Deans, 1936; Edwards et al., 1940, pp.13, 61). The succeeding named coals are the **27 Yard Coal** (locally split into two or three leaves), the **Gawber Coal** (locally subject to washout) and the **Beck Bottom Stone Coal** (up to 1.3 m thick and locally in two leaves up to 5 m apart). In areas where the Horbury Rock is not strongly developed, the next coal in the succession is the **Dunsil Coal**. This name has been widely applied, but not always to the correct seam.

In the north-west of the Barnsley district, the persistence and correlation of the coals above the Swallow Wood Coal is uncertain. Sandstones are well developed in the sequence as locally to the east and possibly may be responsible for local washouts: those include a thin correlative of the **Horbury Rock**. To the west of Gawber [326 073] however, a thin coal ('Swallow Wood Marker') was mapped between the Swallow Wood Coal and a thinly split Gawber coal and thin coals each occur above the latter and the Dunsil Coal. Only the Swallow Wood Coal was traced south-eastwards to Worsbrough, although the Dunsil Coal was recognised at depth eastwards.

The **Swallow Wood Coal** of the Barnsley district is commonly split by two thin dirt partings. This split is more evident in the Barnburgh area [4771 0320]. A more marked split occurs in the Sheffield district, south of Silverwood, where a thin sandstone intervenes. Near Frickley [4680 0962], the coal closely overlies the Top Haigh Moor Coal, effectively merging with it, although dirt partings are present within the combined sequence. Elsewhere near the northern margin of the Barnsley district, the seam is generally impoverished.

The sequence between the Swallow Wood Coal and the Aegiranum Marine Band is illustrated in Figure 15. Of the generally thin coals that occur between the Swallow Wood and Barnsley coals, the highest and thickest is the thicker **Dunsil Coal**. This coal commonly splits into a number of leaves and locally the local term **'Harley Coal'** appears to have been applied (by opencast operators) to the main (workable) components of the Dunsil Coal. The term 'Dunsil' has also been restricted to only a topmost thick leaf at some opencast sites; elsewhere the name 'Harley' was applied to a coal lower in the sequence.

The dirt separations are thinnest in a tract between Cadeby Main and Bullcroft Main collieries. North of Barnsley the seam is much split and deteriorated. Up to at least nine separate coal leaves of the Dunsil Coal were noted in boreholes near Upper Haugh [SK42 98] and, hereabouts, a thicker dirt parting (up to 1 m thick) can be used for correlation and subdivision into 'Upper' and 'Lower' components. At depth south-eastwards, detailed correlation of the various leaves appears impracticable whereas, to the south at Tinsley in the adjoining district, a significant 5 m-split appears to develop. Eastwards in the Doncaster district, the Dunsil Coal effectively merges with the Barnsley Coal, as at Markham Main Colliery No 1 Shaft (Gaunt, 1994, fig. 13).

The **Barnsley Coal** was the most important seam in this part of the Yorkshire Coalfield. It comprises three components: an upper 'Top Softs' unit above a semi-anthracitic 'Hards' coal, which overlies a bituminous 'Bottom Softs' (or 'slotting') coal. Worked thicknesses of around 2 m are typical and the coal is generally of uniform composition throughout the Barnsley district. North of the River Don, an inferior coal ('the clay seam') is present between the 'Hards' and the 'Top Softs'. This clay seam is commonly overlain by a bed of mudstone and dirt. Northwards from near the district margin to about High Ackworth in the Wakefield district, this bed thickens considerably so that the Top Softs unit splits away and effectively joins with the Barnsley Rider Coal to form the **Warren House Coal**. The Hards/Bottom Softs unit continues north from the line of split as the Low Barnsley Coal but this is extensively washed out as a result of erosion beneath the topmost component of the Horbury Rock.

The **Barnsley Rock** is commonly present as a thin sandstone or siltstone between the Barnsley Coal and the Barnsley Rider Coal. It is thicker (over 10 m) in an area near its crop west of Rawmarsh and south-eastwards from there at depth (Figure 7).

The **Kent's Thick Coal** commonly contains a thin dirt parting, which locally thickens to give a significant split. This is marked (up to 10 m) in the area around Cortonwood [4067 0143] and hereabouts the upper coal is the thicker. In the south-east of the Barnsley district and southwards,

Appendix 1 Thickness of coal beds

COAL THICKNESS: SE SHEETS (*: with significant dirt partings)

COAL SEAM	SE30	SE40	SE41S	SE50W
HIGHGATE	0.7	0.2-0.6	thin	0-0.7
SHAFTON	1.4-1.7	1.0-2.0*	0.6-2.2*	0.9-2.3* & split
SHARLSTON TOP	0.7-1.1	0.5-1.9*	0.5-1.4	thin-1.3* & split
SHARLSTON MUCK		0-0.8	0-thin	0-?0.5
SHARLSTON LOW	0.3-0.8	0.5-1.4 & split	0-2.6*	0-0.8
SHARLSTON YARD: FIRST WALES	?0.3+0.2	0.4-1.2* & split	0.7-1.0	0-?0.5
HOUGHTON THIN: SECOND WALES		0.1-0.5	0.1-0.6	0-?0.8
WHEATWORTH	0-2.4* ?no WO	Thin-1.3*	0.1-0.4	0-?0.9
SWINTON POTTERY	thin	0.1-1.2*	0.2-1.3	0.2-0.6
NEWHILL	0.3-1.4	?0-3.0* & split	0.2-2.9*	0.7-1.3
MELTONFIELD	0.7-1.3	0.5-1.5	0.3-1.5	1.3-1.7* & split
TWO-FOOT	0.6-1.5*	0.2-2.1* & split	0.2-1.3*	thin-1.3* & split
ABDY	0.8-1.7*	0.5-0.9	0.7-1.3*	0.8-1.9* & split
TOP BEAMSHAW	thin-1.8*	0.3-2.7 (HHH)	0.3-1.6*	0-2.9* (HHH)
LOW BEAMSHAW (main lower)	0.5-0.6	0.4-1.1*	0.6-1.2	0.3-1.0
KENT'S THIN	0.3-1.5*	0.2-0.7	0.1-0.9	0-0.3
KENT'S THICK	0.7-2.3*	0.5-2.1* & split	0.7-1.2 & split	0.3-0.9* 0.2-0.7
BARNSLEY	1.7-3.1	2.3-3.1	2.6-3.9* & split	1.7-.3.0
DUNSIL	0.5-2.9*	0.7-2.4*	0.3-3.3*	0.9-2.2
Coal, thin	0.7 GAWBER			
SWALLOW WOOD	0.2-3.7*	0.6-2.2* & split	0.5-2.5*	0.6-2.1*

TOP HAIGH MOOR	0.3-2.4*	0-2.3*	0-1.5	0-0.4
LOW HAIGH MOOR	thin-1.4*	0.2-1.6* & split	0.4-2.6*	0-?
LIDGET	0.3-1.5*	0.3-0.9	0.3-0.8	?0.7*
JOAN	thin-0.7	0-0.8	0.5-1.4*	0.2
FLOCKTON THICK	thin-2.9*	0.4-1.5* & split	0.2-2.3*	1.6*
SITWELL				
FLOCKTON THIN	0.3-2.0*	Thin-0.3	0-0.9*	
FENTON	1.0-2.7* & split	?0-3.1* & split	0.6-2.0* & split	0.4 & split 0.3-0.4
PARKGATE	0.4-3.9* & split	0-2.4*	0.5-2.3*	0-2.3*
THORNCLIFFE	0.3-2.2* & split	0.2-3.1* & split	1.1-2.1*	0.1-2.2* & split
SILKSTONE FOUR-FOOT	0-1.6	Thin if present	0.5-1.3*	
SILKSTONE (TOP, where split)	0.6-2.2*	0.8-1.4	0.4-1.2	0.9-1.1
LOUSEY	0-0.6	Thin-0.7 ?and split		
BLACK BAND	0.3-1.3*	0.2-0.5	0.5-1.1 & split	
WHINMOOR	0.5-1.8*	0.2-1.2	0.5-1.5*	

Abbreviations: HHH = Hatfield High Hazels

COAL THICKNESS: SK SHEETS (*: with significant dirt partings)

COAL SEAM	SK39	SK49	SK59W
HIGHGATE		0.5-0.7	0.2-0.7
SHAFTON		0.5-1.2	0.2-1.0
SHARLSTON TOP		0.2-1.6*	0.1-1.4
SHARLSTON LOW		0.1-0.4	0.2-0.6
SHARLSTON YARD: FIRST WALES		thin-0.4	0-0.8
HOUGHTON THIN: SECOND WALES		?0-0.7	0.3-?0.8
WHEATWORTH		?0-1.6*	?0-1.7*
SWINTON POTTERY	0.2-0.7	0.2-2.1*	0.2-0.7
NEWHILL	0.3-0.5	0.2-2.1*	?0.1-0.9
MELTONFIELD	1.4-2.3*	0.6-1.7	?0.5-2.1* & split
TWO-FOOT	0.7-0.9	0.3-1.3	0.1-1.0 & split
ABDY	0.8-1.2	0-1.8*	0?-1.0
TOP BEAMSHAW	?0.3-0.5	0.2-1.4*	0.6-1.4 & split
LOW BEAMSHAW	?0.3-0.4	0.2-0.7	thin-1.1
KENT'S THIN	?0.5-1.4	0.3-1.9 HH: 0.9-1.3*	0-1.1*
KENT'S THICK	0.8-?1.2	1.0-2.6* & split	0.3-1.6*
BARNSLEY	2.3-3.3*	0-3.1	0-3.8*
DUNSIL	0.6-2.1* ?& split	0.5-2.8* & split	0.6-2.4* & split
SWALLOW WOOD	0.9-2.7*	1.2-2.8*	0.7-2.2
TOP HAIGH MOOR	0.3-0.6	0.3-4.3* & split	1.0-1.7*
LOW HAIGH MOOR	?split	0.5-1.9* & split	thin-0.7 & split
LIDGET	0.3-1.2	0.3-1.1	0.4-0.8
JOAN	0.4-0.6	0.3-0.8	0-1.0
FLOCKTON THICK	0.4	0.2-1.1*	0.4-0.8
	0-3.7*	0.1-0.9	
SITWELL	0.9	0.1-0.5	
FLOCKTON THIN	0.2-1.3*	0.1-1.6*	thin?-2.2*
TOP FENTON	0.1-1.9*	0.3-1.2*	0-2.1* & split

LOW FENTON	0.6-1.9*	0.1-1.1	0-0.7
PARKGATE	1.5-3.1*	0-2.4*	1.3-1.7
THORNCLIFFE	0.5-1.5*	0.3-1.7* thin-1.4*	1.1-1.4 & split
SILKSTONE FOUR-FOOT	?0-0.3	thin-0.3	
SILKSTONE (TOP, where split)	0.7-2.3*	0.7-1.2	0.8-1.0
LOUSEY	0.3-0.7	?0-0.6	
BLACK BAND	0.2-1.4*	0.2-0.5	
WHINMOOR	0.4-1.8*	0.5-0.8	

Appendix 3 Shallow worked coals

The information, relating to coals worked within 30 m of the surface, is based on survey information, borehole evidence, limited mine plan coverage and opencast exploration. The coals are listed in descending order.

Note: not all opencast completion plans indicate areas of previous shallow mining.

SE30SW

Coals at crop: M-W

Worked coals: A, KN, B, SW, HM, L, J, FK, F, P, TN, SF, S, BD, W, (Tankersley Ironstone, Claywood Ironstone))

SE30SE

Coals at crop: ST-SW

Worked coals: M, TF, A, KK, B

SE30NW

Coals at crop: SP-F

Worked coals: M, TF, A, LBE, KK, B, Gawber and thin coal below, SW, TH, LH, J (minor-shafts), FK, F, P,(Tankersley Ironstone)

SE30NE

Coals at crop: HG-LBE

Worked coals: SN, ST, SL, N, M, TF, A,

SE40NW

Coals at crop: BY-coal above ST

Worked coal: SN

SE40NE

Coals at crop: Upton-Elmsall

Worked coal: ?Elmsall

SE40SW

Coals at crop: HG-TF

Worked coals: (fireclay above Aegiranum M. B.), SN, N rider, N, M

SE40SE

Coals at crop: coal above BY-WH

Worked coals: unnamed, SN, ST

SK38NE (SHEFFIELD SHEET)*

Coals at crop: SP-MK

Worked coals: M, HH, ?KK, B and ?thin coal above, SW, P, S, MK

SK39NW

Coals at crop: SW-W and Pot Clay

Worked coals: J, F, P, TN and thin coal above, S, W, Pot Clay, (Tankersley Ironstone)

SK39NE

Coals at crop: A-W

Worked coals: KK, B and ?rider, SW, L, FK, F, P, TN, S(U), Lousey

SK39SE (SHEFFIELD SHEET)*

Coals at crop: SP-W (SW-HH below alluvium)

Worked coals: P and coal below, TN, S, ?W, (Claywood Ironstone)

SK48NW (SHEFFIELD SHEET)*

Coals at crop: HG-J

Worked coals: M, TF, A, HH, B, SW.

SK49NW

Coals at crop: SP-FK

Worked coals: N, M, TF, A, TBE, KN, KK, B, D, SW

SK49NE

Coals at crop: BY-TF

Worked coals: HG, SN, ST, thin coal below SP?, M, ?TF

SK49SW (SHEFFIELD SHEET)*

Coals at crop: HG-TN (A-SP mainly below alluvium)

Worked coals: SN/HG (the latter worked at depth to the east), D, B?, SW, F(U), P, TN, (?Tankersley Ironstone)

SK49SE (SHEFFIELD SHEET)*

Coals at crop: Brecks-SP

Worked coals: BY, HG, SN

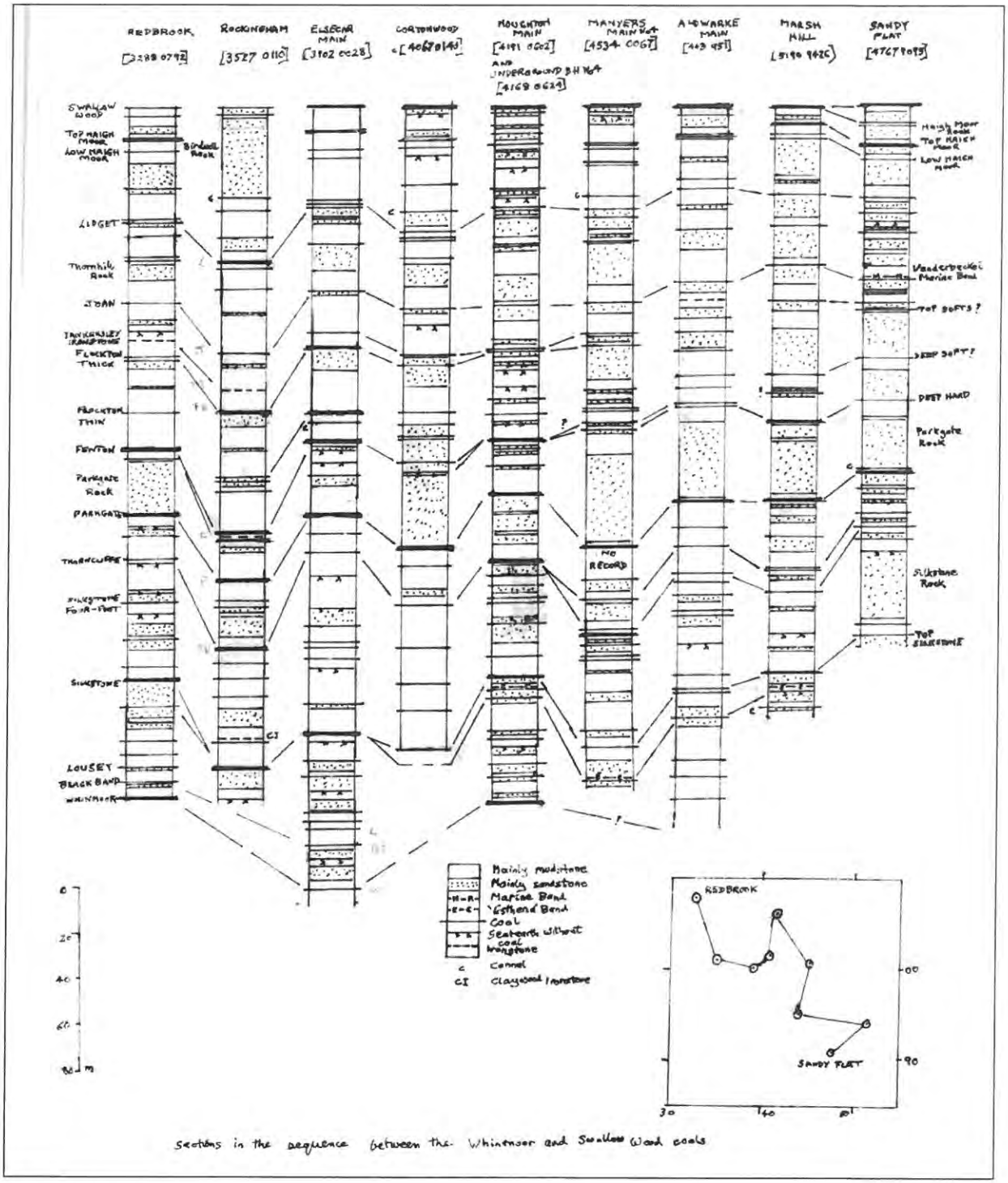


Figure 14. Sections in the sequence between the Whinmoor and Swallow Wood Coals

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

MEMOIRS OF THE GEOLOGICAL SURVEY
OF GREAT BRITAIN

ENGLAND AND WALES

Geology of the Country around Barnsley

EXPLANATION OF SHEET 87

By
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A coal exposed in the bank of a stream, 450 yds. E. of Barley Hole, is probably the Lidgett Coal.

The crop can be traced again from a point ½-mile S.W. of Nether Haugh, east-south-eastwards swinging round the north and east sides of Greasbrough to run southwards into the Don faults, 500 yds. N. of Clough House.

The section in the Bradgate Brickworks (Appendix I, p. 148) gives the position of the Lidgett Coal on the south side of the northern Don Fault. The seam there is :—platy black shale with stone coal 10 in., soft shaly parting 4 in., coal 7 in., black shale 3 in., on coal 6½ in.

A small faulted outlier of Lidgett Coal exists on the north-east side of the Tankersley Fault immediately north of Scholes. J.V.S.

Measures between Lidgett and Swallow Wood coals.—As pointed out above in dealing with the Lidgett Coal, the name Swallow Wood is derived from a locality within the present area. In the northern part two other names have been used for coal seams at and near the Swallow Wood position. They are derived from Haigh Moor and Netherton, localities respectively four miles north-west and the same distance south-west of Wakefield. The former is well within the West Yorkshire coalfield, but Netherton is close to the boundary between that and the South Yorkshire field.

In the original survey and in published sections the names Top Haigh Moor and Low or Little Haigh Moor, Netherton Thick and Netherton Thin as well as Haigh Moor and Netherton unqualified have all been used in this connection. In the area to the north (Edwards & others 1940, p. 54) it is shown that the Top and Low Haigh Moor seams may come to be represented by a single seam, in some places through failure of the Low, and in other places through union of the Low with the Top. In either case the name Haigh Moor, unqualified, is given to the single seam. The following table shows the correlations involved :—

Netherton Thick = (Top) Haigh Moor = Swallow Wood.
Netherton Thin = Low Haigh Moor ... dies out S. of Barnsley.

In the area west of Barnsley a good section of these measures is afforded by the shaft of Barugh Colliery. The site is within the area of the Barugh Works on the east of the Huddersfield road. It is taken from Abandoned Mines Plans Nos. 7195 and 7196, and all three seams were worked.

BARUGH COLLIERY SHAFT.

	Thickness. Ft.	In.	Depth. Ft.	In.
Seatearth	4	0	4	0
Bind and ironstone...	6	2	10	2
Stone, bind and ironstone	11	4	21	6
Strong stone bind	11	0	32	6
Cank	2	6	35	0
Hard sandstone	4	3	39	3
Top Haigh Moor coal	1	8		
(Plan 7195) dirt		7		
coal	1	8	43	2
Seatearth	5	0	48	2
Blue bind	10	2	58	4
Rock	10	0	68	4
Tender bind	11	0	79	4

BARUGH COLLIERY SHAFT—continued.

		Thickness. Ft.	In.	Depth. Ft.	In.
Low Haigh Moor	coal		10	80	0
	dirt		3		
	coal	2	3	82	8
Seatearth		8	0	90	8
Strong stone bind		9	0	99	8
Stone and cank		6	0	105	8
Stone...		28	0	133	8
Coal			8	134	4
Seatearth		6	0	140	4
Strong stone bind		10	0	150	4
Bind and ironstone...		18	4	168	8
Strong bind		3	0	171	8
Lidgett ... coal		1	10	173	6

The Top Haigh Moor is the Swallow Wood, the measures above being the Kexbrough Rock, on the outcrop of which the colliery is situated. The Low Haigh Moor crops out in the Silkstone Branch of the L.M.S.R. (late L. & Y.), ¾-mile W. of the shaft: both this coal and the Swallow Wood have parallel crops running west and east between Kexbrough and the Cawthorne Dike; by an unfortunate error the lower (more southerly) crop has been called the Swallow Wood on the six-inch map (274 N.W.); it should be called Low Haigh Moor or Netherton Thin, the higher, correctly called Top Haigh Moor on 262 N.W., being the true Swallow Wood or Netherton Thick. No further crop of the Low Haigh Moor can be traced, though it may be represented by 1 ft. of coal formerly visible in the railway cutting, 1,000 yds. N.W. of Dodworth Station. At Redbrook two small seams, unworked, are mentioned between the Swallow Wood at 343 ft. and what is probably the Lidgett at 447 ft. At the crops between Dodworth and Worsborough Reservoir these measures are about 75 ft. thick with no workable coals.

C.E.N.B.

This group of measures has yielded many non-marine fossils from a number of horizons. At Barnsley Main Colliery *Carbonicola aquilina* s.l., and *C. turgida* Hind (non Brown) were found 30 ft. below the Swallow Wood Coal (Wray & Trueman 1931, p. 82). In the Barnborough Colliery bore (p. 146) these measures contain the following fossiliferous horizons:—from 4 to 16 in. above the Lidgett seam with *Anthracomya* cf. *obovata* Hind, *A. sp.*, *C.* aff. *aquilina*, *C.* cf. *elliptica*, *C. elliptica?*, *C.* cf. *phrygiana*, *C. sp.*, *Naiadites sp.*, *Carbonita fabulina* and fish scales; from 2 to 9 ft. above the coal with *A.?*, *C.* aff. *aquilina*, *C. carissima?* W. B. Wright, *C.* cf. *carissima*, *C.* cf. *communis* [an unusual form], *C.* cf. *phrygiana* and *Naiadites sp.*; 28-34 ft. above the coal with *A.* aff. *robertsoni* (Brown), *C.* aff. *aquilina* s.l., *C.* aff. *aquilina*, *C.* cf. *fusca*, *C.* aff. *phrygiana*, *C.* cf. *phrygiana*, *N.* aff. *producta*, *N. triangularis*; and 42-60 ft. above the coal with *Spirorbis sp.*, *A.* aff. *williamsoni* (Brown), *C.* aff. *aquilina*, *C.* aff. *concinna*, *C.* cf. *concinna*, *C.* cf. *elliptica*, *C. phrygiana*, *C.* aff. *phrygiana* [possibly sp. nov.], *C. sp.*, *N. triangularis*, *N. sp.* and Ostracods? At Bradgate Brickyard, *C.* aff. *acquilina* tending towards *C. phrygiana*, *C.* aff. *regularis* and *N. triangularis* were collected from shales 11-24 ft. above the Lidgett Coal. Some 60 ft. above the same seam in the Kilnhurst Colliery sinking (1939) *Spirorbis sp.*, *C. aquilina* and allies, *C. elliptica*, *C. regularis* and allies and *N. flexuosa* have been recorded.

The crop of the Low Haigh Moor Coal seam lies parallel and close to that of the Top Haigh Moor or Swallow Wood Coal. It runs in an easterly

direction past Birthwaite Hall to the River Dearne near Woolley Colliery. A further stretch of crop occasioned by a large fault exists immediately south of Kexbrough.

The coal increases in thickness in a north-easterly direction. Around Darton it is 24 to 25 in. thick; at Pyewood and Wharncliffe Woodmoor collieries, 28 in.; at Carlton Main Colliery, 34 in., and in the workings of Monckton Main Colliery under Royston and Felkirk, 36 in. thick.

The measures separating the Low from the Top Haigh Moor Coal vary in thickness. They are thickest in the neighbourhood of Darton, 20 to 25 ft. thick. Elsewhere, at Darton Main Colliery, 21 ft. 11 in.; at Wharncliffe Woodmoor Colliery, three miles to the east, 7 ft. 6 in.; at Carlton Main Colliery, a mile further east, 4 ft. 6½ in.; and at Grimethorpe, two miles E.S.E. of the last, 3 ft. 10 in.; at Monckton Main Colliery shafts and also in the workings under Felkirk, 4 ft. The interval increases northwards from Monckton Main, and is 9 ft. three-quarters of a mile from the shafts. D.A.W.

Top Haigh Moor, Netherton Thick or Swallow Wood Coal. (Fig. 14).—Some particulars of this important coal have been given above, since it forms a reliable datum for identifying the lower seams.

The Top Haigh Moor crops out at the north-eastern corner of High Wood, 700 yds. W. of Swithin House, Haigh, and the lower part of the seam was worked there from crop on a small scale. The crop runs south-eastwards past Birthwaite Hall to the River Dearne near Woolley Colliery, 500 yds. N. of Darton Church. The seam was proved in a bore near Birthwaite to be 4 ft. 2 in. thick:—stone coal 8 in., shale with smuts 7 in., coal 6 in., coal and bind 9 in., on coal 20 in.

The coal and some of the overlying Kexbrough Rock were exposed in the railway cutting running northwards for 500 yds. from Darton Station; the section is now much overgrown, but according to A. H. Green (1878, p. 338) the Top Haigh Moor Coal consisted of coal, black shale and clay in thin layers 7 to 8 in., coal 7 to 10 in., grey clay and shale 7 to 10 in., on coal 15 to 18 in. The seam crops out immediately to the south of Kexbrough village and yet, owing to the presence of an east-west fault, of 240 ft. throw at Birthwaite, it is also present in the Darton Main Colliery shafts, 500 yds. W. of Darton Church, where it is 3 ft. 3 in. thick composed of cannel 3 in., dirt 12 in., coal 3 in., dirt 9 in., on coal 12 in. The seam improves to the north-east. At Wharncliffe Woodmoor Colliery, Carlton, it is 36 in. thick and a mile to the east at Carlton Main Collieries it ranges from 40 to 45 in. Midway between Carlton and Royston it was found to be 38 in. thick with a central dirt parting of 1 in. Under Royston village and in the neighbourhood of Monckton Main Colliery it is 40 in. thick with a dirt parting, 1 in., about the middle of the seam. Under Felkirk, three-quarters of a mile to the north-east, it averaged 48 in. with the dirt parting still present. D.A.W.

At Grimethorpe the section is:—coal 4 in., clod 4 ft., coal 4 ft., clod 3 ft. 10 in., coal 1 ft. 3 in., clod 2 ft. 8 in., on coal 1 ft. 2 in. (Midland Inst. Min. Eng. 1927); but a washout has been proved from this colliery and may account for abnormalities.

From the Dearne valley the outcrop runs to the west of Barugh and Higham and has been worked. South of the Barebones Fault (Fig. 30) it crosses the railway almost a mile north-west of Dodworth Station and thence has been worked almost continuously to the Silkstone Fault in Worsborough Dale. At Victoria Colliery shaft, almost on the crop of the Barnsley Coal, just south of the Dodworth-Barnsley road, it lay 235 ft. from surface; the section was:—coal 1 ft. 6 in., dirt 3 in., coal 3 in., dirt 2 in., coal 4 in., dirt 2 in., on coal 11 in. It was here called Haigh Moor and the

name Swallow Wood wrongly given to a seam 50 ft. higher. At Needlewood, close to the crop north-east of Gilroyd, a very similar section showed a total of 3 ft. 6 in. of coal with three dirt bands; at Round Green, south-west of and between the arms of Worsborough Reservoir, there was 2 ft. 9 in. of coal with two dirt partings. At Redbrook the section of the workings showed five layers of coal varying from 9 to 3½ in., the four intervening dirts from ½ in. to 3 in., giving a total 3 ft. 3 in. C.E.N.B.

From the eastern side of Stainbrough Park the crop runs through Rockley to Birdwell. A small quarry at the disused Rockley Colliery, 750 yds. N.N.E. of Rockley Abbey, showed a seam of coal under 6 ft. of sandstone. On the opposite side of Rockley Dike the seam crops out in the angle between the Worsborough Fault and a cross fault. A well at the Traveller's Inn at the north end of Birdwell reached the coal 33 ft. down, the coal being in three bands 18 in., 12 in. on 12 in. thick separated by two dirt bands each 13 in. thick.

From Birdwell the crop crosses the L.N.E.R. (late G.C.) 900 yds. N.E. of Birdwell Station, weathered coal and clay only being visible, and runs thence through Tankersley churchyard, where coal has been proved, to a fault near Wentworth Station. A temporary exposure in a trench on the road, a quarter of a mile east of Harley, showed coal 7 in., clay 1 ft., coal 2 ft., clay 11 in., on coal 9 in.; this seam may be the Swallow Wood; it is in a narrow strip of ground between two faults. The top of the ridge immediately south-east of Harley is ringed by a crop of the seam, partial exposures of which are seen on the roadside, 500 yds. N.E. of Hood Hill, at Spittal Houses, 1,000 yds. east of Hood Hill, and again 300 yds. N.E. of Spittal Houses.

In Wentworth Park the crop runs eastwards through the south end of Shire Oaks Wood, 1,000 yds. S.S.W. of Wentworth Woodhouse, into the Wentworth Fault. On the north side of this fault part of the seam is exposed in Upper Swallow Wood, one mile S. by E. of Street. Eastwards to Rawmarsh little is seen of the crop, probably on account of strike faults.

J.V.S.

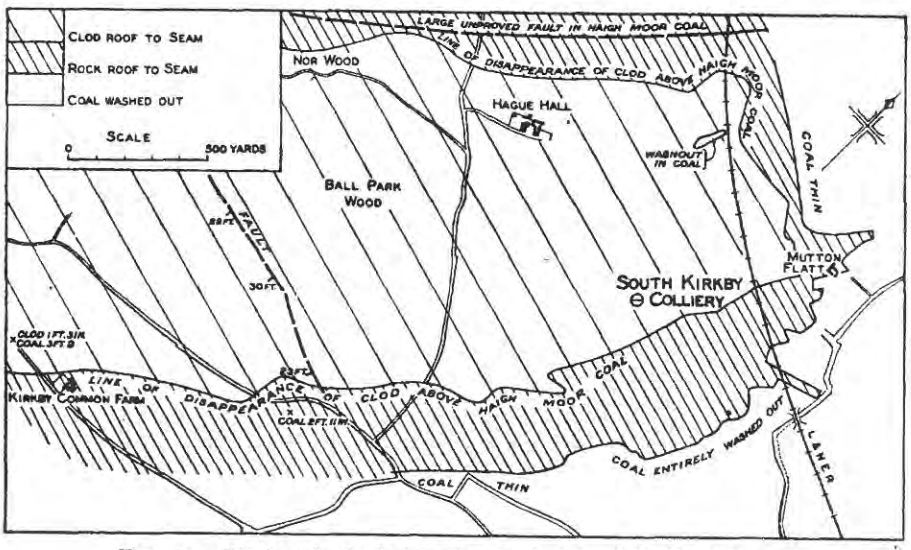


FIG. 14.—*Washout in the Haigh Moor Coal at South Kirkby Colliery.*

The coal has been worked from a small colliery, a quarter of a mile west of Rawmarsh Church :—coal 2 ft. 7 in., dirt 7 in., on coal 1 ft. 8 in. with 15 ft. of ironstone measures above the seam (Green & others 1878, p. 336). A day-hole to the seam exists a quarter of a mile north-west of Barbot Hall. G.H.M.

South of this the crop becomes involved in the Don fault system, but some old workings alongside Bassingthorpe Lane, 440 yds. N. of Clough House, are probably on the crop of this seam. J.V.S.

A washout in the Swallow Wood seam occurs at South Kirkby Colliery (see Fig. 14). The Haigh Moor Rock which forms the roof of the coal there also fills in the washout. G.H.M.

There is a similar occurrence at Grimethorpe Colliery. Another washout, proved from Wharncliffe Woodmoor Colliery, begins a little south-east of the Royston Fault (Fig. 30) and takes a general south-easterly direction, attaining a width of 300 yds. south of Carlton : it has been traced as far as the canal north of Monk Bretton Station. C.E.N.B.

Measures between Swallow Wood and Barnsley coals, including Dunsil Coal.—The average thickness of the group of measures between the Swallow Wood and the Barnsley coals is about 170 ft., but the range, 100-220 ft., is large.

West of Barnsley these measures are usually about 200 ft. thick, but they thin to the south to about 100 ft. near Worsborough Reservoir. At Barnsley Main the thickness is either 175 ft. or 220 ft. according to the identification of the Swallow Wood seam. C.E.N.B.

Eastwards at Hickleton and Denaby collieries it is between 135 and 140 ft., but at Kilnhurst (Thrybergh Hall) Colliery it reaches 220 ft. G.H.M.

The roof shales of the Swallow Wood seam are fossiliferous at Victoria Colliery, Dodworth, where *Carbonicola* cf. *aquilina*, *C.* cf. *turgida*, *C. regularis* and *Naiadites triangularis* have been recorded (Wray & Trueman 1931, p. 83), and also in the Barnborough Colliery bore (p. 146), from which *Spirorbis pusillus*, *Antracomya* cf. *modialaris*, *C.* aff. *aquilina*, *C. phrygiana* and allies and *N.* aff. *producta* were obtained.

In the northern part of the district a strong sandstone is developed at the base of these measures. It is known as the Haigh Moor Rock from its occurrence in the Wakefield area and also as the Kexbrough Rock, a name suggested by A. H. Green (Green & others 1878, p. 346) from the development of the rock at the village of that name.

At crop the rock is well developed in Bretton Park and from Haigh to Birthwaite Hall. Hereabouts it occurs in two main beds separated by sandy shale and is some 80 ft. thick, probably the maximum thickness attained.

It is an irregular, yellow, lenticular-bedded sandstone with many impersistent partings of sandy shale where it has been quarried at the south end of Bretton Park. Some 500 yds. further south in Haigh Quarry, 600 yds. S.W. of Haigh Station, beds on approximately the same horizon but of different character are quarried for local use. The rock is there a fairly uniform, thick-bedded, fine-grained sandstone, 40 ft. of which is exposed; it is overlain by sandy shale and grey shale containing two thin coals. Around Kexbrough the rock forms a broad spread extending from the eastern end of Cawthorne Park to Darton. The Kexbrough-Darton road shows a practically continuous section in this rock which is there a flaggy, yellow sandstone, strongly current-bedded and containing impersistent bands of shale.

In the Darton Main Colliery shafts the rock is 60 ft. thick; three miles to the east in Wharncliffe Woodmoor Colliery, 37 ft.; a mile further east at Carlton Main Colliery, 65 ft. 7 in.; and at Grimethorpe Colliery, two miles E.S.E. of Carlton Main, 63 ft. thick. D.A.W.

The section at Barugh Colliery is given above (p. 49). The rock has a broad outcrop at Barugh extending to Higham and Higham Common, but dies out immediately to the south. In the Redbrook shaft stone bind and ironstone are recorded (Midland Inst. Min. Eng. 1927, p. 274).

From the neighbourhood of Barnsley southwards mudstone with ironstone nodules has set in just above the coal and the Haigh Moor Rock has deteriorated to a few feet of stone bind. C.E.N.B.

The ironstone above the coal is recorded from Redbrook and Houghton shafts and from many of the shaft sections in the south. It has been worked on the north side of Tankersley Park at Bell Ground, south-east of Tankersley Church, where it was reported to consist of balls of hard, close-grained, light brown ironstone embedded in fossiliferous (lamellibranchs and plants) shale (Green & others 1878, p. 337).

A thin bed of sandstone has been mapped a few feet above the coal around Rockley Abbey and from Birdwell south-eastwards to near Harley. It is seen again in Wentworth Park and along the crop to Greasbrough. J.V.S.

In the Kilnhurst Colliery sinking (1939) a fossiliferous horizon 33 ft. above the Swallow Wood Coal yielded *A. sp.*, *C. aquilina* and allies, allies of *C. phrygiana*, *N. triangularis* and *N. sp.* G.H.M.

Above the horizon of the Haigh Moor Rock the measures consist of shale with a number of thin coals and occasional thin beds of raggy sandstone.

On either side of the Dodworth road by the first milestone from Barnsley the shales and mudstones not far below the Barnsley Coal have been largely dug for brickmaking; above these beds is a thin sandstone which can be traced south-east to Worsborough.

West of Barnsley the crop of a coal, apparently about 1 ft. thick, can be traced in the stream courses south of Redbrook; it was worked to a small extent during the 1926 coal dispute. This may be the seam of which the section is coal 1 ft 4 in., dirt 5 in., coal 4 in. in the Redbrook shaft, situated 63 ft. below the Barnsley, but eight seams, some of them only coarse cannel, are recorded here between the Barnsley and the Swallow Wood. Traces of coal were seen in the railway cutting south of Pog Moor and in the adjoining brick pits. C.E.N.B.

East of Birdwell three thin beds of sandstone separated by shale containing thin seams of coal were mapped. Some of these beds outcrop in cuttings along the L.N.E. (late G.C.) Railway line, commencing 900 yds. N.E. of Birdwell Station.

These measures continue through Hoyland Common to Barrow just short of Wentworth. The relief is poor and outcrops are confused by strike faults. A coal 2 ft. thick crops out in a mineral line cutting, 440 yds. N.E. of Wentworth Station, and a 3-inch seam occurs in Skier's Spring Wood, 400 yds. further to the north-east. On the south side of Wentworth two or three thin beds of sandstone, in addition to the one already mentioned, form features between the Swallow Wood and Barnsley crops, ending against the Wentworth Fault (Fig. 30). They continue, on the north side of the fault, along the slopes below the escarpment of the Barnsley Rock to Greasbrough. Thin coals in this group of measures crop out in the streams descending from this escarpment; in Upper Swallow Wood, about 30 ft.

above the Swallow Wood Coal, a coal 1 ft. 11 in. thick crops (Green & others 1878, p. 337); the same seam is exposed in Daniel Lane, 600 yds. to the E.S.E., where it was 1 ft. 7 in., and also at Brookshaw Wood, 550 yds. N. of the weir, where the coal is 1 ft. 6 in. thick. At a higher horizon, about 50 ft. below the Barnsley Coal, a seam of stone coal 6 in. thick resting on hard pyritous mudstone is exposed in a small stream 900 yds. S. of Hoober. J.V.S.

The Dunsil Coal, named after a locality in Nottinghamshire, is the highest of numerous thin seams occurring between the Swallow Wood and the Barnsley coals, and is in places workable.

At Wharncliffe Woodmoor Collieries this seam is 5 ft. 6 in. thick, has numerous thin dirt partings and lies 28 ft. below the Barnsley Coal. At Carlton Main, one mile to the east, the seam is 5 ft: 1 in. thick and 40 ft. below the Barnsley. D.A.W.

Further east still, at Grimethorpe Colliery the Dunsil Coal is 50 ft. below the Barnsley and its section is coal 1 ft. 2 in., dirt 9 in., coal 9 in., dirt 5 in., coal 9 in. A similar coal is recorded at Houghton Main and a somewhat better one, including a 2 ft. 3 in. band of coal, at Mitchell Main (Midland Inst. Min. Eng. 1927, p. 238). This was worked by blind shafts and drifts from the Barnsley workings 53 ft. above. A ' Dunsil ' coal was worked at Darfield (Abandoned Mines, Plan 6254) 60 ft. below the Barnsley, the section being :—coal 1 ft. 2 in., dirt 3 in., coal 10 in., dirt 9 in., on inferior coal 8 in. A coal worked over a small area at Swaithe 81 ft. below the Barnsley can hardly be the same seam, since the section is recorded (Abandoned Mines, Plan 2606) as:—hards 1 ft. 5½ in., dirt ½ in., on coal 11 in.

Exposures of shales just above the Dunsil seam in Chamberlain's Brickpit, Dodworth Road, Barnsley, have yielded the following forms :—*?Anthracomya* cf. *modiolaris, Carbonicola* cf. *acuta,* allies of *C. aquilina, C.* cf. *lateralis, C. phrygiana* and allies, allies of *C. regularis, C. sp.* (possibly *C.* aff. *retrotracta*) and *Naiadites* cf. *producta* (emended list from Wray and Trueman 1931, p. 84). C.E.N.B.

At Frickley the group of thin coal bands forming the Dunsil is 4 ft. 6 in. thick, the actual thickness of coal being 3 ft. 6 in. At Brodsworth the seam is 4 ft. 8 in. and at Bullcroft 5 ft. 2 in. thick. The roof shales at Brodsworth Colliery contain fossiliferous ironstone which has yielded specimens of *Anthracomya* cf. *fisheri* W. B. Wright, *Carbonicola* aff. *aquilina* (J. de C. Sowerby) including forms tending towards *C. retrotracta* and *C. sp.* The same horizon at Yorkshire Main Colliery gave *A. robertsoni* (Brown), *aquilina* and allies, *C.* aff. *retrotracta* and *C. sp.* G.H.M.

At Barrow, Hoyland Silkstone, Elsecar and Wombwell collieries the seam is composed of coal with numerous thin dirt partings and lies between 70 and 80 ft. below the Barnsley. J.V.S.

Barnsley Coal to Base of Shafton Coal.

(Pl. I and Figs. 6, 7, 15—22)

Barnsley Coal (Pl. I and Figs. 16, 17).—The Barnsley Coal is the most important seam in this part of the Yorkshire Coalfield; its average thickness is about 8 ft. The economically important constituents of the seam are three in number, the bottom softs or slotting coal, the hards and the top softs (Fig. 16). The bottom softs average 2 ft. but sometimes reach 3 ft. in thickness and occasionally contain thin dirt bands. The hards consist of dull coal especially valuable for locomotives and steam-raising. They range in thickness from 1 ft. 9 in. to 3 ft. 9 in., occasionally containing in their

SECTIONS OF STRATA

OF THE

COAL MEASURES OF YORKSHIRE,

TOGETHER WITH A FEW DERBYSHIRE SECTIONS.

COMPILED FROM

RECORDS OF BORINGS AND SINKINGS

BY

A COMMITTEE OF THE MIDLAND INSTITUTE OF MINING, CIVIL, AND MECHANICAL ENGINEERS.

1902—1913.

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1914.

F20.—HOYLAND SILKSTONE COLLIERY.

PARISH OF HOYLAND NETHER, YORKSHIRE.

Date of Sinking, about 1873. 87 1-in. Map (N.S.). 282 6-in. Map.

Lat. 53° 30′ 28″ N. Long. 1° 26′ 36″ W.

Height above O.D., 465 ft. Dip of Strata,

	YD.	FT.	IN.	YD.	FT.	IN.
1 Clay		1	2	0		
2 Soft marl		7	1	0		
3 Blue bind		25	0	0		
4 Stone		4	2	0		
5 Blue bind		3	1	0		
6 Coal		0	0	8		
					42	0 8
7 Spavin		2	0	0		
8 Dark bind		21	0	0		
9 Coal		0	0	3		
					65	0 11
10 Dark bind		21	1	0		
11 Cank		1	0	0		
12 Dark bind		3	1	0		
13 Blue bind		6	0	0		
14 Dark bind		7	1	0		
15 Cank		0	2	0		
16 Dark bind		6	1	8		
17 Coal		0	0	8		
					111	2 3
18 Strong grey bind ...	13	0	0			
19 Dark bind	4	2	0			
20 **Barnsley Seam** ...	2	2	0			
					132	0 3
21 Spavin		1	1	0		
22 Stone		1	0	0		
23 Dark bind		7	2	6		
24 Rock		3	0	0		
25 Blue bind		5	1	0		
26 Black shale		1	1	0		
27 Shale		2	2	4		
28 Shale		0	1	0		
29 Coal		0	0	10		
					155	0 11
30 Spavin		0	1	3		
31 Coal		0	0	9		
					155	2 11
32 Spavin		1	0	0		
33 Blue bind		1	0	6		
34 Stone bind		2	2	0		
35 Blue bind		4	1	7		
36 Coal		0	1	0		
					165	2 0
37 Spavin		0	2	0		
38 Blue bind		7	0	0		
39 Coal		0	0	10		
					173	1 10
40 Spavin		0	2	0		
41 Blue bind		7	0	0		
42 Coal		0	0	10		
					181	1 8
43 Spavin		0	2	0		
44 Stone bind		5	2	6		
Carried forward					188	0 2

	YD.	FT.	IN.	YD.	FT.	IN.
Brought forward				188	0	2
45 Dark bind		3	1	6		
46 Black shale		1	0	6		
47 **Swallow Wood Seam**—						
	FT.	IN.				
Coal	2	9				
Spavin ...	5	0				
Coal	1	0	2	2	9	
					195	1 11
48 Spavin		0	1	6		
49 Blue bind		2	1	3		
50 Grey bind		6	2	6		
51 Dark bind and stone		6	0	0		
52 Rock		21	0	0		
53 Dark bind		1	1	0		
54 Spavin		0	0	10		
55 Coal		0	1	2		
					234	1 2
56 Strong stone bind ...	10	0	8			
57 Blue bind	3	1	10			
58 Dark bind	3	1	8			
59 Shale	2	2	0			
60 **Lidgett Seam**—						
	FT.	IN.				
Coal	0	4				
Band ...	0	2				
Coal	0	6				
Band ...	0	1½				
Coal	2	3	1	0	4½	
					255	1 8½
61 Spavin		2	0	0		
62 Dark bind		12	0	0		
63 Shale		1	1	0		
64 Coal		0	0	2		
					270	2 10½
65 Spavin		1	0	10		
66 Blue bind		4	2	6		
67 Rock		18	0	0		
68 Dark bind		3	0	0		
69 Shale		2	1	0		
70 **Joan Coal Seam** ...		0	1	5		
					300	2 7½
71 Spavin		0	2	0		
72 Bind with stone ...		10	1	10		
73 Dark bind		11	2	4		
74 **Flockton Thick Seam**—						
	FT.	IN.				
Coal	0	10				
Grey bind ...	14	0				
Coal	1	7	5	1	5	
					329	1 2½
75 Spavin		0	2	0		
76 Blue bind		2	0	0		
77 Rock		6	0	6		
Carried forward					338	0 8½

F21.—ROCKINGHAM COLLIERY.

PARISH OF HOYLAND NETHER, YORKSHIRE.

Date of Sinking, . 87 1-in. Map (N.S.). 282 6-in. Map.
Lat. 53° 30′ 15″ N. Long. 1° 28′ 5″ W.
Height above O.D., 425 ft. Dip of Strata,

	YD.	FT.	IN.	YD.	FT.	IN.
1 Earth and clay ...	2	0	0			
2 Coal smut	0	0	6			
3 Spavin seat earth ...	0	2	6			
4 Blue bind	3	2	6			
5 Strong bind (stone) ...	4	1	6			
6 Stone and cank mixed	2	0	0			
7 Strong stone bind ...	7	2	4			
8 Ironstone	0	0	3			
9 Stone bind, mixed with ironstone balls	0	2	0			
10 **Swallow Wood Coal**—						
Coal	0	3				
Clod	0	5				
Coal	2	5	1	0	1	
				22	2	8
11 Fireclay	0	2	3			
12 Strong spavin stone	2	0	8			
13 Coal	0	0	10			
				26	0	5
14 Seat earth	1	1	0			
15 Strong stone bind ...	3	2	0			
16 Strong stone bind ...	1	0	0			
17 Stone	33	1	3			
18 Cannel Coal	0	1	5			
				66	0	1
19 Soft bind	1	1	7			
20 Black shale	0	0	3			
21 Bind	3	0	3			
22 Coal	0	1	4			
				71	0	6
23 Stone spavin	1	0	5			
24 Bind	2	2	10			
25 Stone bind	2	2	5			
26 Dark bind (Lidgett mine)	4	1	7			
27 List	0	0	2			
28 Black shale	1	0	11			
29 Coal	0	0	7			
				84	0	5
30 Stone spavin	2	0	4			
31 Lidgett quarry ...	5	2	7			
32 Blue bind	3	0	10			
33 **Lidgett Coal**—						
Coal	2	1				
Spavin ...	1	5				
Coal	0	7	1	1	1	
				96	2	3
34 Soft spavin	1	1	5			
35 Spavin and batty Coal mixed ...	0	2	8			
36 Blue bind	2	2	2			
37 Black bat	0	0	1			
38 Dark bind	0	1	0			
39 Coal	0	0	1			
				102	0	8

	YD.	FT.	IN.	YD.	FT.	IN.
Brought forward				102	0	8
40 Spavin	0	1	9			
41 Stone bind	0	2	8			
42 Hard stone	1	0	0			
43 Stone bind	3	1	3			
44 Watson mine	1	0	10			
45 Spavin	0	0	4			
46 Coal	0	0	1½			
				109	1	7½
47 Strong spavin ...	1	2	2			
48 Strong stone bind ...	0	2	10			
49 Stone	0	2	10			
50 Stone bind	7	1	1			
51 Cank	0	1	8			
52 Stone	2	0	10			
53 Blue bind	1	0	5½			
54 Stone bind	6	0	11			
55 Blue bind	4	0	0			
56 Black shale	4	1	9			
57 **Joan Coal**	0	1	6			
				139	2	8
58 Stone spavin	1	2	6			
59 Strong bind	3	0	0			
60 Stone	1	1	6			
61 Blue bind	0	2	2			
62 Stone	0	0	10			
63 Dark bind	1	2	1			
64 Black rust	0	2	3			
65 Strong stone bind ...	2	0	9			
66 Stone	0	0	6			
67 Blue bind	4	0	1			
68 Tankersley Park mine	2	1	8			
69 Dark bind	1	0	3			
70 Black bass	0	1	9			
71 Blue bind	0	2	10			
72 Black bass	1	0	7			
73 Black shale	4	0	2			
74 **Flockton Thick Coal**—						
Cannel ...	1	0½				
Brasses or black bass	0	7				
Coal	0	10½				
Dirt	0	3				
Coal	0	11				
Dirt	1	3½				
Coal	1	6	2	0	5½	
				168	2	0½
75 Stone spavin	1	1	4			
76 Stone	4	2	0			
77 Stone bind	2	0	0			
78 Blue bind	3	1	9			
79 Black bass	0	0	8			
80 Blue bind	0	2	2			
81 Black shale	0	0	6			
82 Stone bind	0	1	2			
Carried forward				181	2	7½

F21.—ROCKINGHAM COLLIERY.—*Continued.*

	YD.	FT.	IN.	YD.	FT.	IN.
Brought forward				181	2	7½
83 Stone		1	0 3			
84 Blue bind		1	0 1			
85 Stone		2	1 6			
86 Dark bind		1	2 11			
87 Blue bind		9	0 3			
88 **Flockton Thin Coal**—						
Cannel ... 1 8						
Soft spavin 1 0						
Coal 1 1	1	0	9			
				198	2	4½
89 Strong spavin ...	2	2	7			
90 Coal	0	0	8			
				201	2	7½
91 Strong spavin ...	1	2	5			
92 Stone	1	0	10			
93 Blue bind	0	2	7			
94 Coal	0	0	7			
				206	0	0½
95 Spavin	1	2	1			
96 Blue bind	8	1	10			
97 Hard stone	1	0	6			
98 Stone bind	2	1	3			
99 Blue bind	3	0	0			
100 Spavin	0	2	10			
101 **High Fenton Coal**—						
Coal 0 8						
Dirt 0 1						
Coal 2 8						
Dirt 0 6						
Coal 0 9	1	1	8			
				225	1	2½
102 Black mine	1	1	10			
103 Black shale	0	1	0½			
104 **Low Fenton Coal**—						
Coal 1 3						
Dirt 0 9						
Coal 2 0						
Cannel ... 0 5	1	1	5			
				228	2	6
105 Strong bind	2	1	9			
106 Dark bind	0	0	6			
107 Stone	3	1	0			
108 Strong blue bind ...	2	2	0			
109 Cank	0	1	11			
110 Strong bind	3	2	8			
111 Blue bind	3	0	3			
112 **Parkgate Coal**—						
Top softs ... 1 7						
Dirt 1 7						
Roof Coal ... 1 3						
Brazils ... 1 2						
Hard Coal 2 6						
Dirt 0 4						
Bottom softs 1 3½	3	0	8½			
				248	1	3½
113 Dirt and Coal ...	0	1	6			
				248	2	9½
114 Stone bind	4	0	10			
Carried forward				253	0	7½

	YD.	FT.	IN.	YD.	FT.	IN.
Brought forward				253	0	7½
115 Blue bind	2	2	2			
116 Coal	0	0	3			
				256	0	0½
117 Spavin	0	2	10			
118 Coal	0	0	10½			
				257	0	9
119 Stone and spavin ...	3	0	1			
120 Coal	0	0	1			
				260	0	11
121 Strong stone bind ...	3	0	7			
122 Blue bind	1	2	3			
123 Rock	9	1	2½			
124 White mine	2	2	5			
125 Black shale	0	2	2			
126 Roof stone	0	0	2			
127 **Thorncliffe Thin Coal**	0	2	10½			
				279	0	7
128 Dirt	0	0	7			
129 Coal	0	1	1¼			
				279	2	3¼
130 Coal and dirt mixed	1	2	6			
				281	1	9¼
131 Strong spavin ...	0	1	9			
132 Strong bind	6	0	4			
133 Coal and bat... ...	0	1	4			
				288	2	2¼
134 Spavin	0	0	6			
135 Stone bind	1	2	6			
136 Blue bind	3	1	10			
137 Dark bind	1	1	2			
138 Coal	0	0	11¼			
				296	0	1½
139 Spavin	0	2	11			
140 Black shale	2	0	9			
141 Hard stone	0	0	7			
142 Stone bind	2	1	1			
143 Black shale	1	2	2			
144 Coal	0	0	2			
				303	1	9½
145 Hard stone with cank	1	2	6			
146 Very strong bind ...	2	2	3			
147 Black bind	0	2	11			
148 Stone bind	3	2	2			
149 Hard cank	0	2	1			
150 Strong stone bind ...	4	1	1			
151 Blue bind	0	0	6			
152 Black shale iron mine	2	0	6			
153 Coal	0	0	4½			
				320	1	2
154 Spavin	1	0	0			
155 Blue bind	10	0	0			
156 Roof stone	0	0	1¾			
157 **Silkstone Coal**—						
Branch ... 1 0						
Top Coal ... 1 5½						
Dirt 0 7½						
Bottom softs 1 8½						
Seat Coal ... 0 4	1	2	1½			
				333	0	5¼
158 Spavin	0	1	10½			
159 Rock	2	1	10			
				336	1	1¾

MINERAL REPORT

Date: 16th August 2013

My Ref: PJ/M3687/5

CONFIDENTIAL

BIRDWELL ROUNDABOUT AND LINK ROAD TO ROCKINGHAM ROUNDABOUT.

SITUATION

A mining report has been requested for the proposed new Birdwell roundabout and link road. This report provides a review of the mining and geological history along the proposal and an assessment for the potential for mining legacy risks. The report makes recommendations for investigation and/or remediation requirements.

GEOLOGICAL INFORMATION

Geological records indicate that the land is underlain by Middle Coal Measures mudstones, siltstones and sandstones. A geological fault is conjectured to cross the proposal as shown coloured blue on drawing M3687/5a.
The proposal is also dominated by two areas of opencast backfill as shown on the attached drawing and detailed below.

MINING

Opencast

The Tankersley Common and Rockingham opencast sites were worked during the 1940's and 1990's respectively as marked red on drawing M3687/5a. The opencast voids were subsequently backfilled with overburden/spoil and the land returned to agricultural use/open space. The backfill varies in thickness from less than 2 metres in the west to in excess of 10m in the east. Consequently the proposed roads will cross backfill and opencast high walls.
The Rockingham opencast site was compacted back to provide a developable platform. Creep and/or differential settlement could still occur across high walls or above the Tankersley common site in particular.

Underground (Deep Mining)

This area has been affected by deep mine workings in the past.
However all affects from deep mine workings should have ceased decades ago and with the site now being remote from the active coalfield it should remain stable for the foreseeable future.

FORMER LAND USES

Historical ordnance survey plans show the route crossing open land with no significant development prior to the opencast working of coal.

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BARNSLEY Metropolitan Borough Council Doncaster Rotherham

LANDFILL

The current borough landfill register does not indicate the route to cross any landfill although one landfill sites is recorded within 250m of the proposal as detailed below.

Site No.	Landfill Material	Category
53	Demolition waste	4

Category 4 sites are described "as being licensed to accept material that would not be expected to give rise to landfill gas in substantial quantities"

CONCLUSIONS

1. The route is considered stable from the deep mining subsidence aspect and as it now lies remote from the active coalfield it is likely to remain in this state for the foreseeable future.

2. The Tankersley Common opencast backfill was not compacted to provide a developable platform. Although backfilled over 50 years ago the possibility for creep or differential settlement remains. It would therefore be prudent to undertake near surface soils investigations to adequately assess the ground conditions and compaction over the backfill. The road foundations should be suitably designed particularly across the high walls to prevent damage due to differential settlement.

3. Given the extent of opencast the chances of encountering unworked coal at surface is low. Any coal encountered in foundation excavations should be blinded off with a suitable inert material to reduce the risk of spontaneous combustion occurring. SYMAS can be called upon for on-site inspection if any unusual ground conditions are encountered.

4. Fugitive gases may be present within the opencast fill or landfill. Fugitive gas monitoring and safety procedures should therefore be undertaken where site personnel are required to work in deep or confined excavations.

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Report prepared by P. James 16th August, 2013.



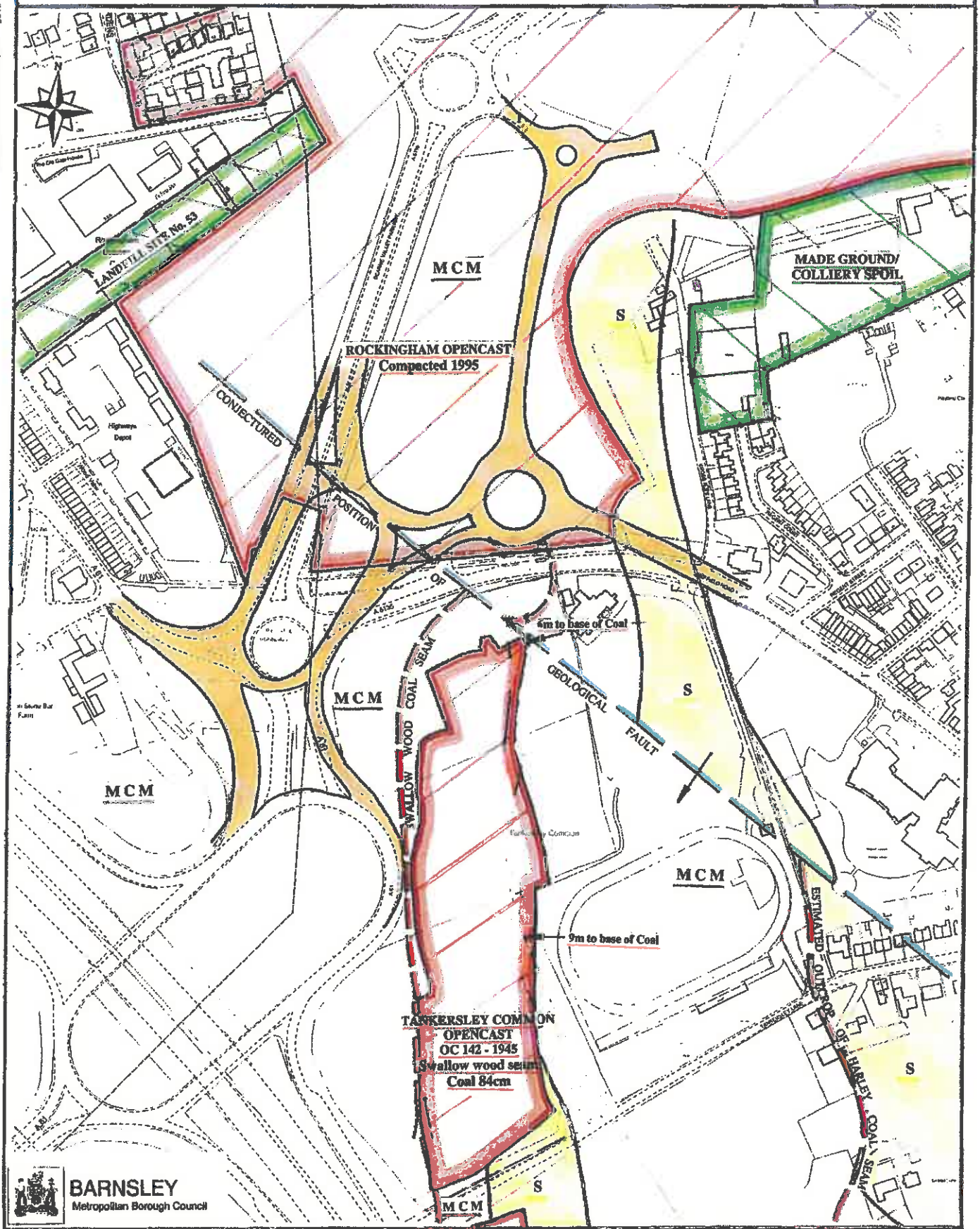
P. James,
Principal Mining Engineer.

DRAWING TITLE

BIRDWELL ROUNDABOUT & LINK ROAD TO ROCKINGHAM ROUNDABOUT

DRAWING NO.

M3687/5A



BARNSLEY
Metropolitan Borough Council

SCALE	DATE		O.S REFERENCE
1:2500	12.8.13	SOUTH YORKSHIRE MINING	SE 3400/3500
DRAWN BY: AS	CHECKED BY:	ADVISORY SERVICE	P. JAMES BSc (Hons) PRINCIPAL MINING ENGINEER

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