4) mottles and brown (7.5YR5/4) ped faces
110 - 130 2BC(g)	Red (2.5YR3/6) moderately flinty clay (U.S. clay) with common yellowish brown to pale brown (7.5YR5/2) mottles

**Profile 35** (B.W. Avery, 1976)

Location:	Meadow Field, Scout Farm (TL107127)
Land use:	arable
Soil series:	Carstens (intergrading to Batcombe)
Classification:	England and Wales (1980): typical (grading to stagnogleyic) paleo-argillic brown earth U.S.D.A. (1992): Typic Paleudalf

	F.A.O. (1990): Chromic Luvisol
Horizons (cm):	
0 - 25 Ap	Dark greyish brown (10YR4-3/2) slightly flinty, very slightly calcareous clay loam (U.S. silt loam)
25 - 35/50 Eb	Brown (7.5YR4/4) moderately (varying from slightly to very) flinty silty clay loam (U.S. silt loam) with wavy lower boundary and paler brown (7.5YR5-6/4) inclusions in lower part
35/50 - 65/92 Bt1	Reddish brown to yellowish red (5YR4/4-5/6) moderately flinty silty clay loam (U.S. silty clay loam) with brown (7.5YR4-5/4) inclusions and similar colours on some ped faces; wavy lower boundary
65/92 - 120 Bt2(g)	Yellowish red (5YR5/8) to reddish yellow (7.5YR6/6-8) slightly to moderately flinty clay (U.S. clay to clay loam) with paler brown (7.5YR5/4-3) ped faces and few redder mottles

**Profile 36 (R.G. Sturdy, 1976)**

Location:	Osier Field, Scout Farm (TL110128)
Land use:	old grass
Soil series:	Charity
Classification:	England and Wales (1980): typical argillic brown earth. U.S.D.A. (1992): Typic Paleudalf F.A.O. (1990): Chromic (or Haplic) Luvisol
Horizons (cm):	
0 - 10 Ah	Dark greyish brown (10YR4/2) very slightly flinty silty clay loam (U.S. silt loam)
10 - 25 AE	Dark greyish brown to dark brown (10YR4/2-3) very slightly flinty silty clay loam (U.S. silt loam)
25 - 40 Eb	Brown (7.5YR4/4) very slightly flinty silty clay loam (U.S. silt loam)
40 - 70/84 Bt1	Brown (7.5YR5/4) slightly flinty silty clay loam (U.S. silty clay loam), with darker brown (7.5YR4/2-3) inclusions and ped faces; wavy lower boundary
70/84 - 105 Bt2	Strong brown (7.5YR5/6) slightly flinty silty clay loam (U.S. silty clay loam) with reddish brown (5YR4/4) clay coats on ped faces
105 - 170 BC(t)	Brown to strong brown (7.5YR5/5) very slightly flinty silty clay (U.S. silty clay loam) with few paler brown (7.5YR5/2) veins and ped faces

**Profile 37 (R.G. Sturdy, 1976)**

Location:	Ver Field, Scout Farm (TL111128)
Land use:	old grass (made ground in 1993)
Soil series:	unnamed; fine silty over non-calcareous gravel
Classification:	England and Wales (1980): argillic humic gley soil U.S.D.A. (1992): Mollic Endoaqualf F.A.O. (1990): Gleyic Luvisol?
Horizons (cm):	
0 - 18 Ahg1	Very dark grey (10YR3/1) very slightly flinty, humose sandy silt



	loam (U.S. loam) with common fine strong brown (7.5YR4/6) mottles along root channels
18 - 36 Ahg2	Dark greyish brown to dark grey (10YR4/2-1) slightly flinty sandy silt loam to silty clay loam (U.S. silt loam) with mottles as above
36 - 50 Eg	Dark greyish brown (10YR4/2) moderately flinty silty clay loam (U.S. silt loam) with few mottles
50 - 58 Btg	Dark grey (10YR4/1) slightly flinty silty clay loam (U.S. silt loam) with many dark yellowish brown (10YR4/4) to strong brown (7.5YR5/6) mottles
58 - 95 2Btg	Dark grey (10YR4/1) very to extremely flinty sandy clay loam (loamy gravel) with many strong brown mottles
95 - 110 2BCgf	Strong brown (7.5YR5/8) very flinty clay loam (U.S. loam) with many pale brown (7.5YR4/2) mottles

**Profile 38 (B.W. Avery, 1976)**

Location:	Ver Field, Scout Farm (TL112128)
Land use:	old grass (made ground in 1993)
Soil series:	Tidmarsh
Classification:	England and Wales (1980): gleyic argillic brown earth U.S.D.A. (1992): Mollic Hapludalf (or Glossudalf) F.A.O. (1990): Chromic Luvisol?
Horizons (cm):	
0 - 15 Ah1	Very dark greyish brown (10YR3/2) very slightly flinty, humose clay loam (U.S. loam)
15 - 32 Ah2	Dark greyish brown (10YR4/2) moderately to very flinty clay loam (U.S. loam)
32 - 50 Bw?	Brown very flinty sandy silt loam or sandy loam (loamy gravel of subangular flints with few flint pebbles)
50 - 85 2Eb	Brown to light yellowish brown (10YR5/4) very to extremely flinty sandy loam with paler mottles (loamy gravel with inclusions of 'clean' gravel)
85 - 130 2Btgf	Prominently mottled, light yellowish brown and strong brown to yellowish red, very flinty sandy clay loam with clayey coats and inclusions

**Profile 39 (B.W. Avery, 1976)**

Location:	Ver Field, Scout Farm (TL112129)
Land use:	old grass (made ground in 1993)
Soil series:	Binstead (phase with superficial silty calcareous alluvium)
Classification:	England and Wales (1980): typical argillic gley soil U.S.D.A. (1992): Aeric Endoaqualf F.A.O. (1990): Gleyic Luvisol?
Horizons (cm):	
0 - 12 Ah1	Very dark grey to greyish brown (10YR3/1-2) stoneless, calcareous, humose silty clay loam (U.S. silt loam to silty clay loam)
12 - 25 Ah2(g)	Dark greyish brown, very slightly flinty, calcareous silty clay loam



- 25 - 48 2Eg (U.S. silt loam) with common strong brown to yellowish red mottles  
Brown to greyish brown very flinty sandy silt loam to sandy loam  
(loamy gravel) with fine strong brown mottles
- 48 - 150 2Eg/Bt<sub>g</sub>f Pale brown, very to extremely flinty sandy loam (loamy gravel) with  
yellowish red to dark reddish brown ferruginous bands; matrix  
becoming sandy clay loam or finer below 90 cm; wet at base

**Profile 40** (L. De Klerk and C. Van Beek, 1977)

- Location: Knott Wood (TL117135)  
Land use: deciduous woodland  
Soil series: Carstens  
Classification: England and Wales (1980): typical paleo-argillic brown earth  
U.S.D.A. (1992): Typic Hapludalf  
F.A.O. (1990): Chromic Luvisol
- Horizons (cm):
- 0 - 15 Ah Dark brown (10YR3/3) slightly flinty silty clay loam (U.S. silt loam)  
15 - 30 Eb Brown to dark brown (7.5YR4/4) moderately flinty silty clay loam  
(U.S. silt loam)  
30 - 50 Bt Strong brown (7.5YR5/6) slightly flinty silty clay loam (U.S. silty  
clay loam)  
50 - 90 2Bt Reddish brown to yellowish red (5YR4/5) very slightly flinty clay  
(U.S. silty clay to clay) with common fine red (2.5YR5/6) mottles  
90 - 100 Cu Pinkish grey (7.5YR7/2) extremely calcareous silty clay (U.S. silty  
clay loam) containing many chalk fragments

**Profile 41** (L. De Klerk and C. Van Beek, 1977)

- Location: Little Knott (TL120134)  
Land use: temporary grass  
Soil series: Hook (intergrading to Batcombe)  
Classification: England and Wales (1980): gleyic argillic brown earth  
U.S.D.A. (1992): Typic Paleudalf  
F.A.O. (1990): Haplic Luvisol
- Horizons (cm):
- 0 - 24 Ap Dark brown (10YR4/3) very slightly flinty, very slightly calcareous  
silty clay loam (U.S. silt loam)  
24 - 40 Bt<sub>1</sub> Dark yellowish brown (10YR4/4) very slightly flinty silty clay loam  
(U.S. silty clay loam)  
40 - 65 Bt<sub>2</sub>(g) Brown (7.5YR5/4) stoneless silty clay loam (U.S. silty clay loam)  
with common strong brown (7.5YR5/7) mottles  
65 - 105 2Bt<sub>3</sub>(g) Brown (7.5YR5/4) stoneless to very slightly flinty silty clay (U.S.  
silty clay loam) with common strong brown mottles  
105 - 110 2BC<sub>g</sub> Strong brown (7.5YR5/7) stoneless to very slightly stony silty clay  
to clay (U.S. silty clay) with common yellowish red (5YR5/6)  
mottles

**Profile 42 (L. De Klerk and C. Van Beek, 1977)**

Location:	Bones Close
Land use:	arable
Soil series:	Batcombe
Classification:	England and Wales (1980): stagnogleyic paleo-argillic grown earth U.S.D.A. (1992): Aquic Paleudalf F.A.O. (1990): Chromic Luvisol
Horizons (cm):	
0 - 20 Ap	Dark brown (10YR4/3) slightly flinty, very slightly calcareous silty clay loam (U.S. silt loam)
20 - 40 Bt1	Strong brown (7.5YR5/6) and dark yellowish brown (10YR4/4), slightly flinty faintly mottled silty clay loam (U.S. silty clay loam)
40 - 120 2Bt(g)	Strong brown (7.5YR5/8) very slightly flinty clay (U.S. clay) with common pinkish grey (7.5YR7/2) mottles