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A SEDIMENTOLOGICAL AND PALAEOGEOGRAPHICAL  
STUDY OF THE NAMURIAN 'ROUGH ROCK' IN THE  
SOUTHERN PENNINES

BY

CHRISTOPHER WALTER HEATH, B.Sc. (Wales)

VOLUME II

Thesis submitted to the University of Keele for the Degree  
of Doctor of Philosophy, 1973

## VOLUME II

### CONTENTS

#### FIGURES

- 1 Generalised Vertical Section showing the Stratigraphical Position of the Rough Rock
- 2 Geographical Setting of the Area Studied
- 3 Structural Features of the Southern Pennines
- 4 Different Sandstones termed 'Rough Rock' by Shackleton 1962
- 5 Sandstone termed Rough Rock in this Thesis
- 6 Local Lithofacies Variations within the Rough Rock at Foxt and Moneystone, Staffordshire
- 7 Palaeocurrent Directions in the Rough Rock of the Southern Pennines
- 8 Cross-stratal Azimuthal Dip Directions in the Rough Rock (Shackleton 1962)

#### PLATES

1 to 65

#### General Index for Enclosures 2, 3, 4 and 5

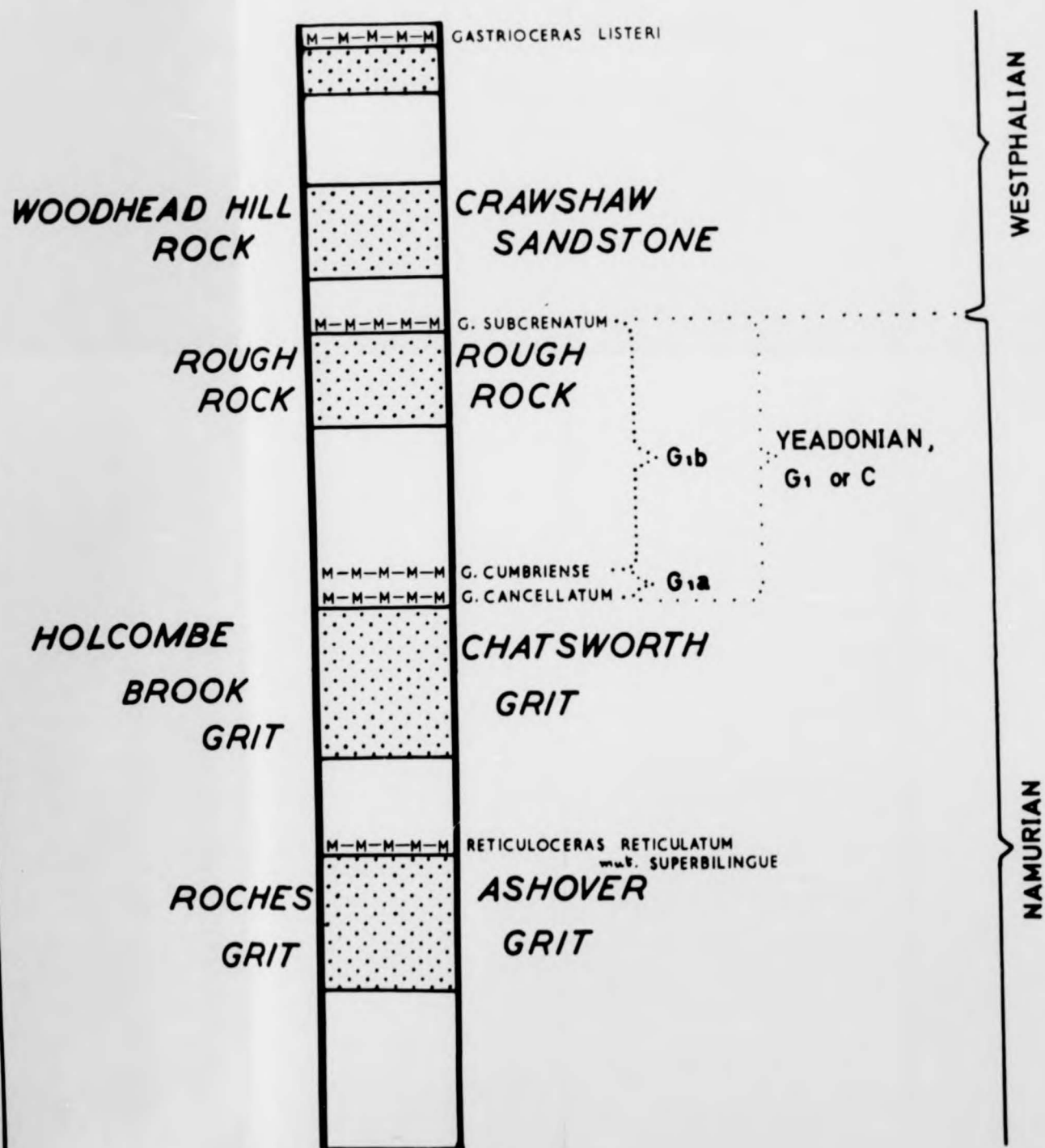
#### ENCLOSURES

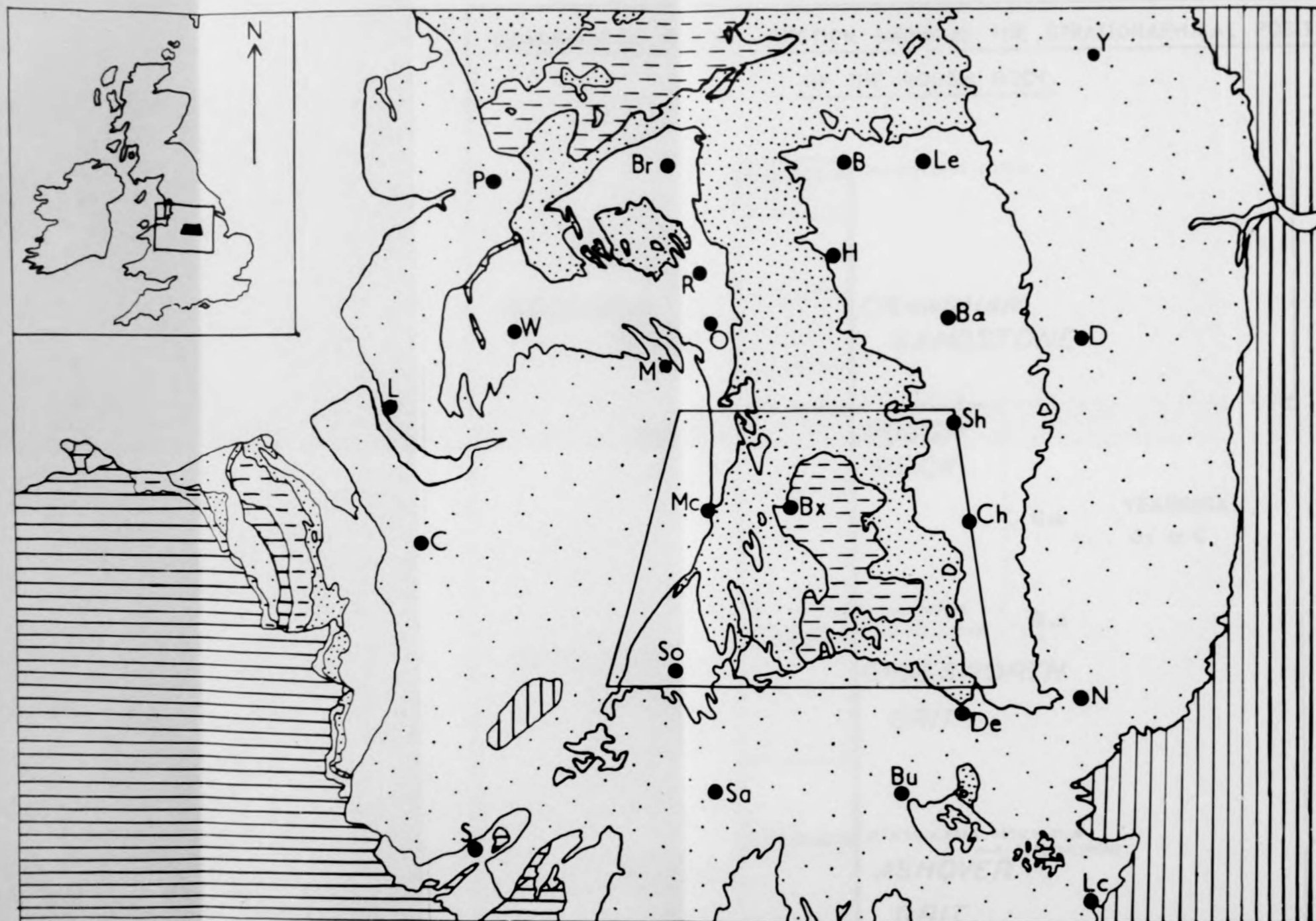
- 1 Different Names for Sandstones at the Rough Rock Horizon
- 2 The North Staffordshire Coalfields

ENCLOSURES (Continued)

- 3 Goyt Trough and East Cheshire
- 4 Sheffield
- 5 Chesterfield-Derby
- 6 Palaeocurrent Directions and Modal Analyses from the Rough Rock of the Central Pennines
- 7 The Palaeogeographical Setting of the Rough Rock in the Southern Pennines

GENERALIZED VERTICAL SECTION SHOWING THE STRATIGRAPHICAL POSITION  
OF THE ROUGH ROCK





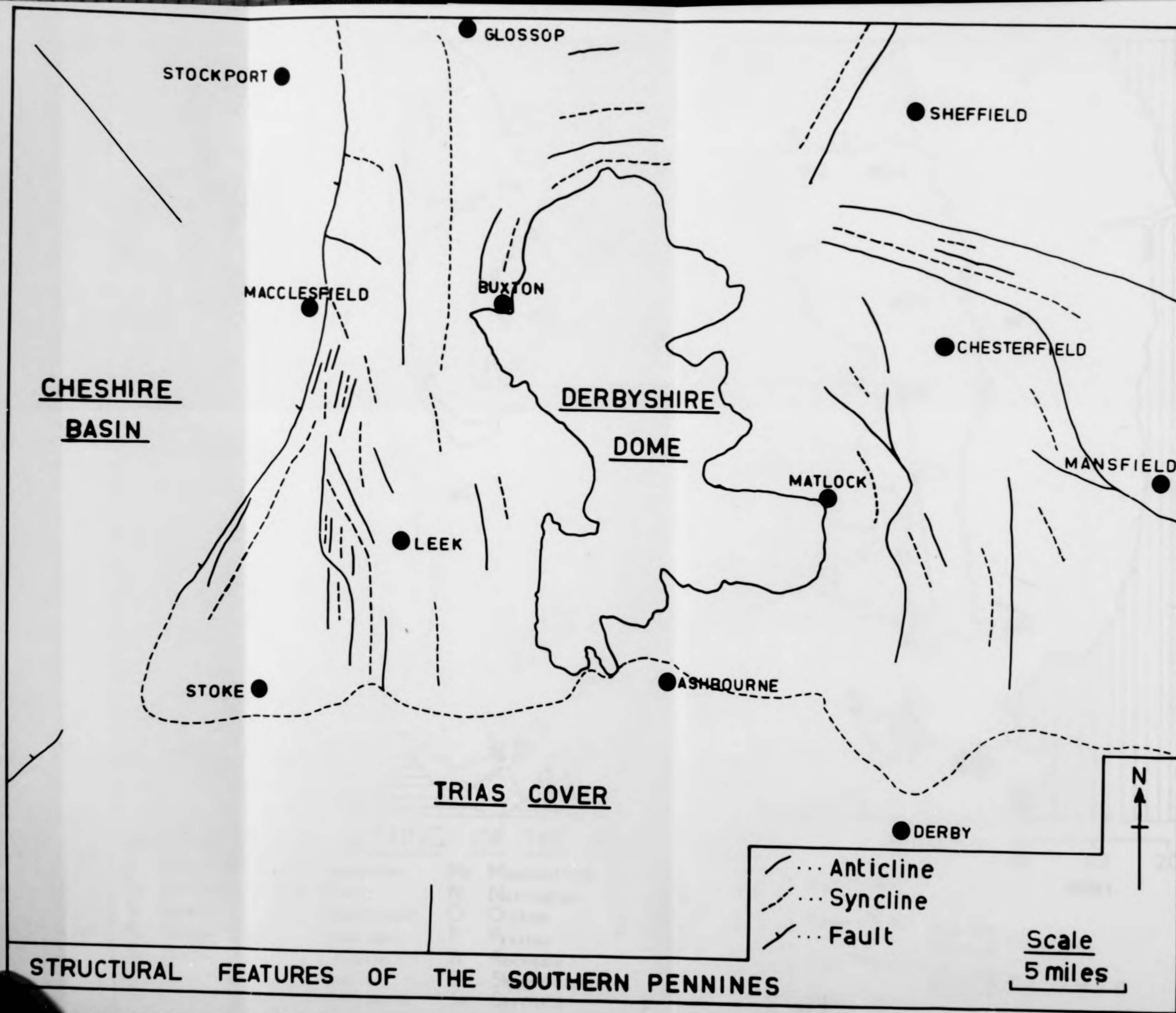
# GEOGRAPHICAL SETTING OF THE AREA STUDIED.

SCALE — 0 10 20 miles

B Bradford.	D Doncaster.	Mc Macclesfield.	So Stoke.
Ba Barnsley	De Derby	N Nottingham	Sa Stafford
Br Burnley	H Huddersfield	O Oldham	W Wigan
Bu Burton	L Liverpool	P Preston	Y York
Bx Buxton	Lc Leicester	R Rochdale	
C Chester	Le Leeds	S Shrewsbury	
Ch Chesterfield	M Manchester	Sh Sheffield	

	Post Trias.		Carb. Lst.
	Permo.-Trias.		Pre. Carb. Lst.
	Coal Measures		
	Namurian		

Fig 3



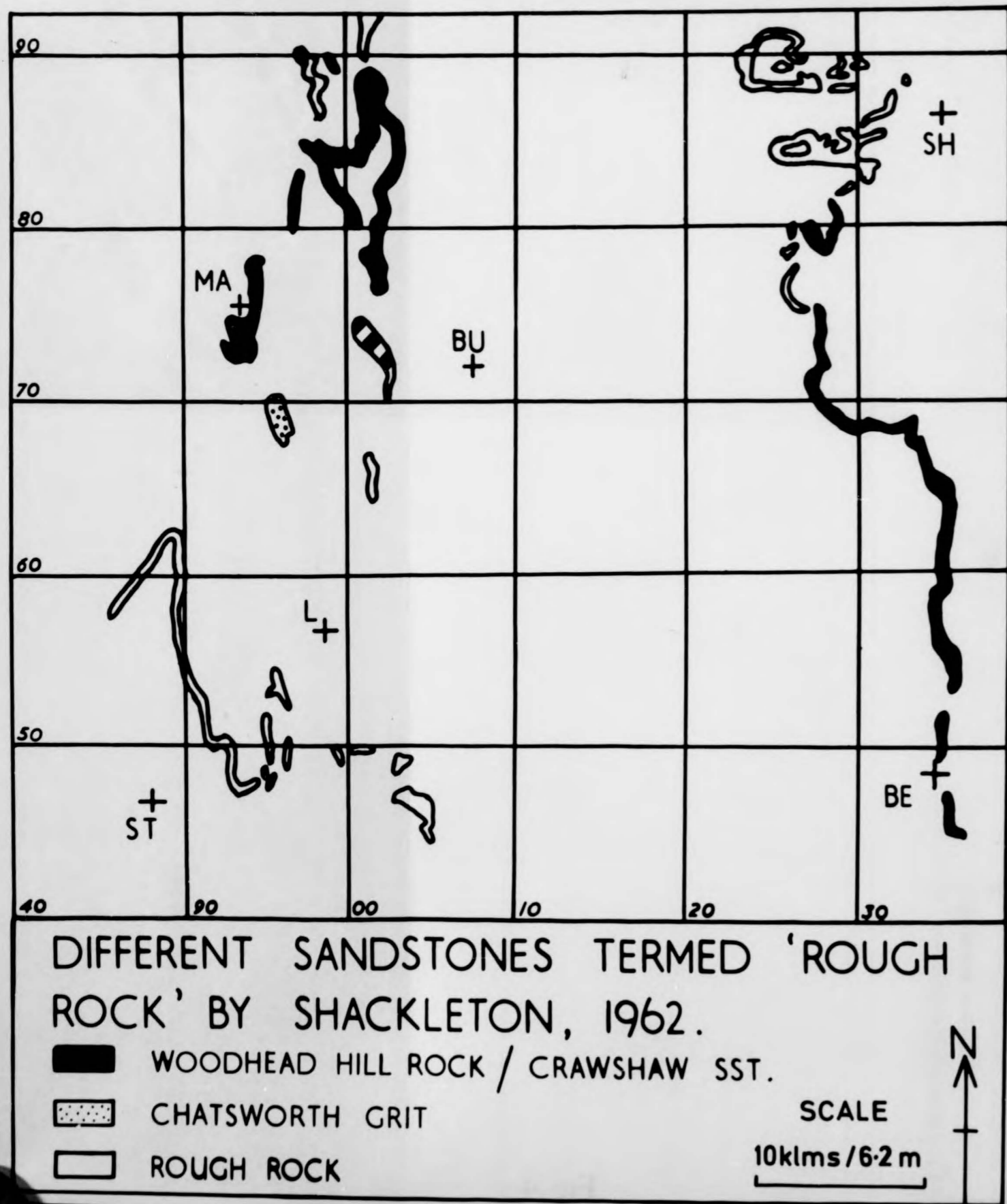
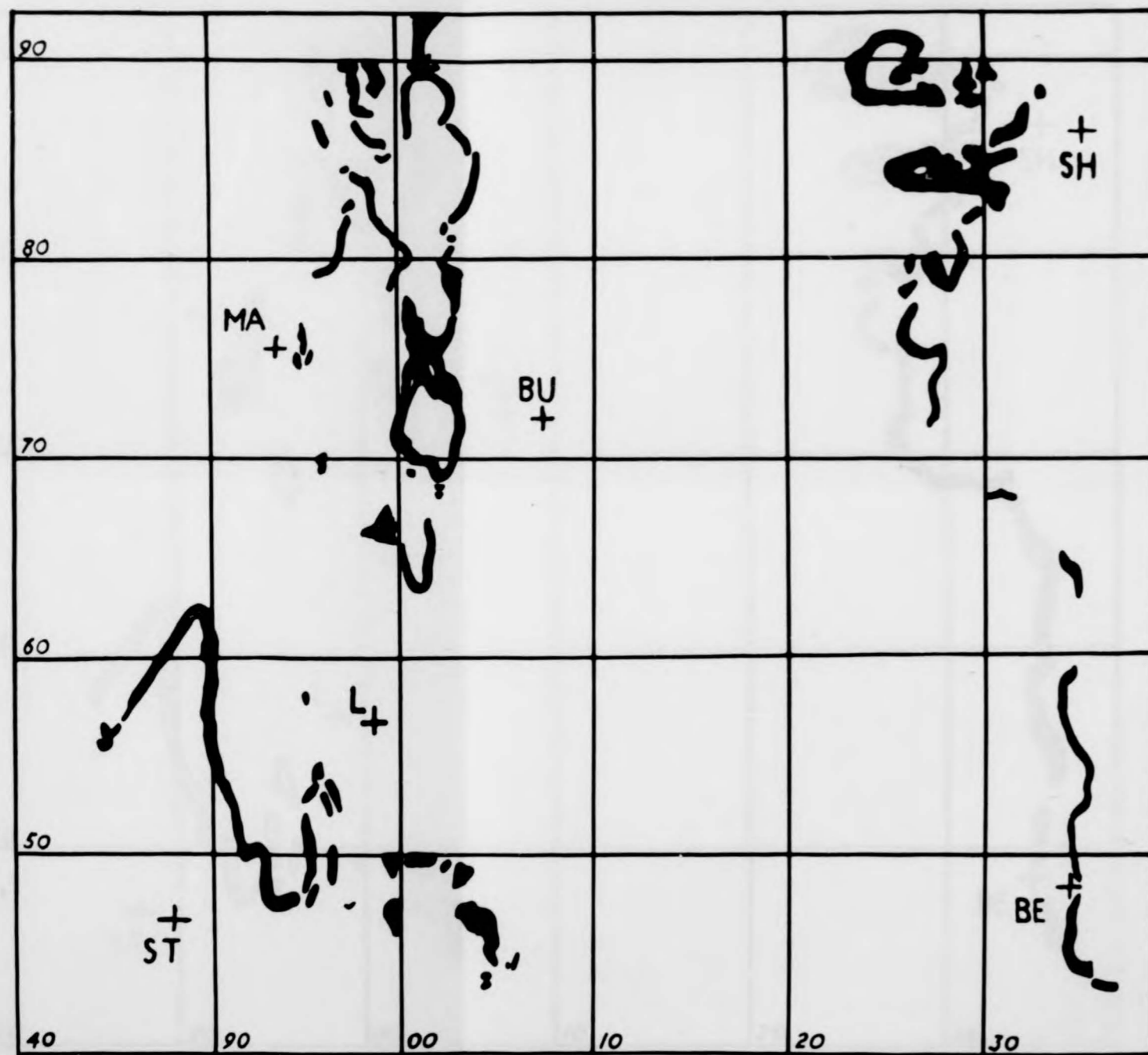


Fig 5



SANDSTONE TERMED ROUGH ROCK IN  
THIS THESIS

Sources :

I.G.S 1"26" Maps

Cope 1947 & Pers. Comm

Francis 1967

SCALE

10 klms / 6.2 m

N  
↑

Fig 6

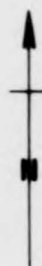


# PALAEOCURRENT DIRECTIONS IN THE ROUGH ROCK OF THE SOUTHERN PENNINES

SCALE 1" = 5 miles

Miles 0 1 2 3 4 5 6 Miles

← Palaeocurrent direction  
eg. soil to west.



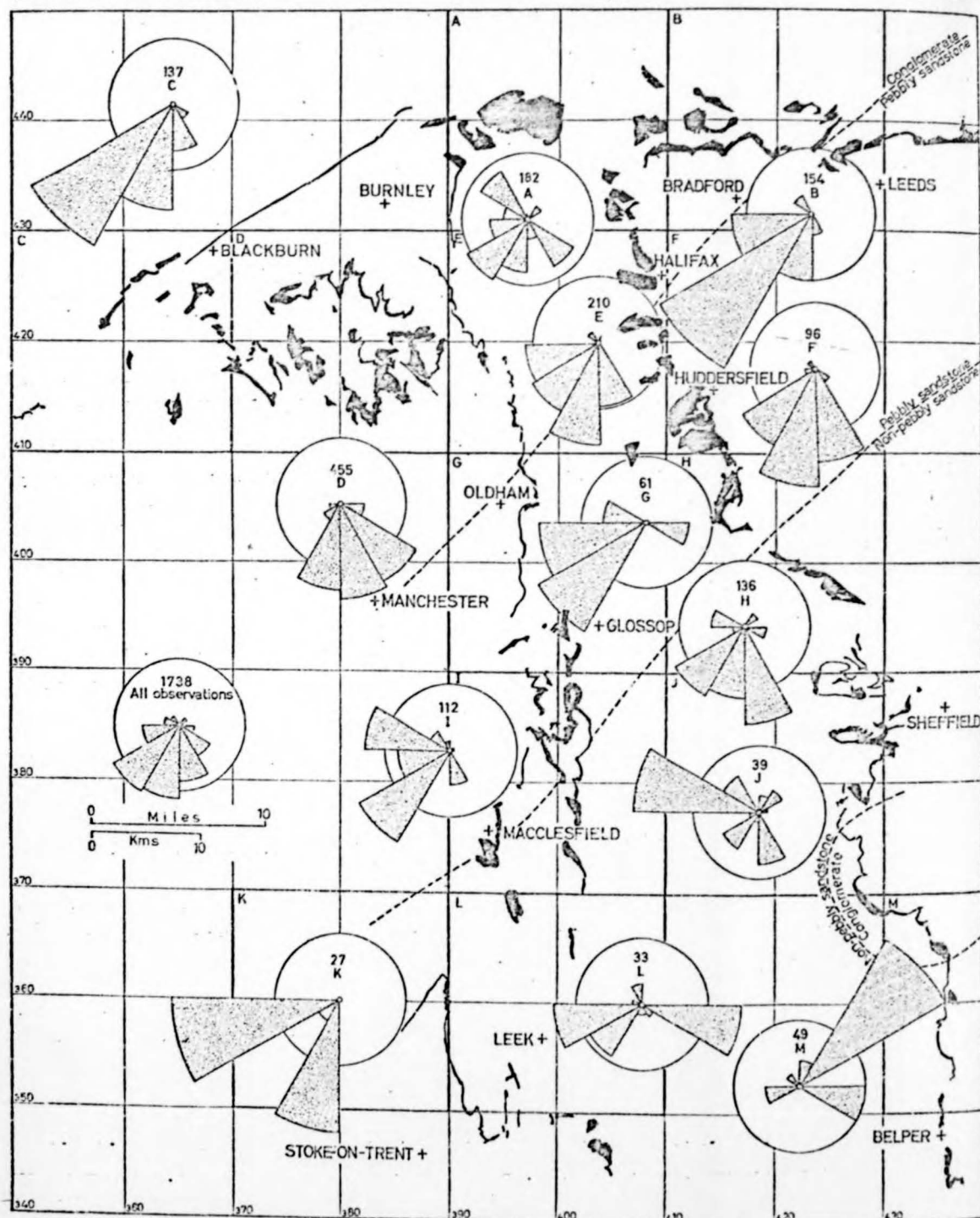


FIGURE 8 CROSS-STRATAL AZIMUTHAL DIRECTIONS IN THE ROUGH ROCK OF THE CENTRAL PENNINES (After Shackleton 1962)



PLATES

1 to 65

PLATE 1

LOCALITY: Rock End, near Biddulph, Staffs. (See Plate 46)

N.G. REF: SJ 8980 5700

DESCRIPTION: Tor-like features of the Rough Rock outcrop on the eastern limb of the Potteries Syncline. The base of the outcrop (F5) consists of pebbly, thick tabular cross-bedded sets which are locally contorted (Lithofacies 8 & 9(1)a). The overlying beds are dominantly tabular cross-bedded sets with associated parallel bedded sandstones (Lithofacies 9(1)b).

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



PLATE 2

LOCALITY: Foxlow Edge and Stake Edge, near Errwood Reservoir, Derbys. (See Plates 35 & 47).

N.G. REF: SK 0050 7570

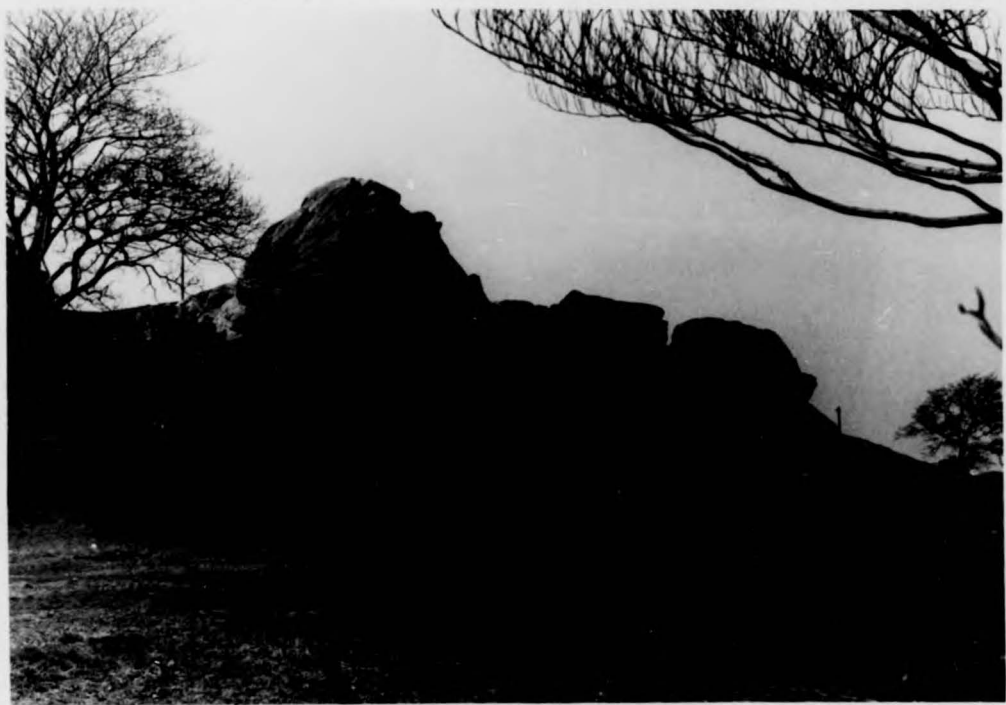
DESCRIPTION: The prominent scarp-feature of the Rough Rock on the western limb of the Goyt Syncline. The scarp face in the foreground (F4) is composed of pebbly trough-bedded sets, (Lithofacies 9(2)) while the scarp in the middle distance (F.G13) is mainly composed of tabular cross-beds with associated parallel beds (Lithofacies 9(1)b).

A —  
B —  
C —  
D —  
E —  
F —  
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A  
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 3

LOCALITY:

Rake End, near Fernilee Reservoir, Derbys.

N.G. REF:

SK 0240 7600

DESCRIPTION:

The absence of a scarp-feature on the eastern limb of the Goyt Syncline, the only indications of the Rough Rock (G5 to H7) are the trial pits for flag stone (G-H7) (Lithofacies 12).

A—

B—

C—

D—

E—

F—

G—

H—

J—

K—

PLATE 4

LOCALITY:

White Edge and Stoke Flat, near Froggatt, Derbys.

N.G. REF:

SK 2600 7700

DESCRIPTION:

The well-defined scarp of the Crawshaw Sandstone and the absence of the Rough Rock feature in the foreground.

A—

B—

C—

D—

E—

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G—

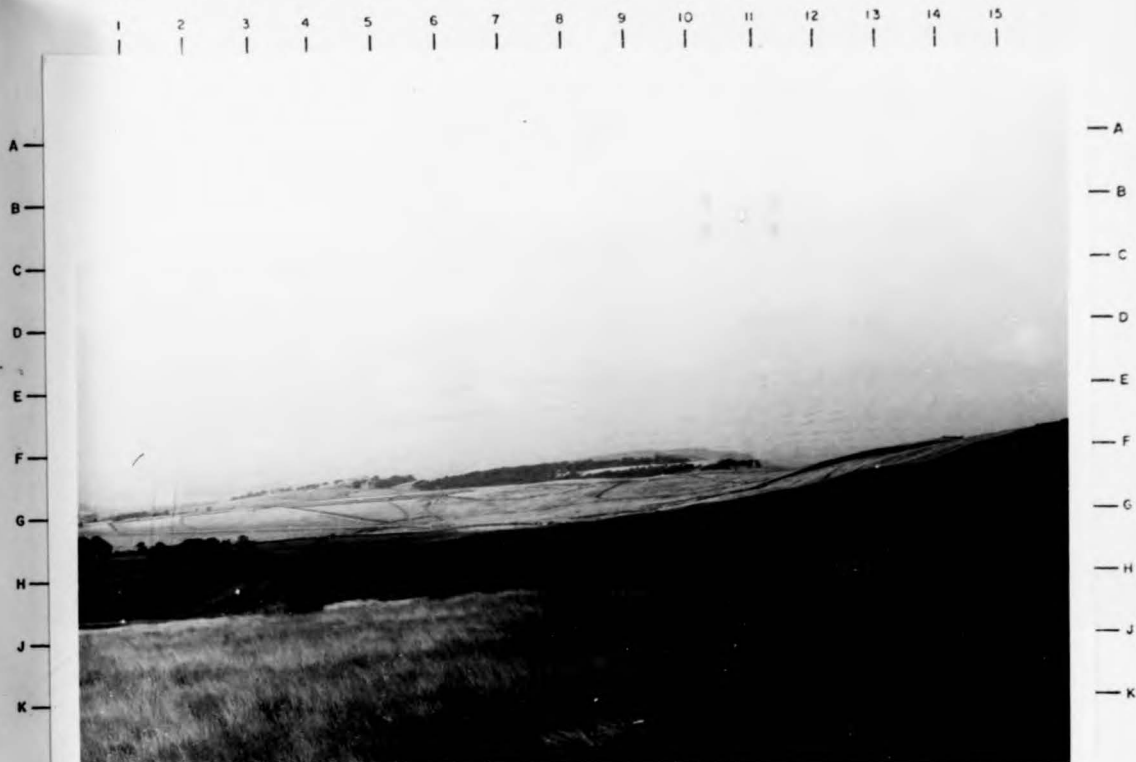
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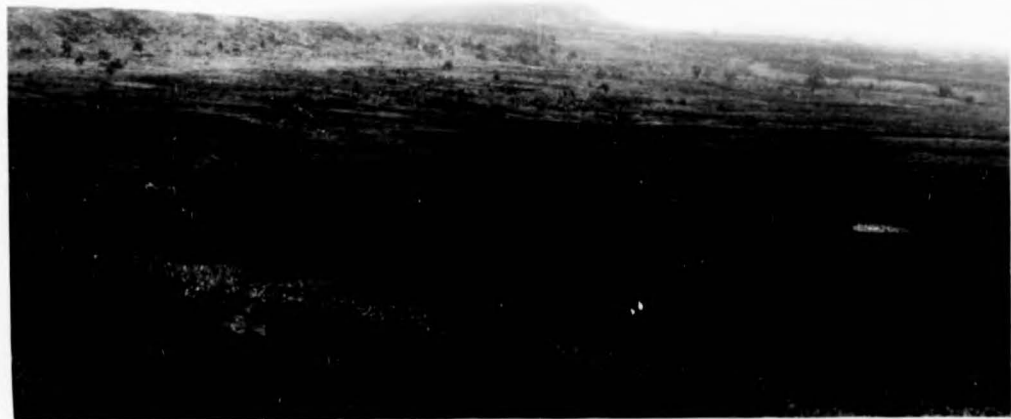
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PLATE 5

LOCALITY: Wall Grange Brickpit, near Cheddleton, Staffs.  
(See Plates 16, 17 & 22).

N.G. REF: SJ 9636 5330

DESCRIPTION: The Gastrioceras cancellatum (F1 - J9) and Gastrioceras cumbriense (E4 - G9) Marine Bands (Lithofacies 1) below red and purple laminated siltstones and mudstones (F12) (Lithofacies 2). The base of the Rough Rock commences at the top of the cliff at the extreme left of the photograph.

PLATE 6

LOCALITY: Mow Cop Quarry, Staffs. (See Plates 9, 11, 20, 33, 43).

N.G. REF: SJ 8684 5850

DESCRIPTION: Pale green kaolinitic clay bands (C8, J8, K10) between parallel bedded and tabular cross-bedded sandstone (Lithofacies 2, 12 & 9(1)b). The base of the sandstone is often load casted (H8) and occasionally the basal strike of the cross-beds is visible due to differential settlement of individual beds into the clay (H14).

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 7

LOCALITY: The Wash, Quarnford, Staffs.

N.G. REF: SK 0120 6634

DESCRIPTION: The relationship of the Gastrioceras subcrenatum Marine Band (E2) with the underlying mudstones (G5) and coal (G10) (Lithofacies 1, 2 & 3).  
(After Cope, 1946a)

PLATE 8

LOCALITY: Danebower Roadside Quarry, Chesh.

N.G. REF: SK. 0100 7000

LOCALITY: Parallel-Bedded sandstone with interbedded siltstones (F4) and coal smuts (J3). The top surface of the exposure (D10, E15) shows well-orientated plant stems and log fragments.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
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J—  
K—

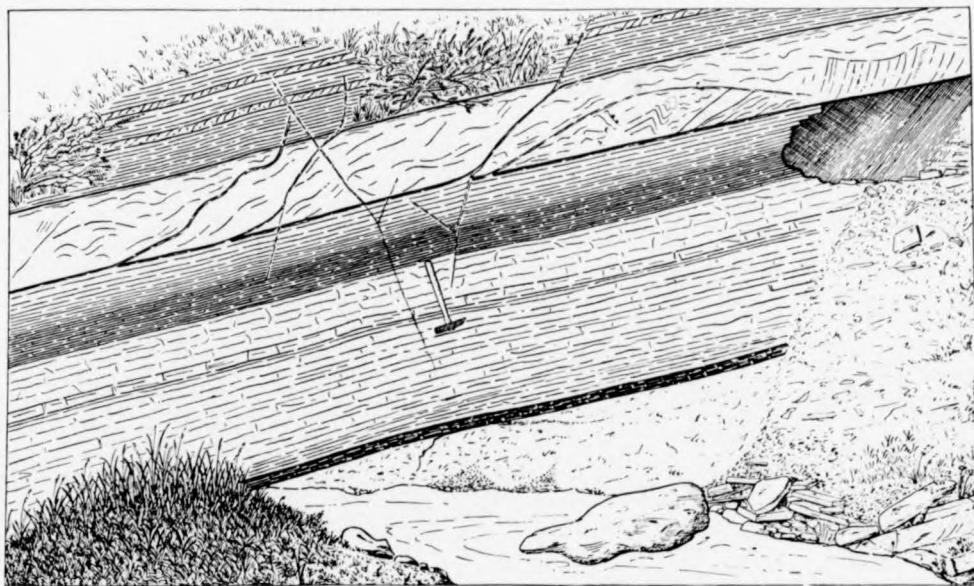


FIG. 3.—Sketch showing bed of contorted shale resting upon marine band. Stream near The Wash, Quarnford, Staffordshire.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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C—  
D—  
E—  
F—  
G—  
H—  
J—  
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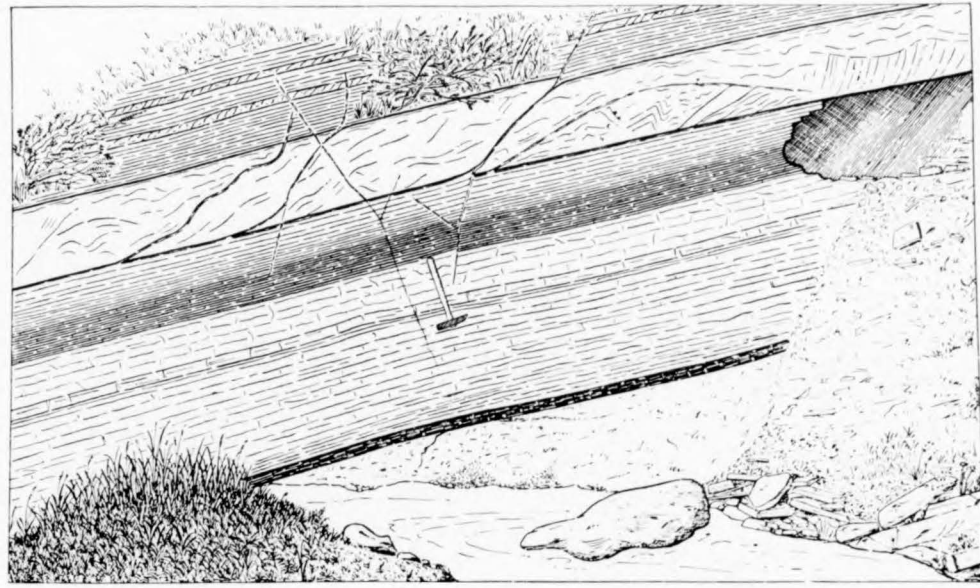
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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& 3).

bedded  
The  
(5) shows  
fragments.

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D—  
E—  
F—  
G—  
H—  
J—  
K—



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FIG. 3.—Sketch showing bed of contorted shale resting upon marine band. Stream near The Wash, Quarnford, Staffordshire.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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agments.

PLATE 9

LOCALITY: Mow Cop Quarry, Staffs. (See Plates 6, 11, 20, 33 & 43).

N.G. REF: SJ 8684 5850

DESCRIPTION: Basal surface of parallel and cross-bedded sandstone with dark brown angular shale pellets (F7) (Lithofacies 4).

PLATE 10

LOCALITY: Danebower Quarry, Chesh. (See Plate 49).

N.G. REF: SK 0130 7000

DESCRIPTION: Tabular cross-bedded sets (A13, D12) (Lithofacies 9(1)c) with basal shale pellet horizon (E4 - D15) (Lithofacies 4); underlain by thick tabular cross-bedded set (G9)(Lithofacies 9(1)a).

20, 33

d  
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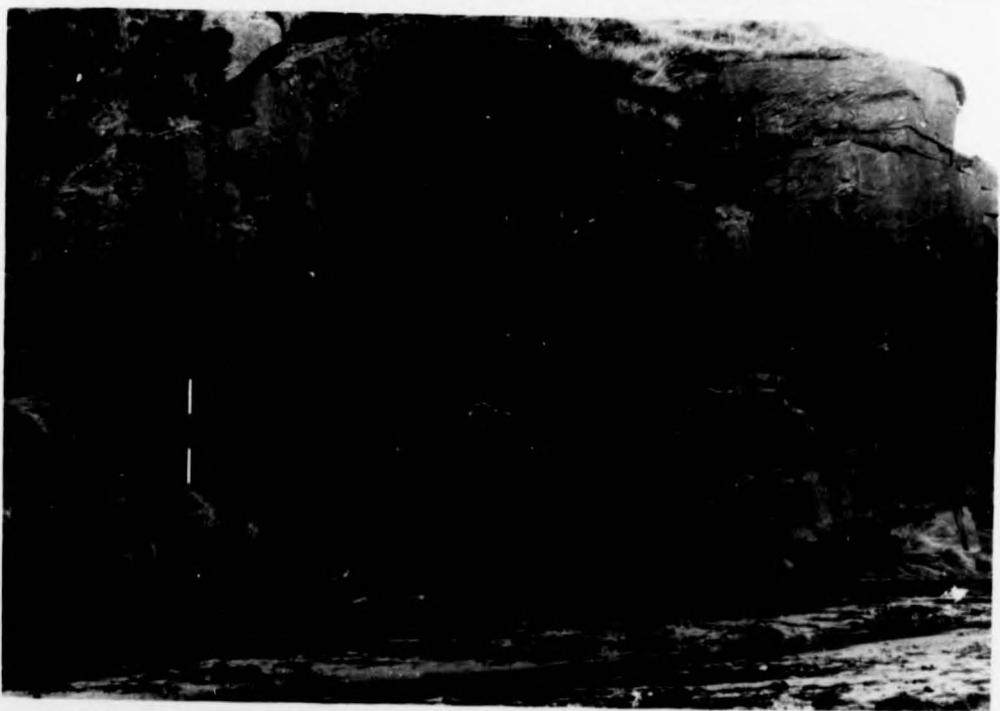
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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E4 - D15)  
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PLATE 11

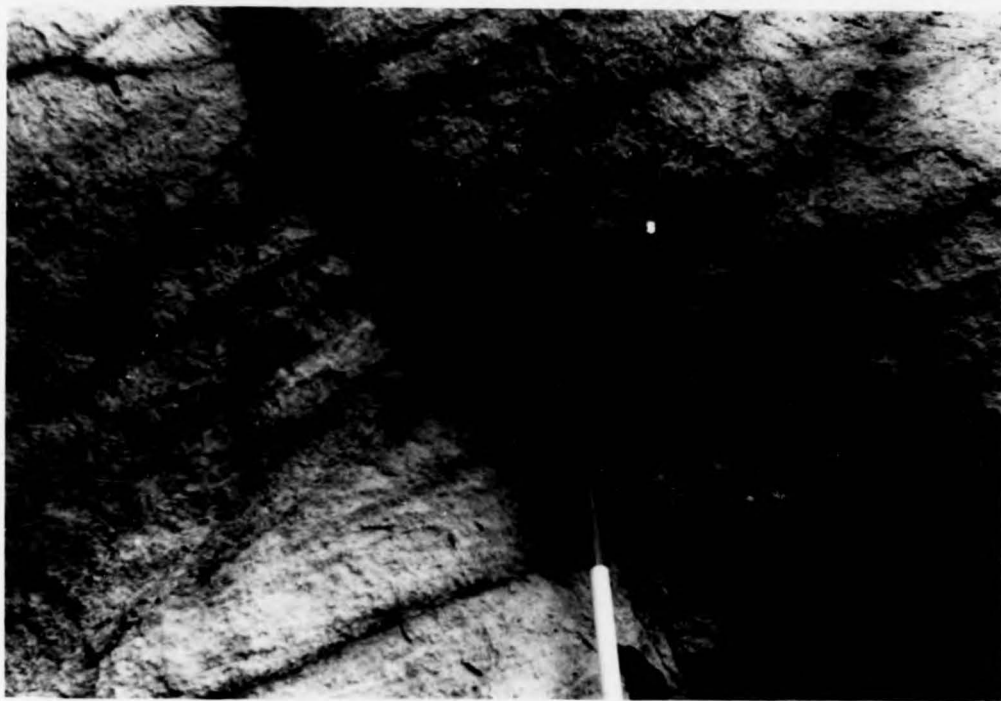
LOCALITY: Mow Cop Quarry, Staffs. (See Plates 6,9,20,33 & 43).  
N.G. REF: SJ 8675 5842  
DESCRIPTION: Dark brown, soft, mud pebbles (Centre of photograph) in a coarse grained, friable sandstone with poorly developed cross-bedding and iron stained bedding planes and joints (Lithofacies 4).

PLATE 12

LOCALITY: Goytsclough Quarry, Derbys. (See Plates 34,39,55 & 56).  
N.G. REF: SK 0110 7340  
DESCRIPTION: Poorly to moderately bedded shale conglomerate (Lithofacies 5) with local channel (centre of photograph) overlain by tabular cross-bedded sets (Lithofacies 9(1)c) and underlain by massive beds to thick tabular cross-beds.

33 & 43).

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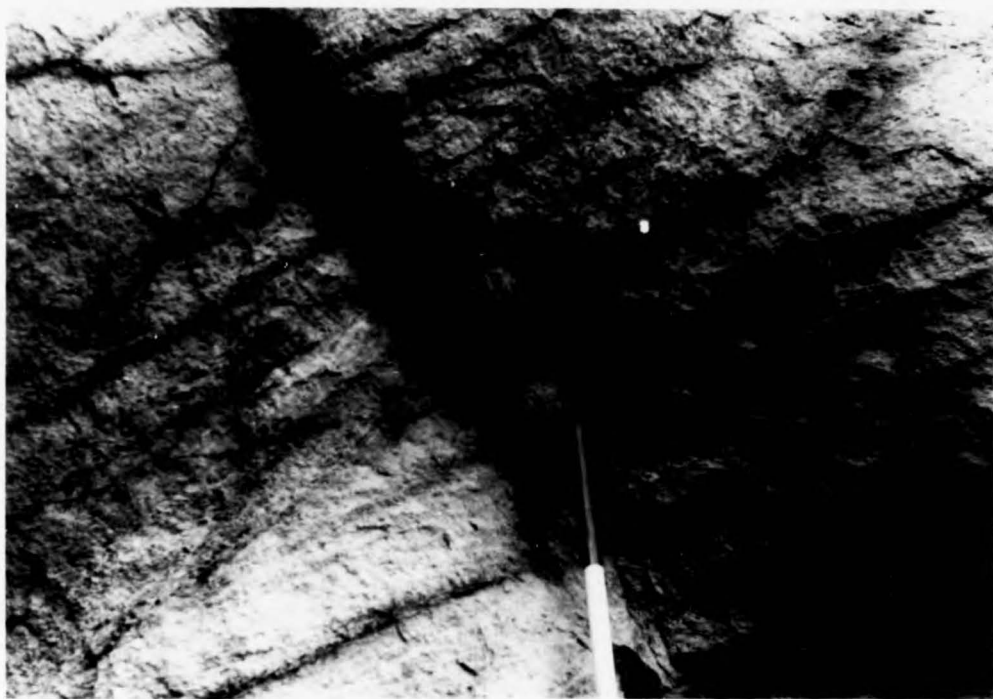
, 39, 55 & 56).

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33 & 43).

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of photograph)  
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thick tabular



PLATE 13

LOCALITY:

Issue Tor Quarry, near Fernilee, Derbys.  
(See Plates 32 & 37).

N.G. REF:

SK 0105 7735

DESCRIPTION:

Shale conglomerate bed (centre of photograph)  
underlain by thick tabular cross-bedded set.

PLATE 14

LOCALITY:

Cracken Edge Quarry, near Chinley, Derbys.  
(See Plates 36, 50, 62, 63 & 64).

N.G. REF:

SK 0370 8360

DESCRIPTION:

Moderately orientated, rounded shale pebbles  
and cobbles at the base of a shale conglomerate.  
(Lithofacies 5).

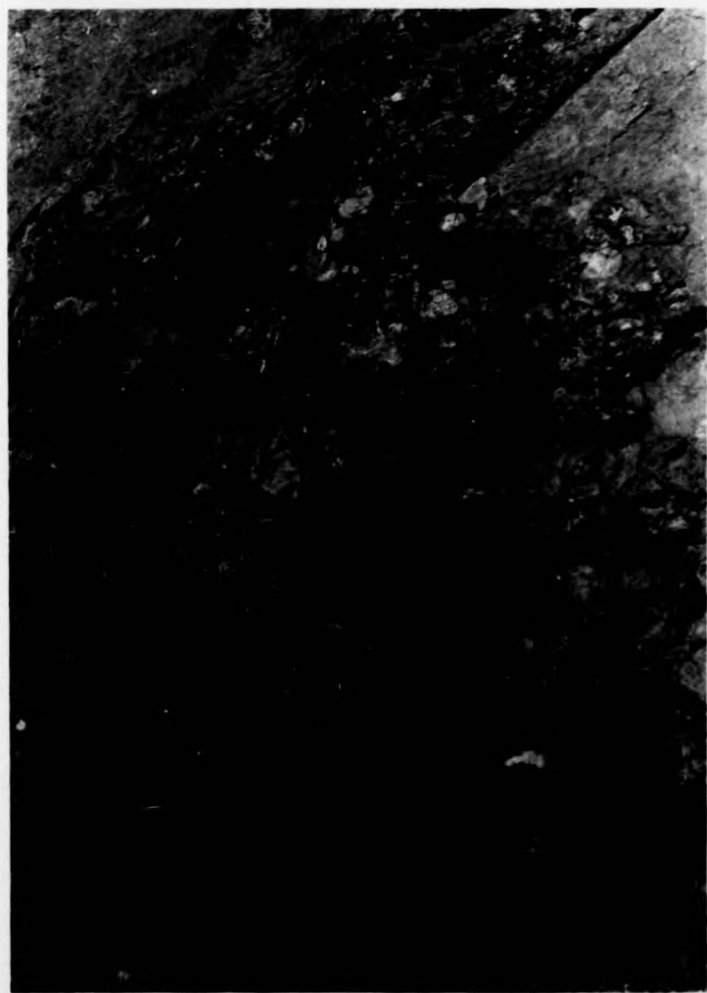




PLATE 15

LOCALITY:

Moorside Lodge, near Disley, Ches.

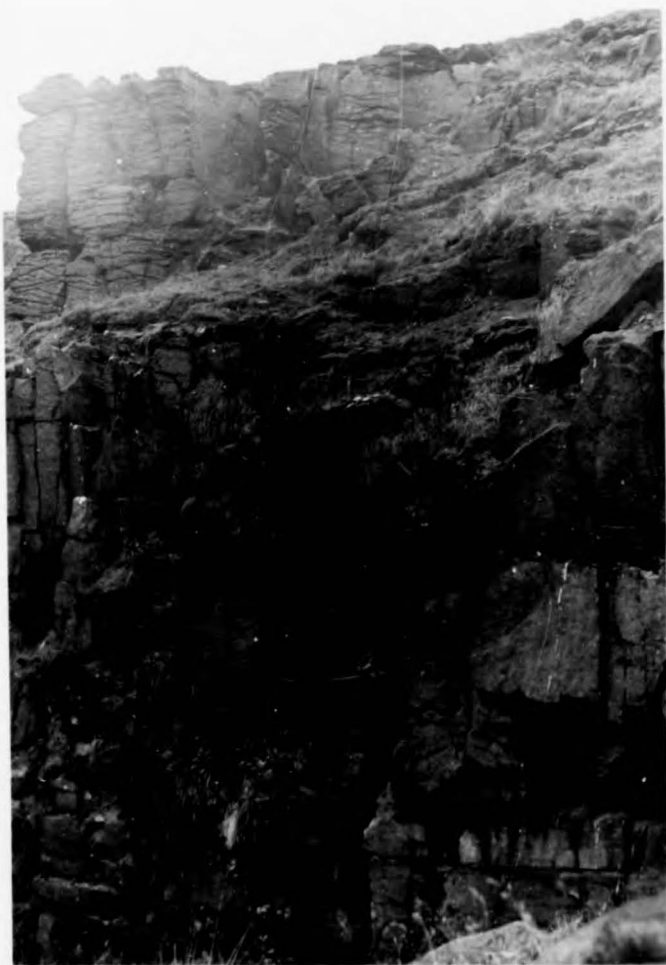
N.G. REF:

SJ 9880 8280

DESCRIPTION:

Mixed conglomerate of plant and log fragments, red and grey mudstone pebbles and quartz and occasional feldspar pebbles, towards the base of the Rough Rock (Lithofacies 6).

ents,  
and  
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ents,  
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PLATE 16

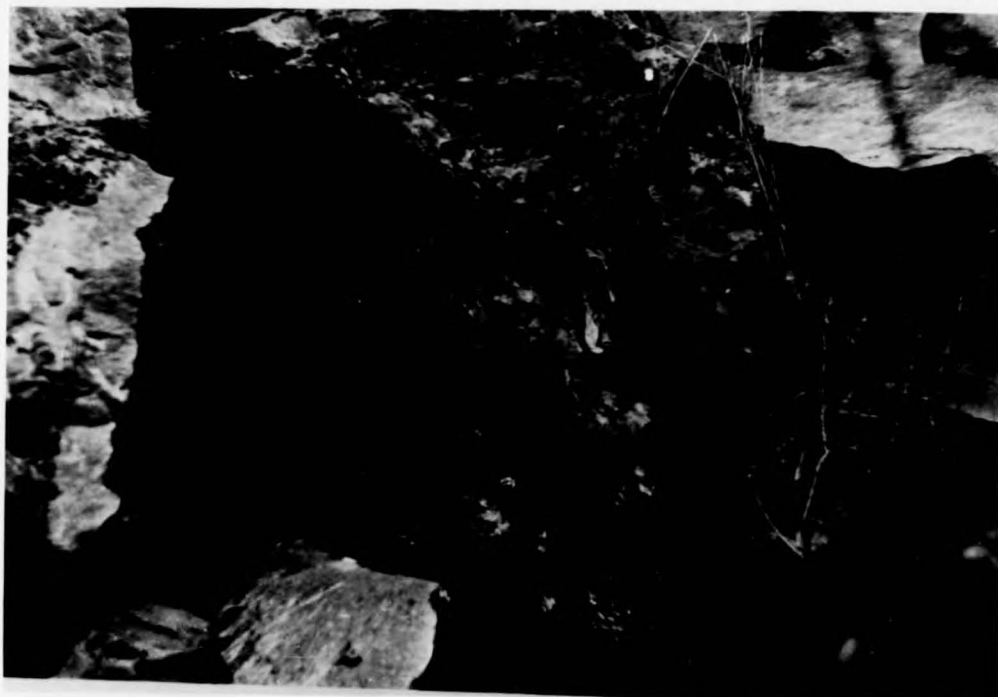
LOCALITY: Wall Grange Brickpit, near Cheddleton, Staffs.  
N.G. REF: SJ 9634 5333  
DESCRIPTION: Fallen block of mixed conglomerate from the base of the Rough Rock. Log-fragments form the dominant constituent with subordinate amounts of quartzitic pebbles and mudstone pebbles. The light streaks are concentrations of pale green kaolinitic clay (Lithofacies 6).

PLATE 17

LOCALITY: Wall Grange Brickpit, near Cheddleton, Staffs.  
N.G. REF: SJ 9634 5333  
DESCRIPTION: The sharp base of the Rough Rock resting with low angled unconformity on red siltstones and mudstones.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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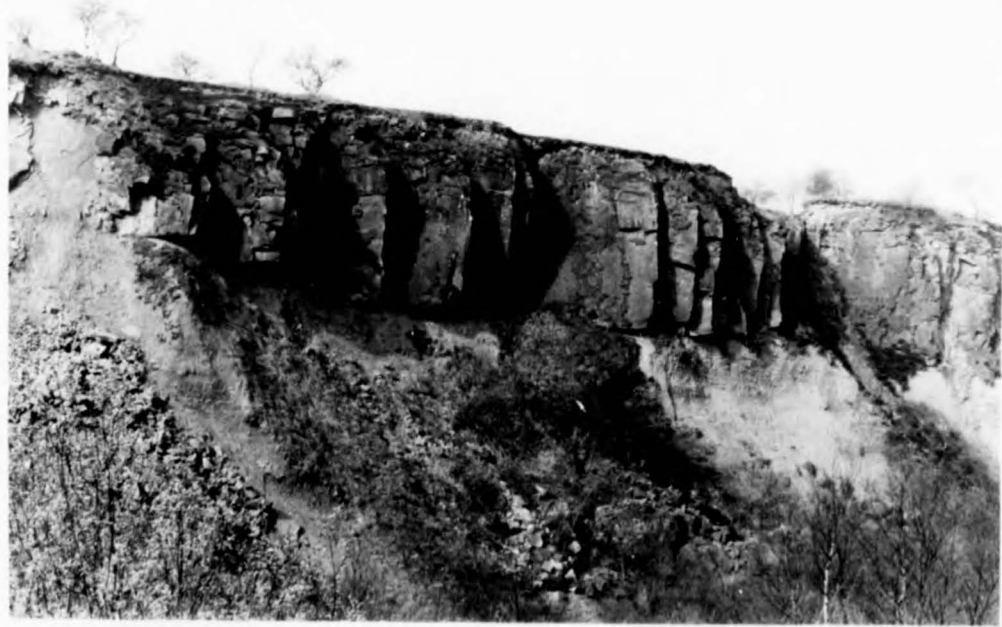
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PLATE 18

LOCALITY:

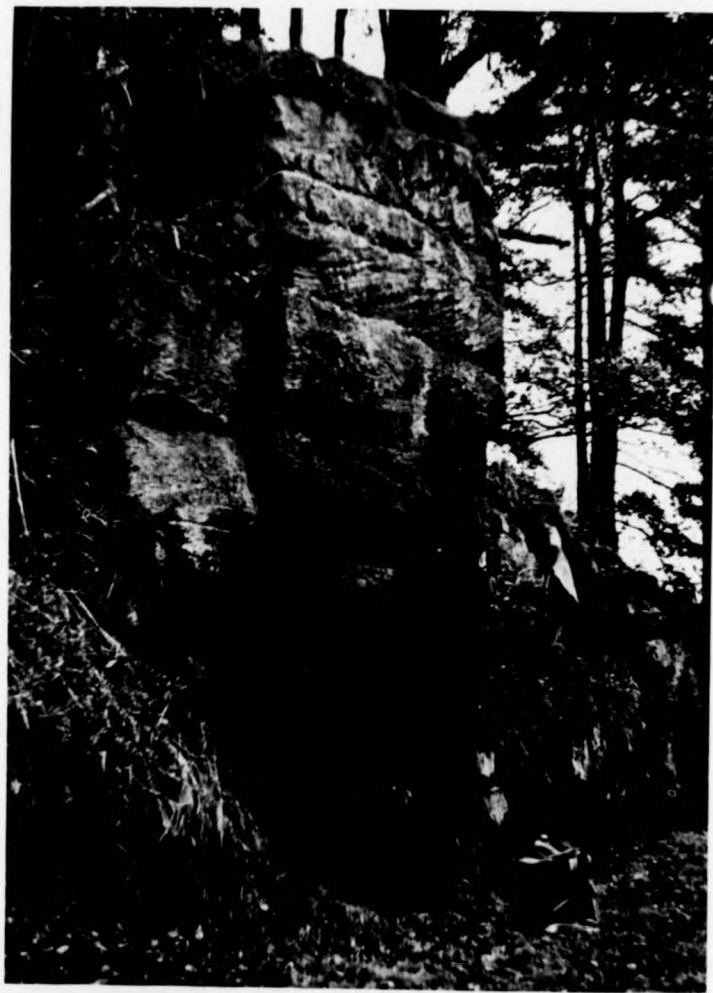
Foxt, Staffs. (See Plates 23, 24 & 41).

N.G. REF:

SK 0365 4876

DESCRIPTION:

High and low angled tabular shaped cross-bedded set picked out by pebbly layers at the base of the Rough Rock (Lithofacies 7 & 9(1)c).



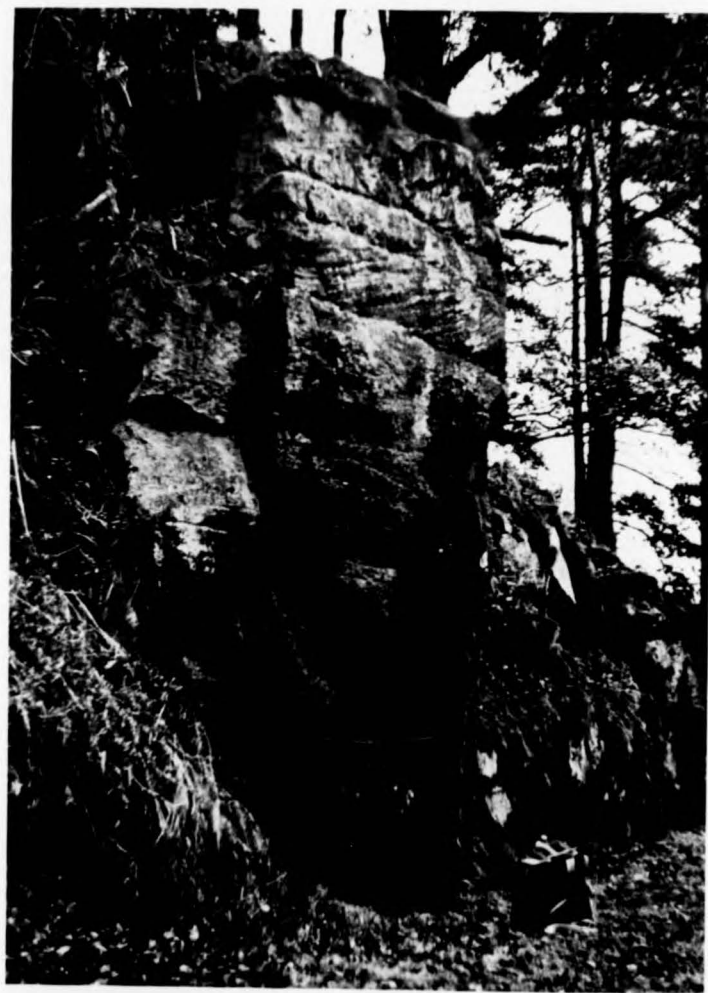


PLATE 19

LOCALITY:

Cawton's Well, near Biddulph, Staffs.

N.G. REF:

SJ 9000 5561

DESCRIPTION:

Pebble-bands delineating the bases of tabular cross bedded sets and occasional cross-beds (Lithofacies 7 & 9(1)c).

ubular  
eds



abular  
beds



abular  
beds

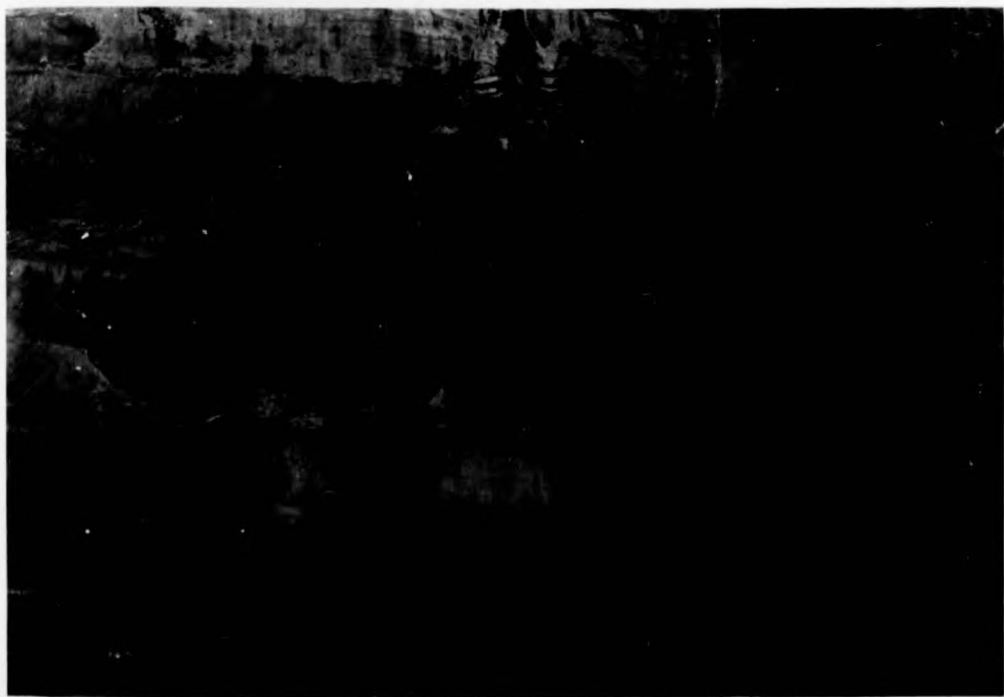
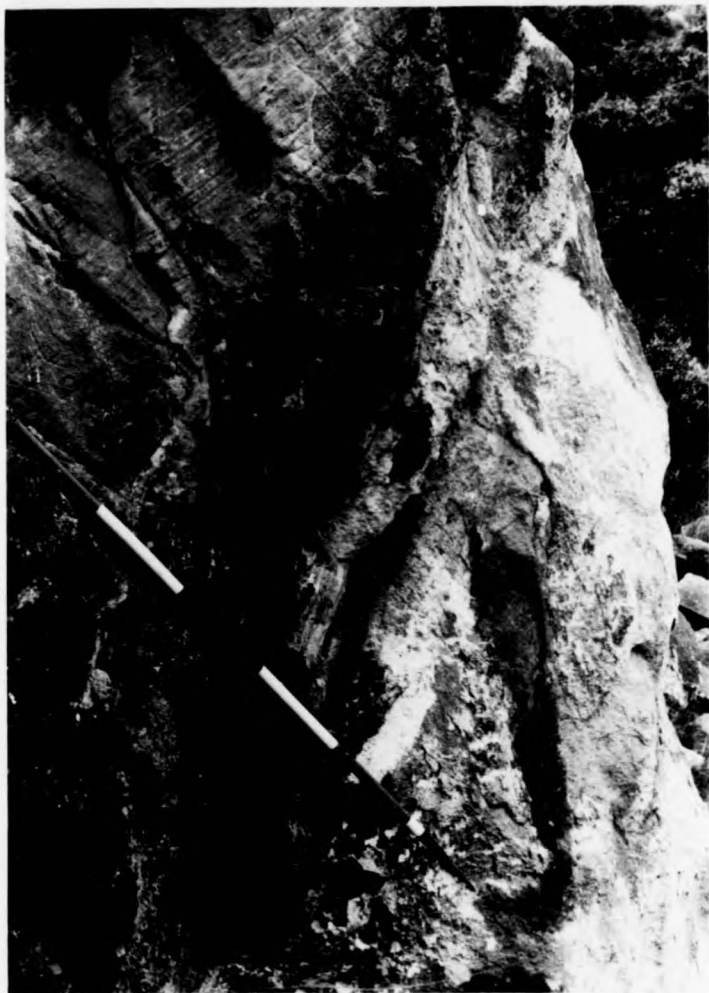


PLATE 20

LOCALITY: Mow Cop Quarry, Staffs. (See Plates 6, 9, 11, 33 & 43).  
N.G. REF: SJ 8684 5850  
DESCRIPTION: Pebble bands near the base of the Rough Rock. The thickest band corresponds to the base of the thick tabular cross-bed, whilst the single layer bands mark the base of thin parallel beds and low-angle tabular cross-beds (Lithofacies 7).

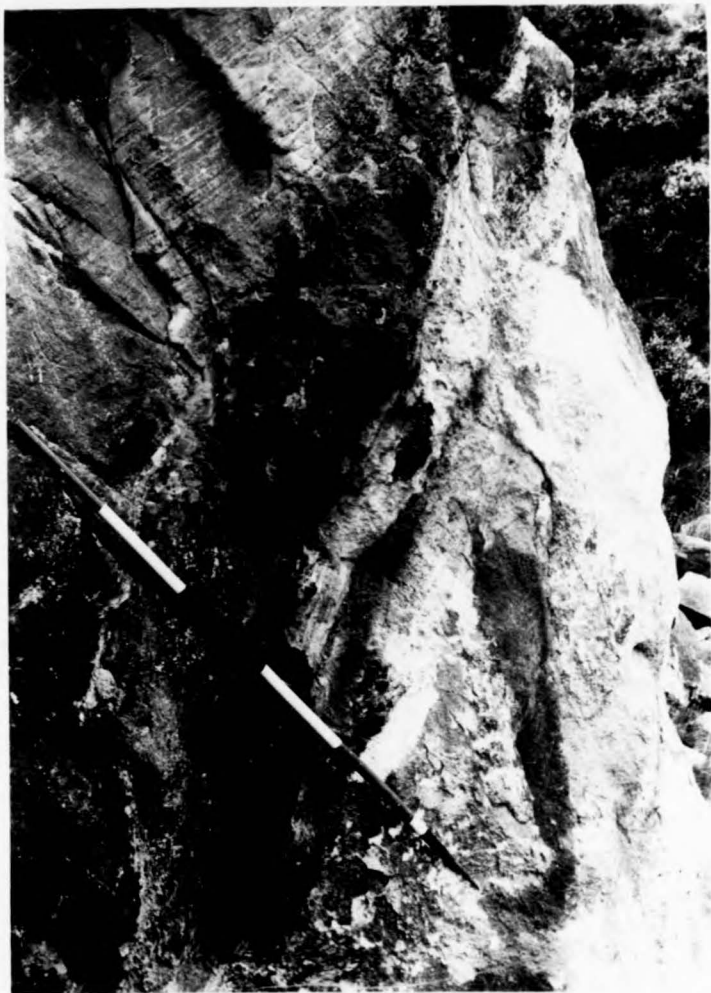
PLATE 21

LOCALITY: Coxbench Quarry, Derbys.  
N.G. REF: SK 3700 4300  
DESCRIPTION: Flame-like contortions in an otherwise structureless medium to fine grained sandstone (Lithofacies 8(i)).



11, 33 & 43).

ck.  
of the  
layer  
and  
)).

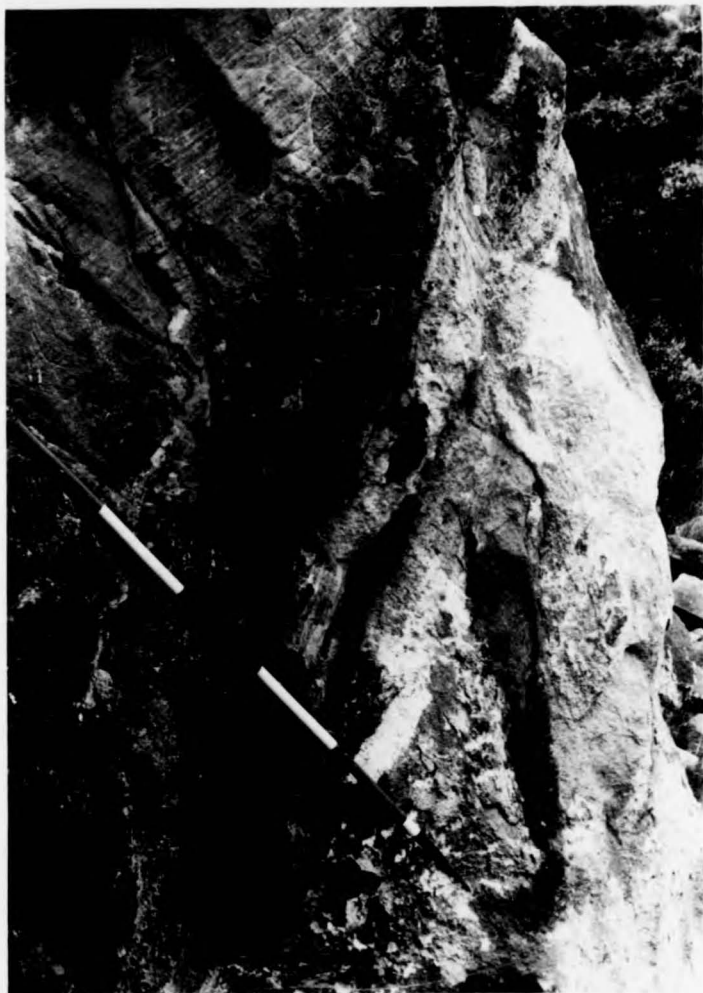


one

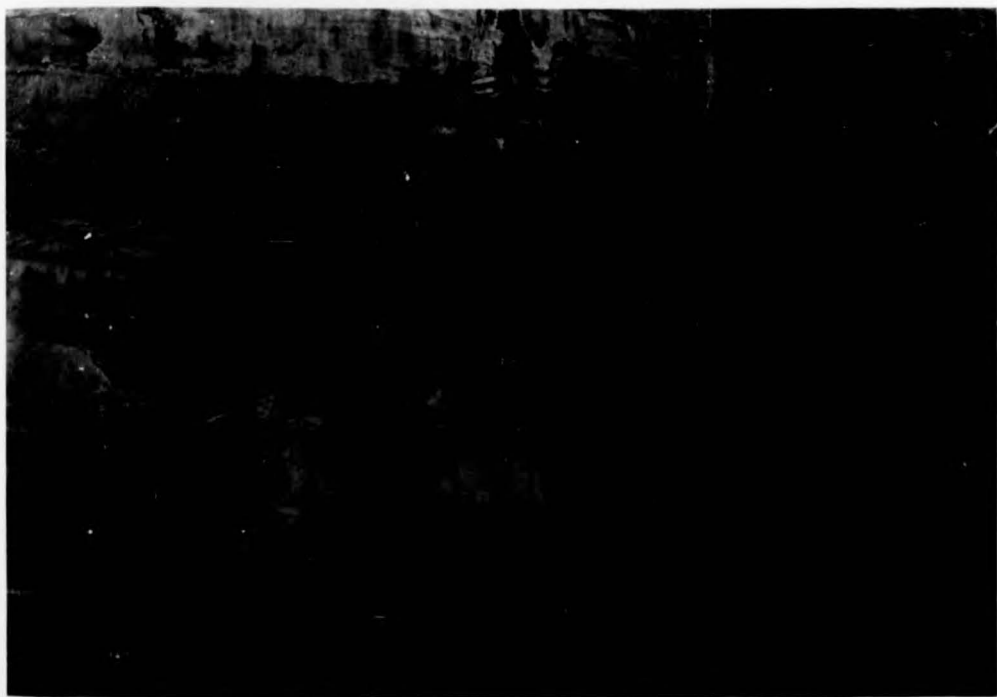


1, 33 & 43).

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f the  
layer  
nd  
).

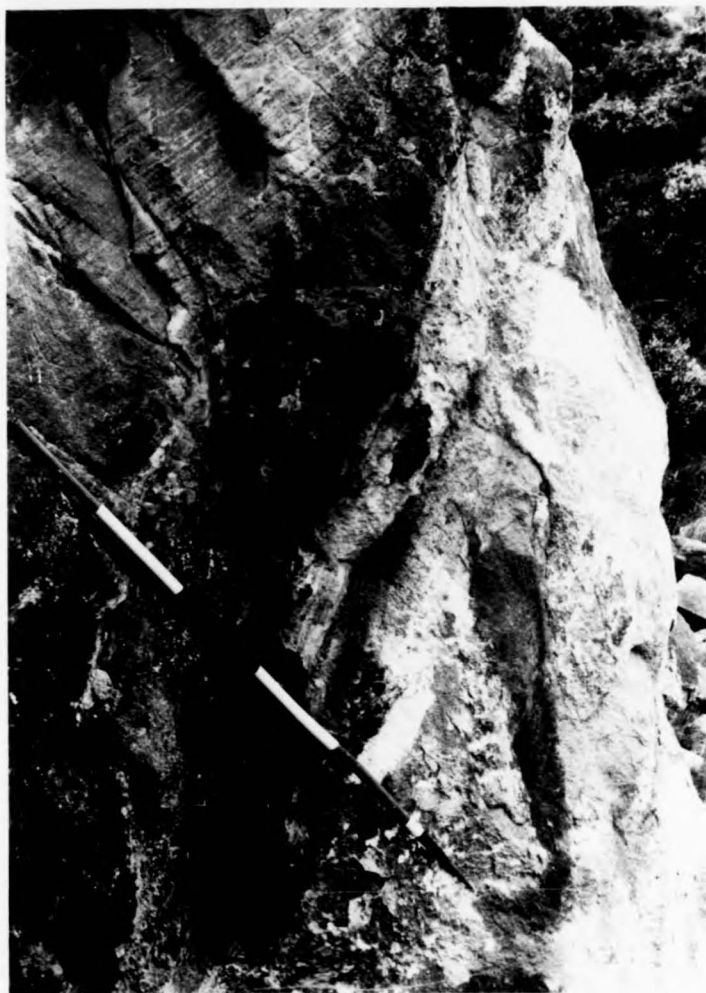


one



1, 33 & 43).

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f the  
layer  
nd  
).



one



PLATE 22

LOCALITY: Wall Grange Brickpit, near Cheddleton, Staffs.  
N.G. REF: SJ 9625 5336  
DESCRIPTION: Contorted graded sandstone in the thick tabular cross-bedded sets at the base of the Rough Rock. Note the variation in asymmetry from the bottom to top of the photograph (Lithofacies 8(ii) & 9(1)a).

PLATE 23

LOCALITY: Foft, Staffs. (See Plates 18, 24, 41 & 42).  
N.G. REF: SK 0368 4830  
DESCRIPTION: Low amplitude undulations in thick tabular cross-bedded set overlain by complex contortions in both thick and possibly medium scale-tabular cross-bedded sets. The medium scale tabular cross-bedding in the upper right of the photograph may be sheared sections of the thick cross-beds (Lithofacies 8(ii) & 9(1)a).

affs.

abular  
h Rock.  
bottom  
i) &



ar  
ortions  
abular  
lar  
photograph  
s-beds



stuffs.

tabular  
h Rock.  
bottom  
li) &



ar  
ortions  
tabular  
ular  
photograph  
ss-beds



PLATE 24

LOCALITY:

Foxt, Staffs. (See Plates 18,23,41 & 42).

N.G. REF:

SK 0368 4830

DESCRIPTION:

High amplitude contortions in graded medium to coarse grained sandstone. Note the initial symmetrical form (G11) progressing into an asymmetrical form (E8) with finally a loss of definition in the chaotically bedded zone (C5).

PLATE 25

LOCALITY:

Moneystone, Staffs.

N.G. REF:

SK 0510 4670

DESCRIPTION:

High and low amplitude, asymmetric contortions.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
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—F  
—G  
—H  
—J  
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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(C5).

tions.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 26

LOCALITY: Lodge Barn, near Biddulph, Staffs.  
N.G. REF: SJ 9003 5570  
DESCRIPTION: Asymmetrical contortions (F7) and associated weakly contorted tabular cross-bedding (J10) with a possible contemporary axial plane shear (F5 - K8), overlain by tabular cross-beds (F9).

PLATE 27

LOCALITY: Knyperlsey Park, near Biddulph, Staffs.  
N.G. REF: SJ 8995 5600  
DESCRIPTION: Symmetrical to slightly contorted (H12) with associated shear (G12) and low amplitude contortions (G10) overlain by medium scaled tabular cross-bedded sets (E10) (Lithofacies 8(iii)).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 28

LOCALITY:

Knypersley Park, near Biddulph, Staffs.

N.G. REF:

SJ 8995 5600

DESCRIPTION:

Circular planes of weakness with enclosed asymmetrical contortions overlain by tabular shaped cross-bedding. The lateral equivalent of the slumbed feature is clearly depicted as a thick tabular shaped cross-bedded set (Lithofacies 8(iii)).

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ar  
ent

PLATE 29

LOCALITY:

Morley Moor Quarry, near Derby, Derbys.

N.G. REF:

SK 3800 4200

DESCRIPTION:

Rough sketch of the quarry face showing massive to thick tabular cross-beds in part contorted, with an associated circular plane (Lithofacies 8(iii)) overlain by parallel bedded sandstone (Lithofacies 12).



34



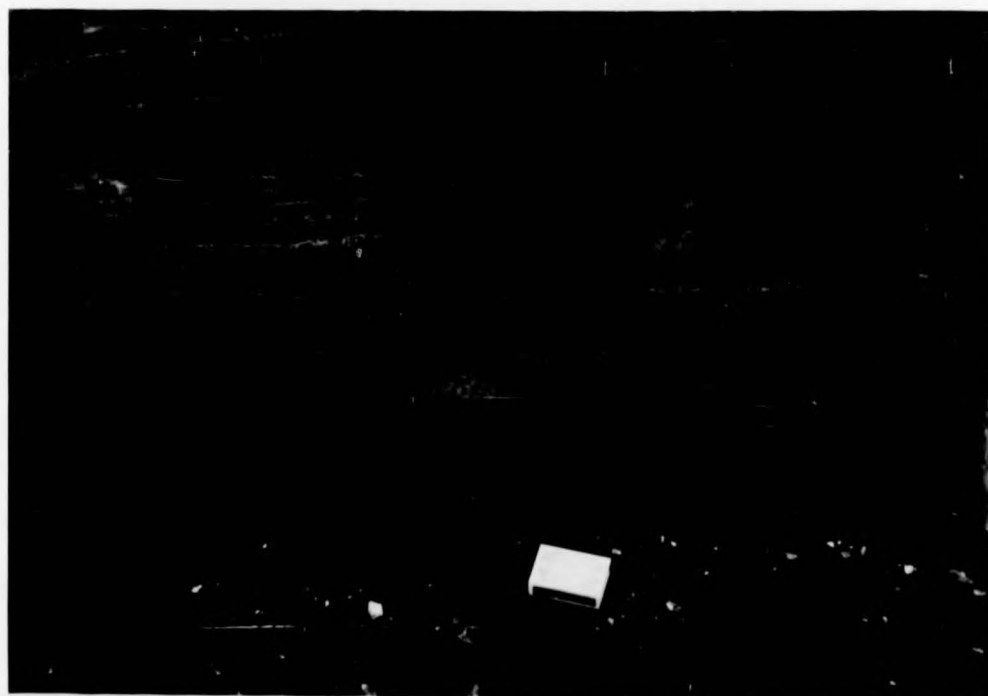
345

PLATE 30

LOCALITY: Morley Moor Quarry, near Derby, Derbys.  
N.G. REF: SK 3800 4200  
DESCRIPTION: End view of the face depicted in Plate 29 showing the circular plane enclosing small scale contortions (Lithofacies 8(iii)).

PLATE 31

LOCALITY: Brown Edge, near Biddulph, Staffs.  
N.G. REF: SJ 9074 5349  
DESCRIPTION: Small scale symmetrical to slightly asymmetrical contortions. Note the thickening of the coarser grained beds at the crests of the contortions and the increase in asymmetry upwards (Lithofacies 9(iv)).



metrical  
coarser  
ions  
thofacies



metrical  
coarser  
ions  
thofacies

PLATE 32

LOCALITY: Issue Tor Quarry, near Fernilee, Derbys.  
(See Plates 13 & 37).

N.G. REF: SK 0105 7735

DESCRIPTION: Thin contorted band exposed as a fallen block,  
the top surface shows the plan form of the upper  
asymmetrical forms in the band (Lithofacies 8(iv)).

PLATE 33

LOCALITY: Mow Cop Quarry, Staffs. (See Plates 6,9,11,20 & 43).

N.G. REF: SJ 8684 5850

DESCRIPTION: A possible contorted zone, the cross bedding (H9)  
appear to have locally been overturned (F9) as  
shown by the kaolinitic clay bands (F7) and load  
casted horizons (D7, E10) (Lithofacies 8(v)).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

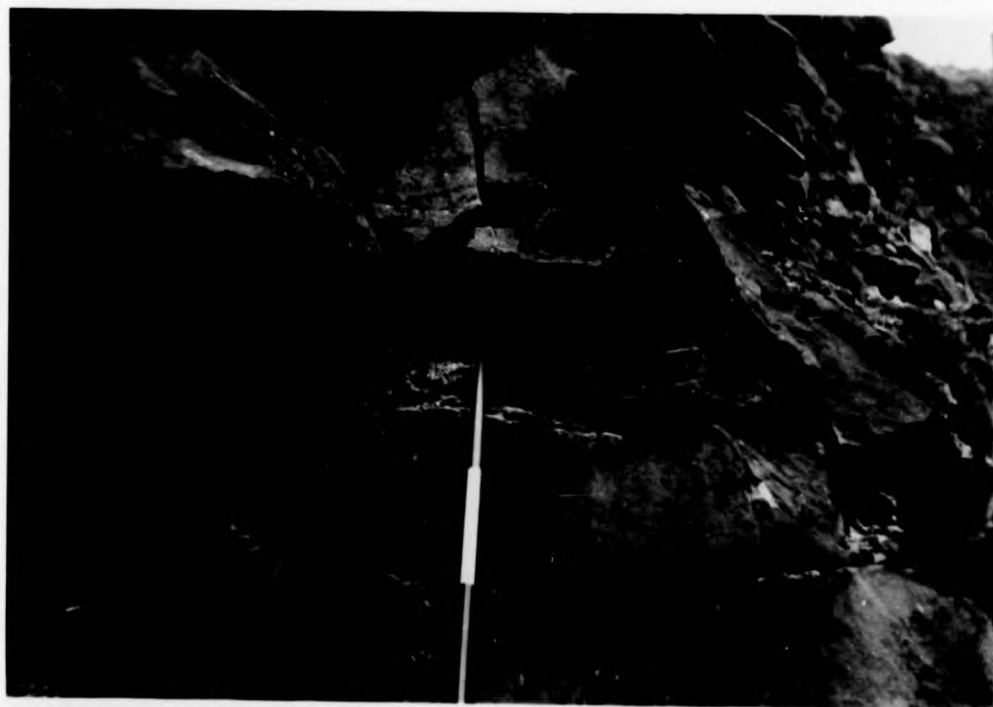
A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

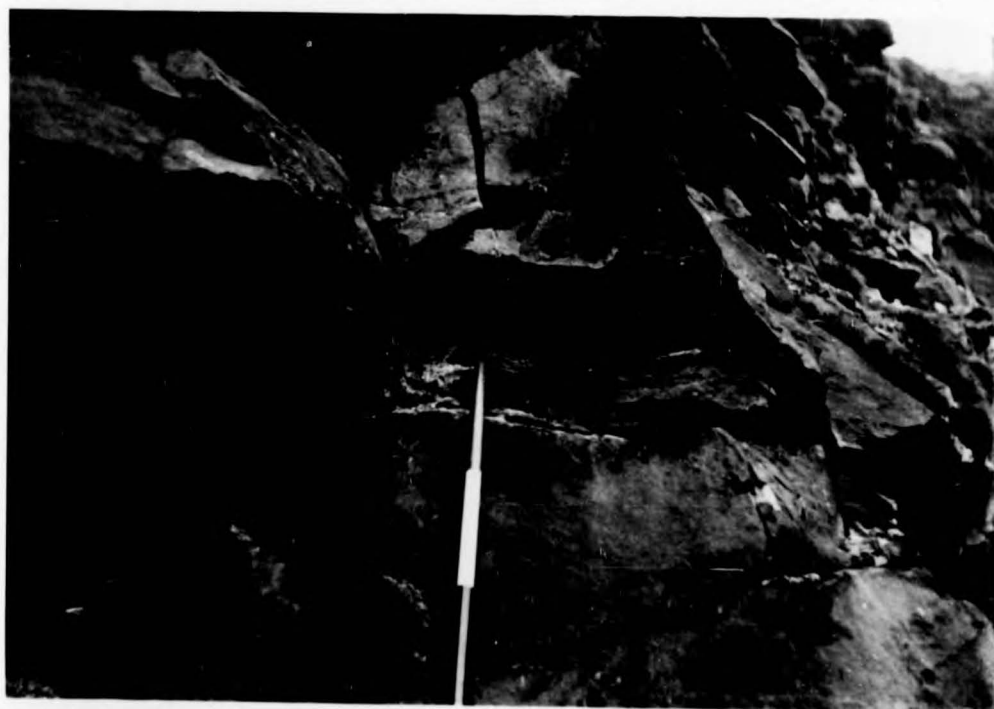
A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 34

LOCALITY: Goytsclough Quarry, Goyt Valley, Derbys.  
N.G. REF: SK 0120 7327  
DESCRIPTION: Undulating parallel-bedding (C9) (Lithofacies 8(v)) grading into massive beds (F9) and underlain by apparent thick tabular cross-bedding with intercalated shale pellet bands (J11).

PLATE 35

LOCALITY: Foxlow Edge, Goyt Valley, Derbys. (See Plate 2).  
N.G. REF: SK 0050 7550  
DESCRIPTION: Pebbly, trough shaped cross-bedded sandstone.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 36

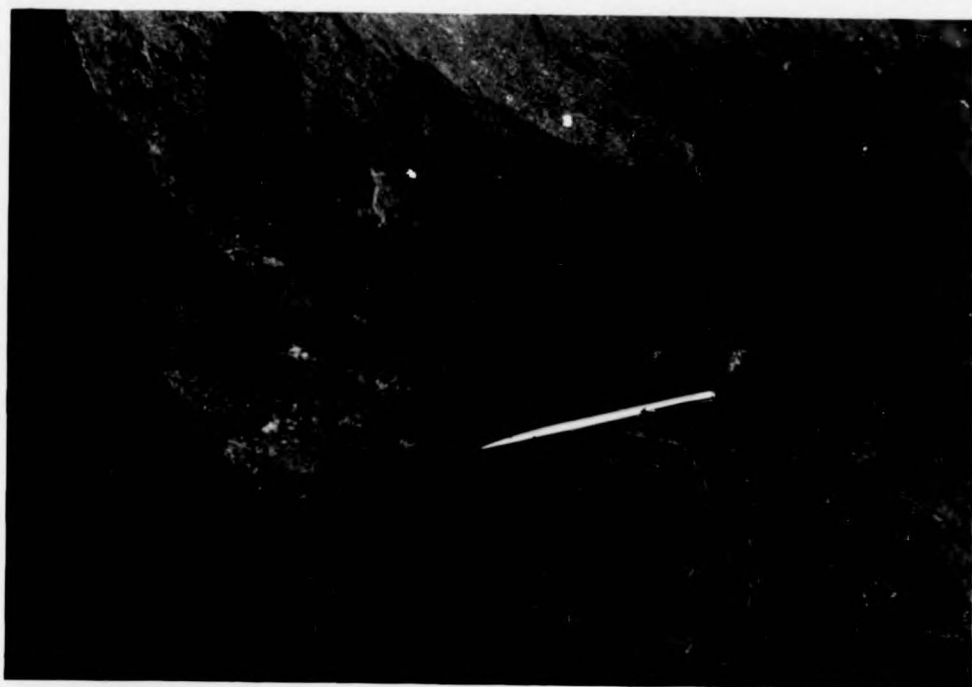
LOCALITY: Cracken Edge Quarry, near Chinley, Derbys.  
(See Plates 14, 50, 62, 63 & 64).  
N.G. REF: SK 0370 8360  
DESCRIPTION: Lepidodendron log fragments in medium grained,  
tabular cross-bedded set.

PLATE 37

LOCALITY: Issue Quarry, Near Fernilee, Derbys. (See Plates  
13 & 32).  
N.G. REF: SK 0105 7735  
DESCRIPTION: The largest plant fragment observed in the  
Rough Rock, as observed on a cross-bedding  
plane in a thick, tabular cross-bedded set.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —

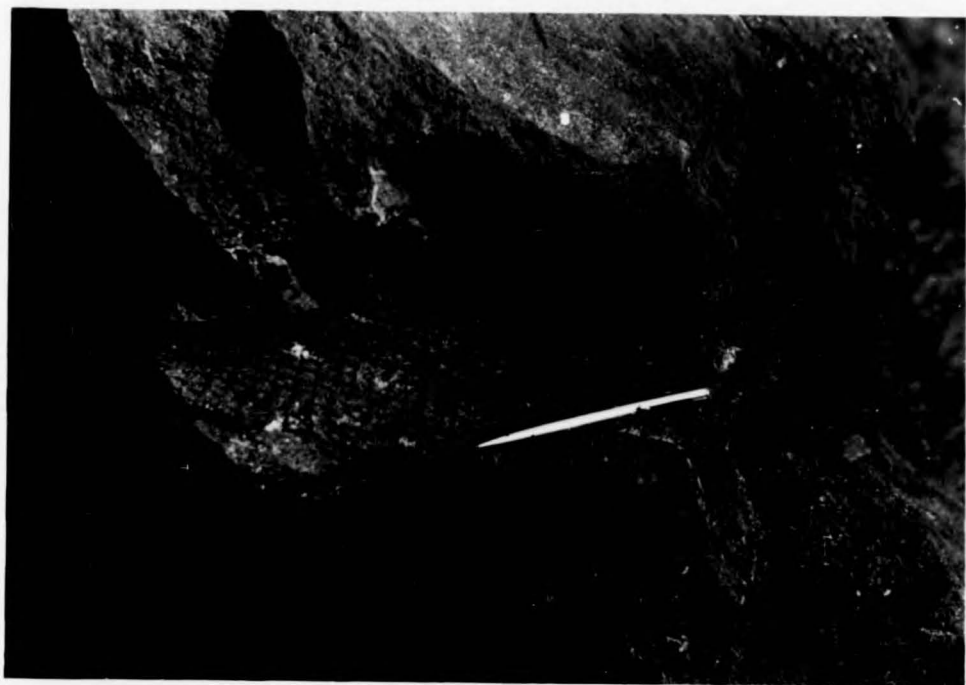


— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
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— F  
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— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 38

LOCALITY: Moneystone Quarry, near Cheadle, Staffs.  
N.G. REF: SK 0475 4623  
DESCRIPTION: Mud granules in a tabular shaped, finely cross-bedded set. The random distribution of the granules would suggest an origin due to the decomposition of feldspar.

PLATE 39

LOCALITY: Goytsclough Quarry, Goyt Valley, Derbys.  
(See Plates 12, 34, 55 & 56).  
N.G. REF: SK 0120 7320  
DESCRIPTION: Concretions in massive bedded sandstone (E10, G4).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —

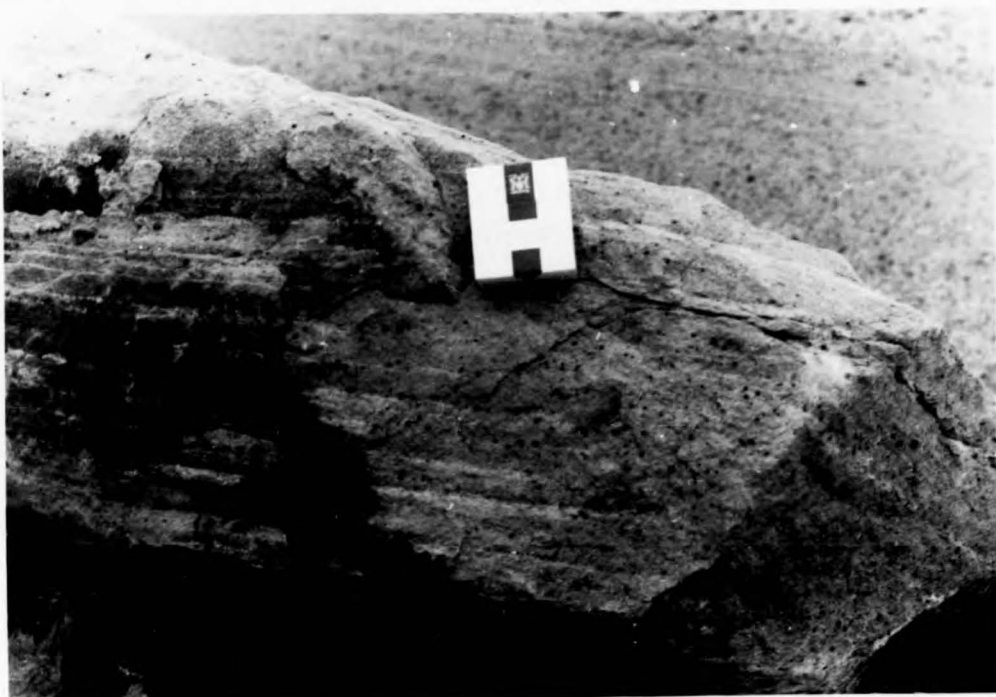


— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 40

LOCALITY: Knypersley Park, near Biddulph, Staffs.  
N.G. REF: SJ 8990 5600  
DESCRIPTION: Thick medium scaled tabular cross-beds (Lithofacies 9(1)a) underlying the lithofacies shown in Plate 27 and 28.

PLATE 41

LOCALITY: Foxt, near Cheadle, Staffs (See Plates 23, 24 & 42).  
N.G. REF: SK 0365 4876  
DESCRIPTION: Thick tabular shaped cross-bedded set, (Lithofacies 9(1)a), parallel bedded sandstone (Lithofacies 12) and a medium scaled (Lithofacies 9(1)c) tabular set, the latter showing both tangential (E3) and angular (E7) basal erosive contacts with the underlying set.

facies  
ate 27

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

24 & 42).

ofacies  
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ular set,  
angular  
ying set.

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

facies  
late 27

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

24 & 42).

facies  
ies (12)  
ular set,  
angular  
ying set.

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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PLATE 42

LOCALITY: Foxt, near Cheadle, Staffs. (See Plates 23, 24 & 41).  
N.G. REF: SK 0365 4876  
DESCRIPTION: Possible representative of back-set ripples below  
a thick medium scaled cross-bedded set.

PLATE 43

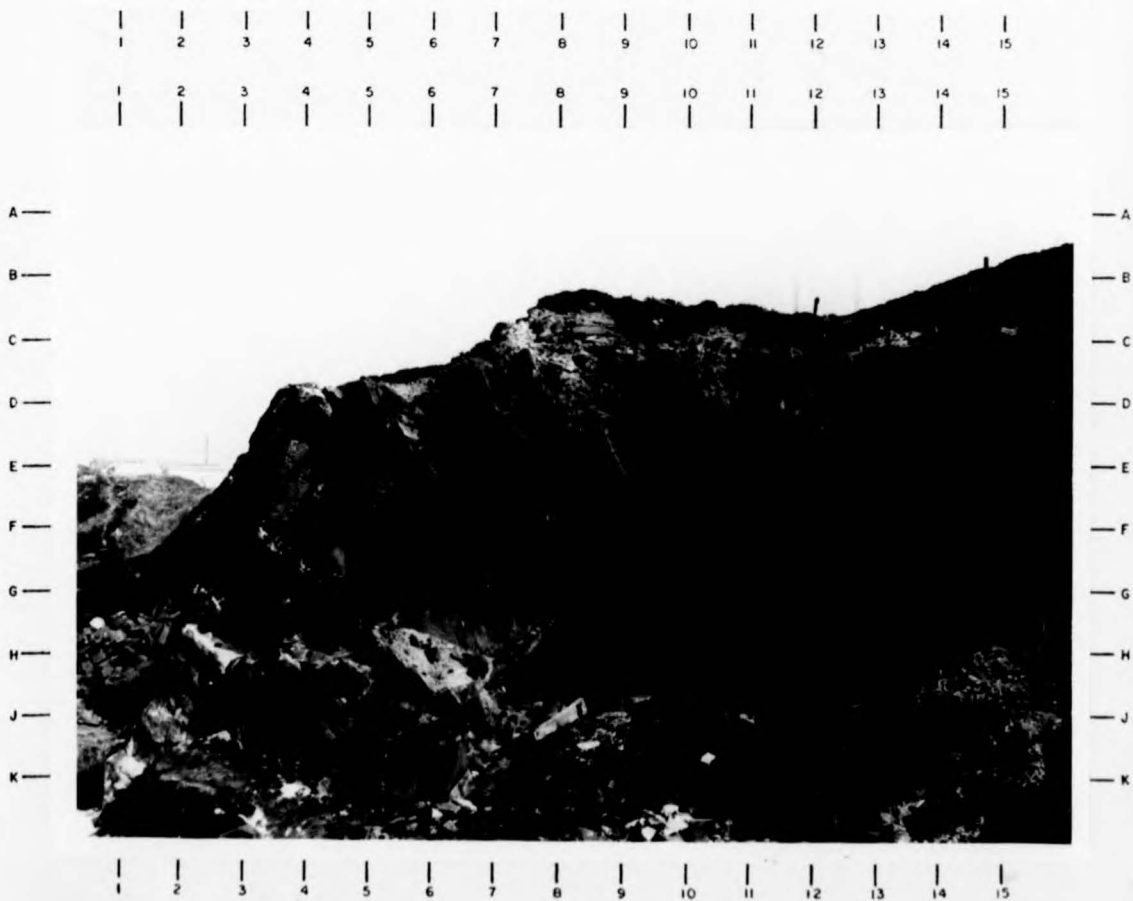
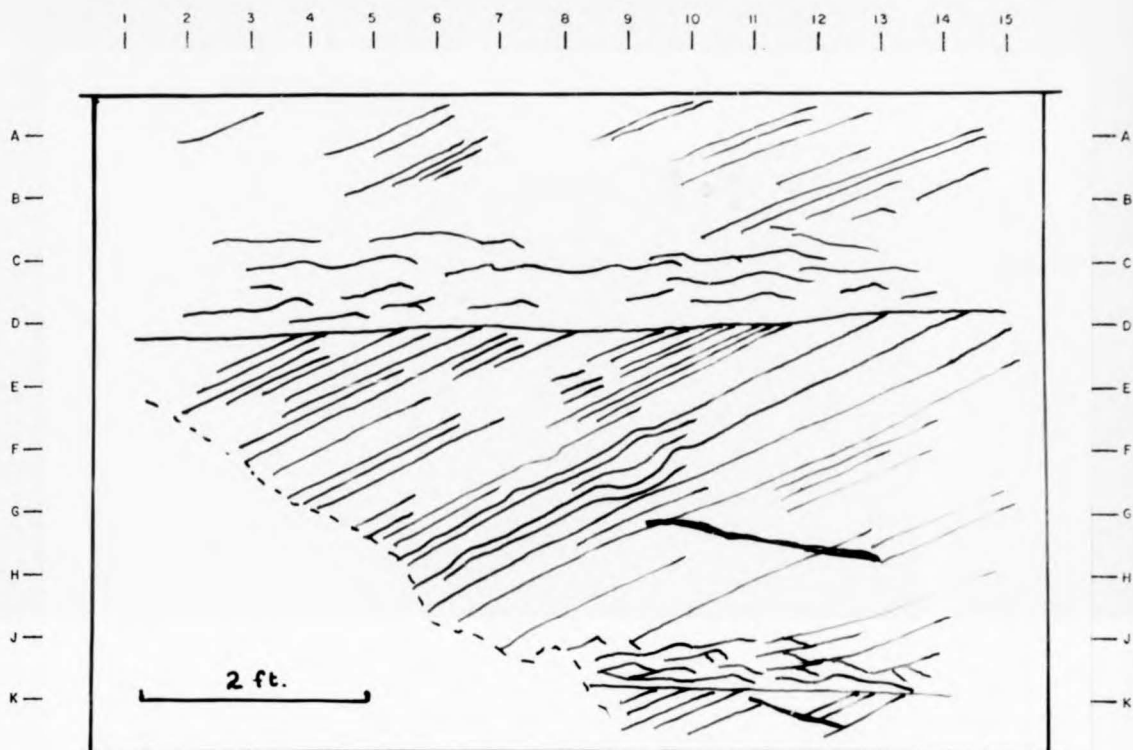
LOCALITY: Mow Cop Quarry, Staffs. (See Plates 6, 9, 11, 20 & 33).  
N.G. REF: SJ 8684 5850  
DESCRIPTION: Thick tabular cross-bedded sets (E4, G11 & F13)  
between parallel bedded (H4) and medium scale  
tabular cross-bedded (G8, F11) sandstones. The  
straight basal contacts (H5).

4 & 41).

below

20 & 33).

f13)  
le  
The



4 & 41).

below

20 & 33).

13)  
le  
The

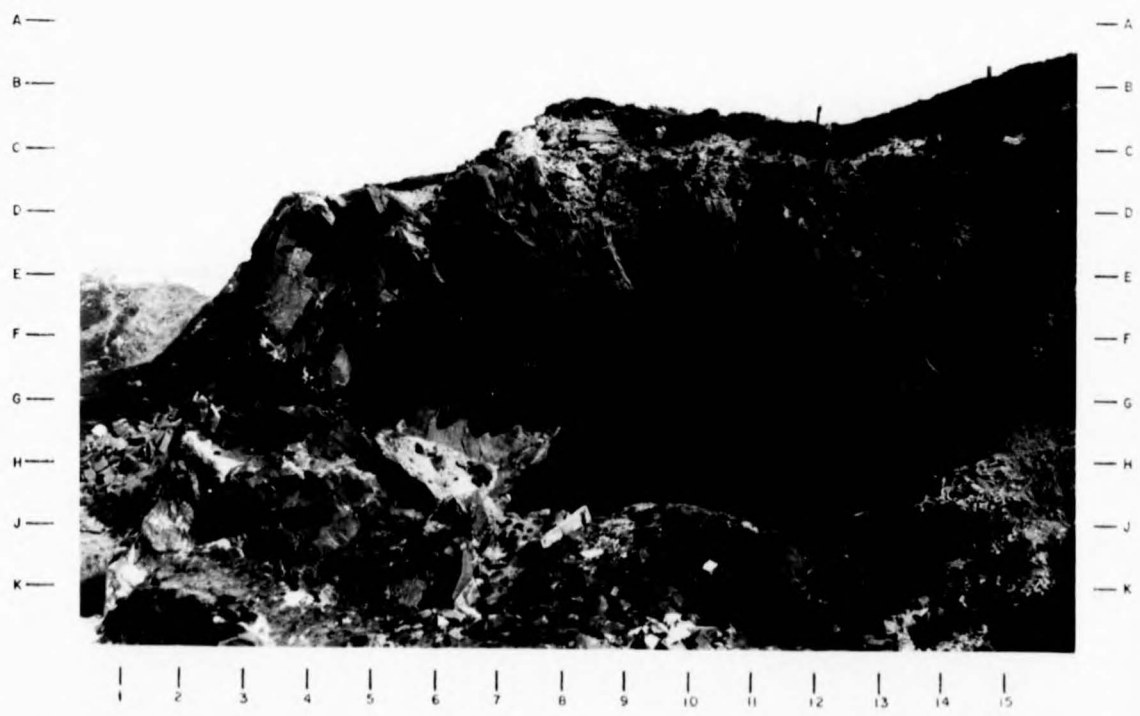
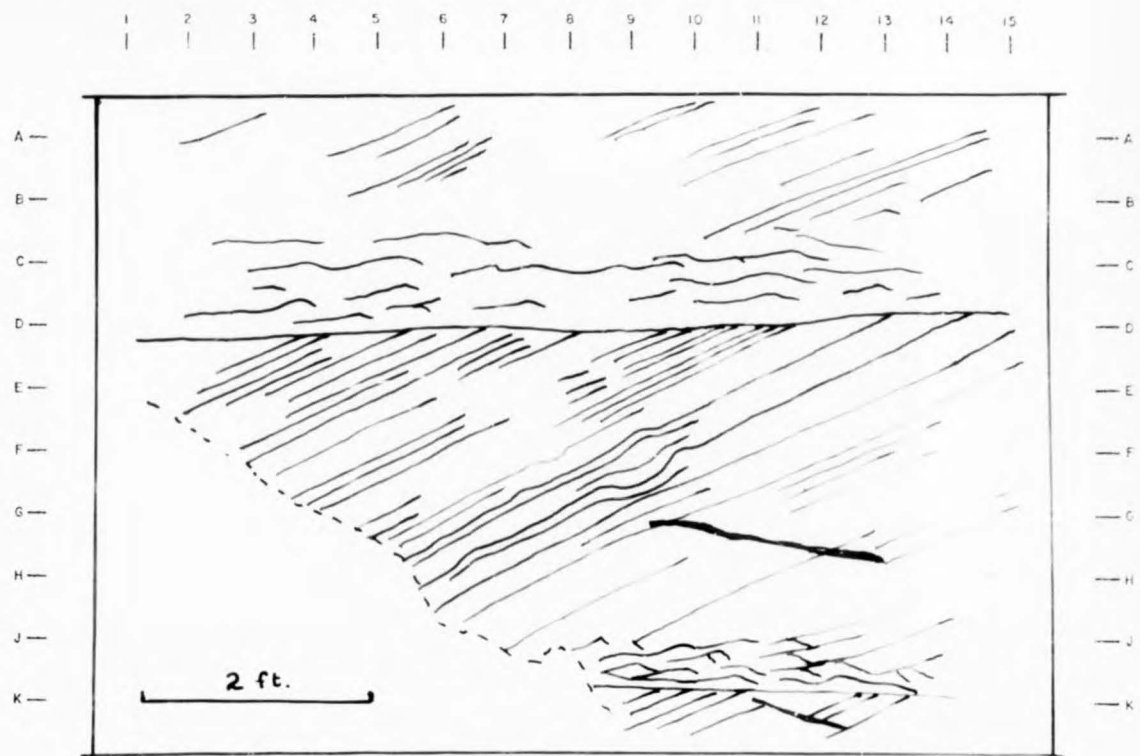


PLATE 44

LOCALITY:

Errwood Reservoir Cliff, Goyt Valley, Derbys.

N.G. REF:

SK 0140 7580

DESCRIPTION:

Thick tabular shaped cross-bedded set (J9)  
(Lithofacies 9(1)a)) overlain by medium scaled  
tabular to weakly trough shaped cross-bedded  
sets (D10) (Lithofacies 9(1)c).

PLATE 45

LOCALITY:

Errwood Reservoir Bridge, Goyt Valley, Derbys.

N.G. REF:

SK 0118 7498

DESCRIPTION:

Thick tabular shaped cross-bedded sets (E4, F15)  
composed of fine to medium pebbly subarkose  
(Lithofacies 9(1)a).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 46

LOCALITY: Rock End, near Biddulph, Staffs. (See Plate 1).  
N.G. REF: SJ 8980 5700  
DESCRIPTION: Medium scale tabular shaped cross beds (C9) with associated parallel beds (C9) (Lithofacies 9(1)b) overlying a thick tabular cross-bedded set (H4) (Lithofacies 9(1)a).

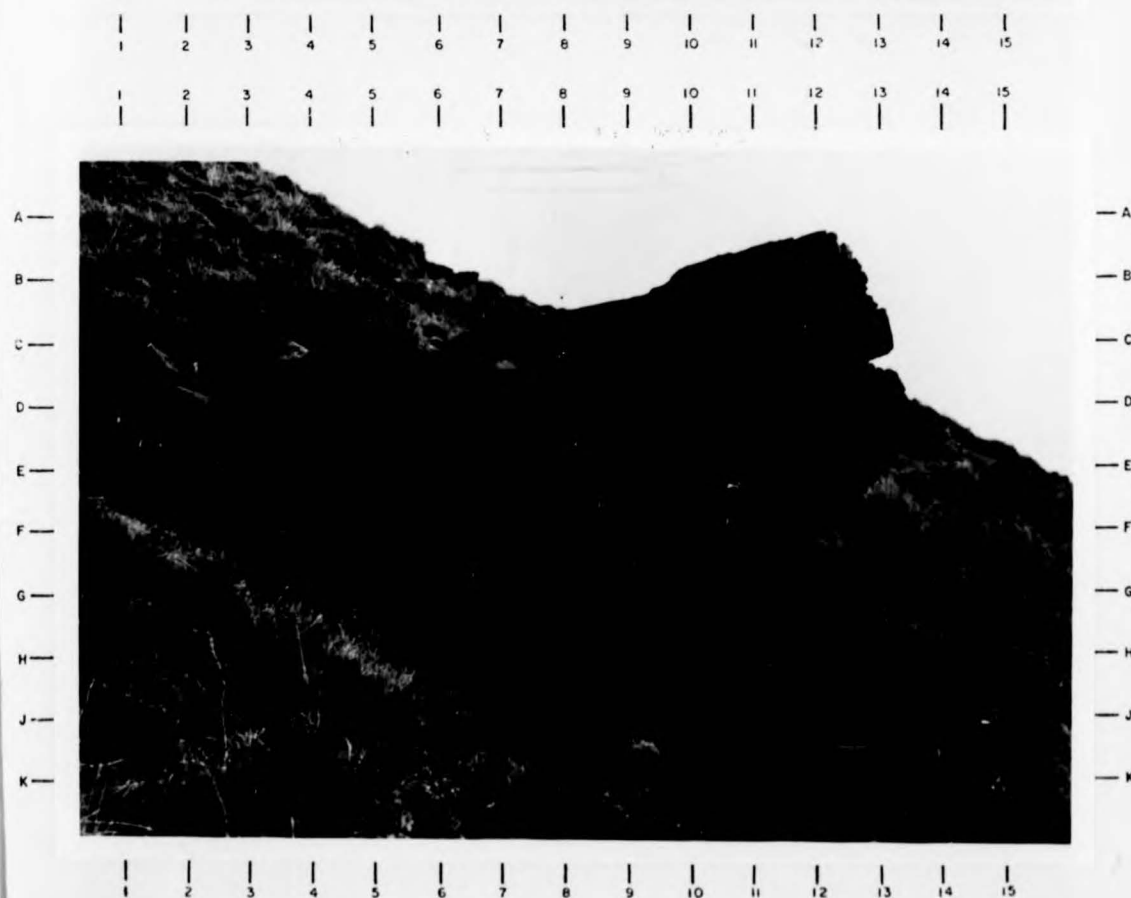
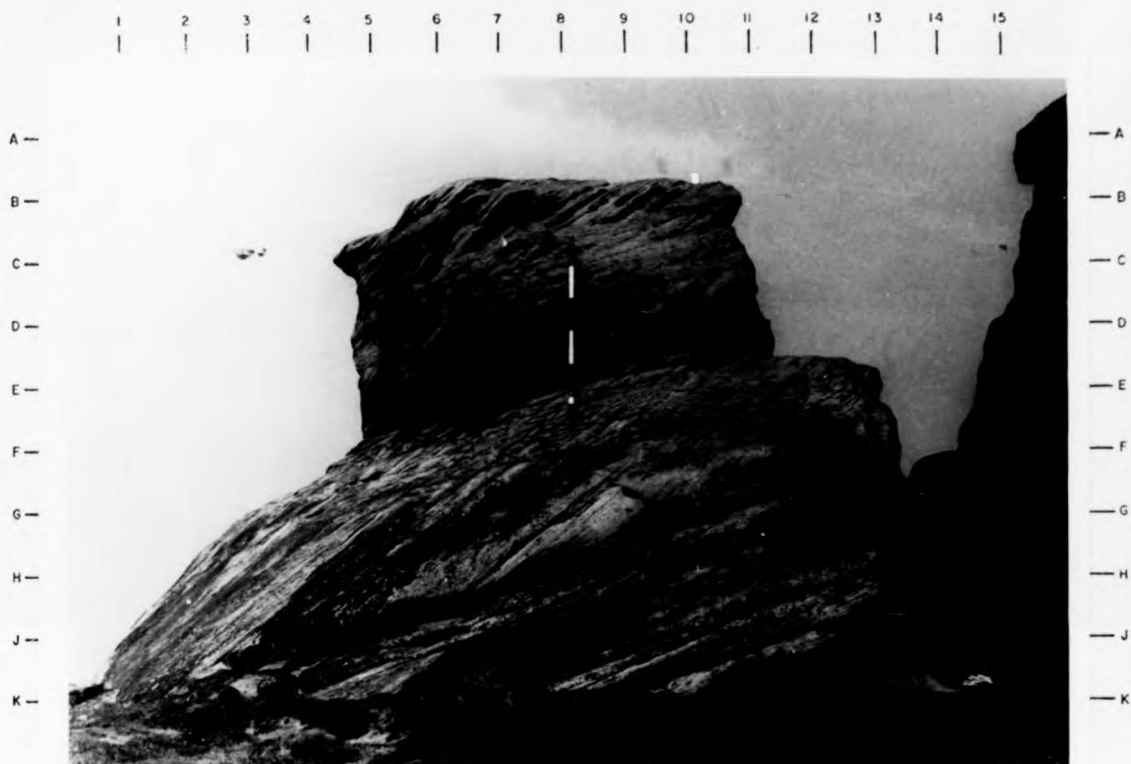
PLATE 47

LOCALITY: Stake Edge, near Errwood Reservoir, Derbys. (See Plate 2).  
N.G. REF: SK 0020 7390  
DESCRIPTION: Tabular shaped cross-bedded sandstone with associated parallel bedded sandstone (Lithofacies 9(1)b).

e 1).

) with  
9(1)b)  
(H4)

ofacies



te 1).

) with  
9(1)b)  
(H4)

ofacies

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—

B—

C—

D—

E—

F—

G—

H—

J—

K—



—A

—B

—C

—D

—E

—F

—G

—H

—J

—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—

B—

C—

D—

E—

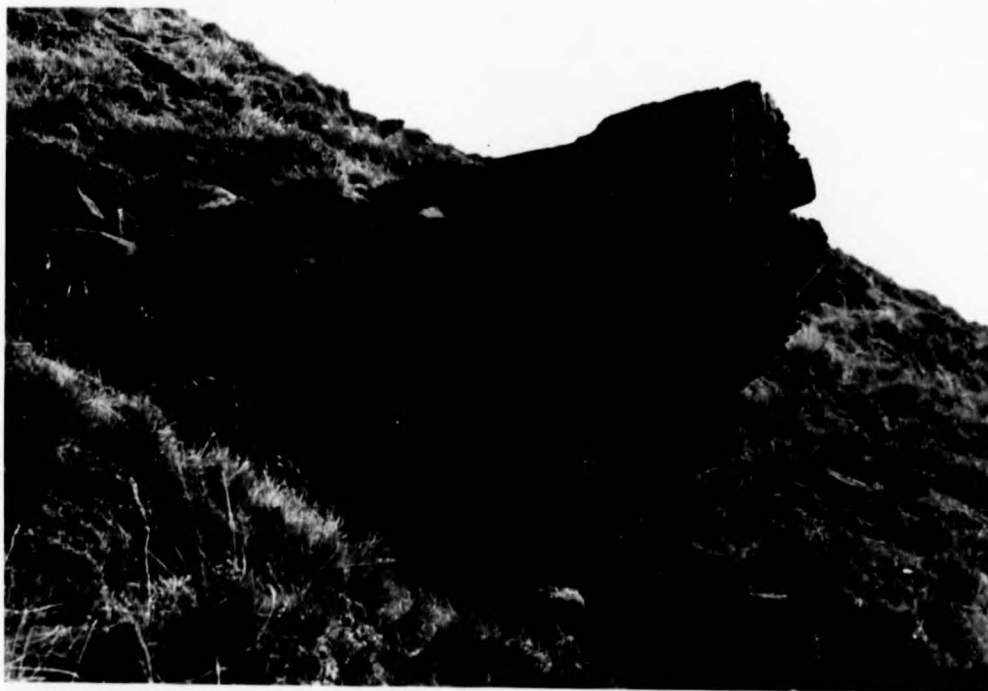
F—

G—

H—

J—

K—



—A

—B

—C

—D

—E

—F

—G

—H

—J

—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 48

LOCALITY: Moneystone, near Cheadle, Staffs.  
N.G. REF: SK 0510 4645  
DESCRIPTION: Medium scaled cross-bedded sets overlying a thick pebbly medium scaled set.

PLATE 49

LOCALITY: Danebower Quarry, Ches. (See Plate 10)  
N.G. REF: SK 0130 7000  
DESCRIPTION: Medium scaled, tabular cross-bedded sets (Lithofacies 9(1)c). The base of the cliff corresponds to the shale pellet horizon in Plate 10.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —

B —

C —

D —

E —

F —

G —

H —

J —

K —



— A

— B

— C

— D

— E

— F

— G

— H

— J

— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —

B —

C —

D —

E —

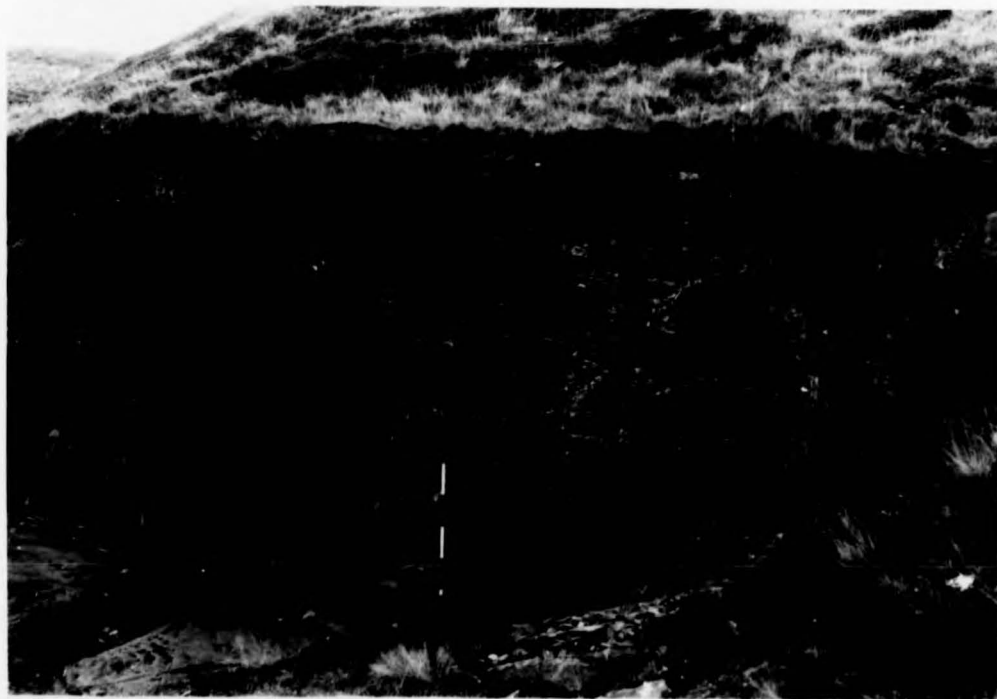
F —

G —

H —

J —

K —



— A

— B

— C

— D

— E

— F

— G

— H

— J

— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —

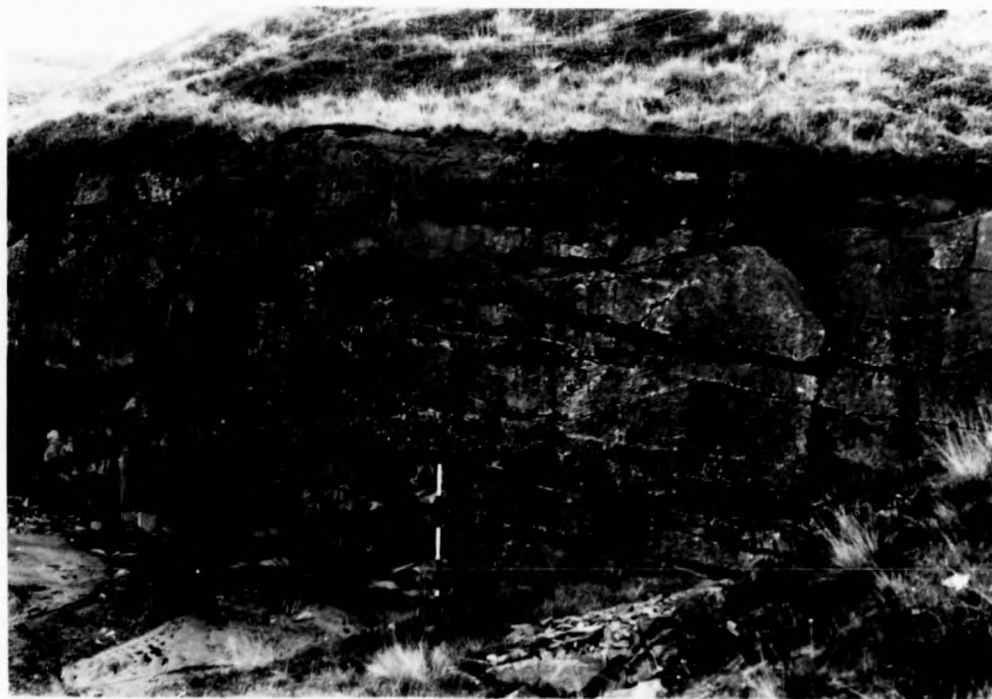


— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 50

LOCALITY: Cracken Edge, near Chinley, Derbys. (See Plates 14, 36, 62, 63 & 64).

N.G. REF: SK 0369 8359

DESCRIPTION: Tabular to slightly troughed cross bedding with tangential basal contacts (D7) overlying tabular cross beds with poorly developed contorted bedding (H7) (Lithofacies 9(1)c).

PLATE 51

LOCALITY: Goyts Lane, Goyt Valley, Derbys.

N.G. REF: SK 0155 7490

DESCRIPTION: Low amplitude trough shaped cross-bedding (Lithofacies 9(2)).

Plates

g with  
tabular  
ed bedding

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A—  
B—  
C—  
D—  
E—  
F—  
G—  
H—  
J—  
K—



—A  
—B  
—C  
—D  
—E  
—F  
—G  
—H  
—J  
—K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Plates

ing with  
tabular  
ed bedding

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

PLATE 52

LOCALITY: Goytsclough Quarry, roadside section. Goyt Valley, Derbyshire (See Plates 12, 34, 39, 55 & 56).  
N.G. REF: SK 0163 7310  
DESCRIPTION: Trough-shaped, medium-scaled cross-beds in calcareous, fine to medium-grained sandstone.

PLATE 53

LOCALITY: Bilinge Hill Quarry, near Bollington.  
N.G. REF: SJ 9550 8277  
DESCRIPTION: Pinch and swell (Kappa) cross-bedding. Sets and cosets are separated by undulating bands of micaceous, fine-grained sandstones and siltstones.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 54

LOCALITY: Billinge Hill Quarry, near Bollington, Ches.  
N.G. REF: SJ 9550 8277  
DESCRIPTION: View of the face normal to that shown in Plate 53.

PLATE 55

LOCALITY: Goytsclough Quarry, Goyt Valley, Derbys. (See Plates 12, 34, 39 & 56).  
N.G. REF: SK 0110 7340  
DESCRIPTION: Apparently massive-bedded sandstone, although slight representatives of 'inclined' bedding are discernable (Lithofacies 10).

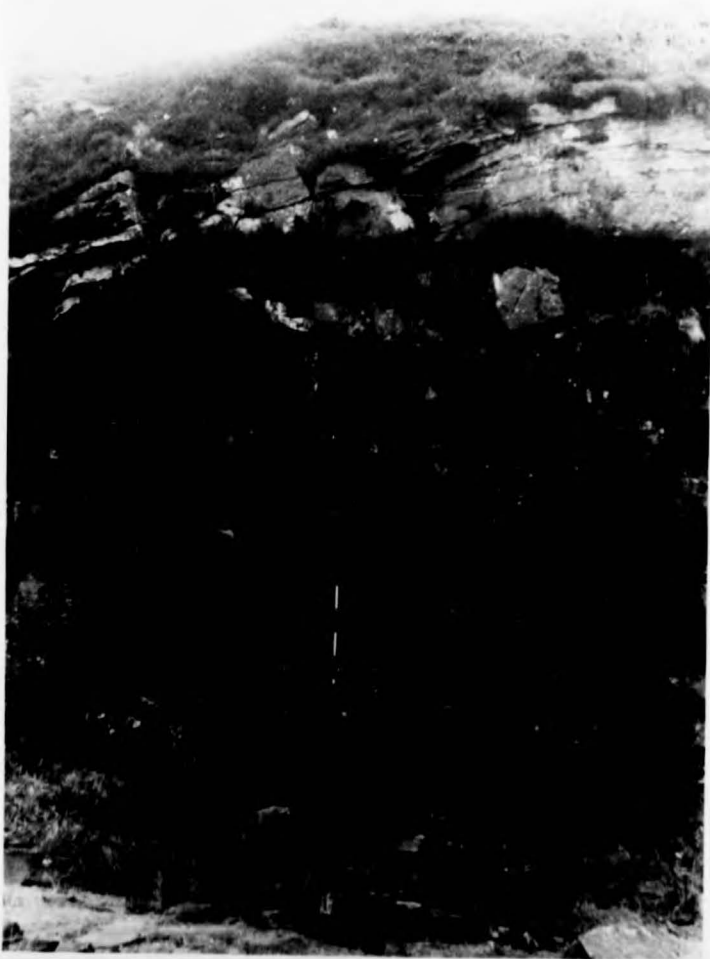
Ches.

n Plate 53.



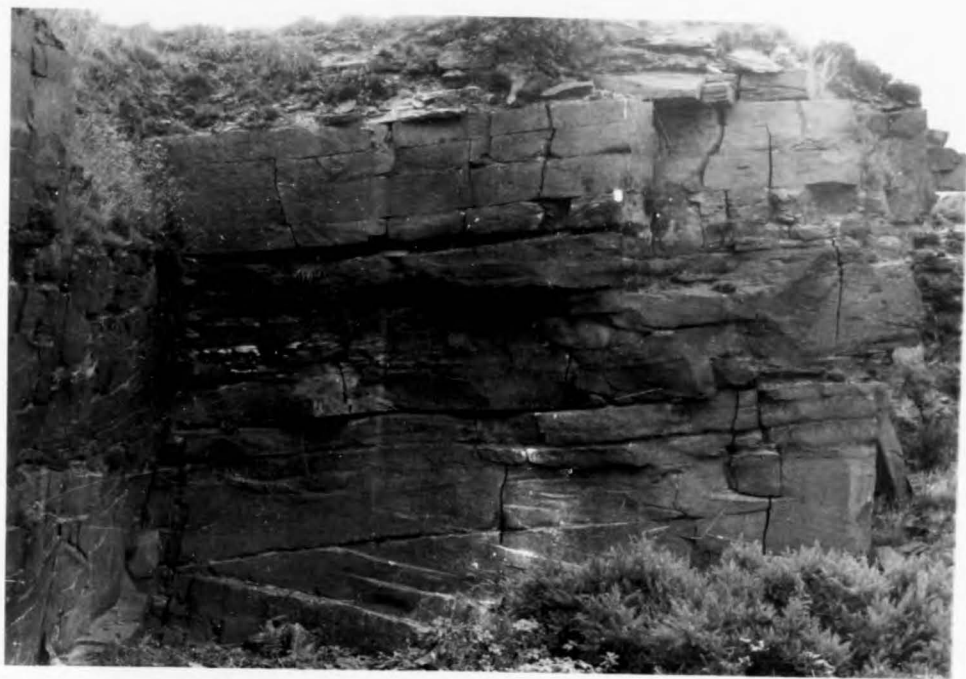
(See Plates

though slight  
re discernable



Ches.

n Plate 53.



(See Plates

though slight  
re discernable



PLATE 56

LOCALITY:

Goytsclough Quarry, Goyt Valley, Derbys.  
(See Plates 12, 34, 39 & 55).

N.G. REF:

SK 0110 7340

DESCRIPTION:

Apparently massive bedded sandstone with  
localised poorly discernable cross-beds  
and chaotic disturbed bedding (Lithofacies 10).

PLATE 57

LOCALITY:

Moneystone Quarry, near Cheadle, Staffs.

N.G. REF:

SK 0480 4630

DESCRIPTION:

Rib and furrow structure on the upper bedding  
plane of a ripple bedded sandstone overlying  
a tabular shaped cross-bedded set (Lithofacies  
11 & 9(1)c).

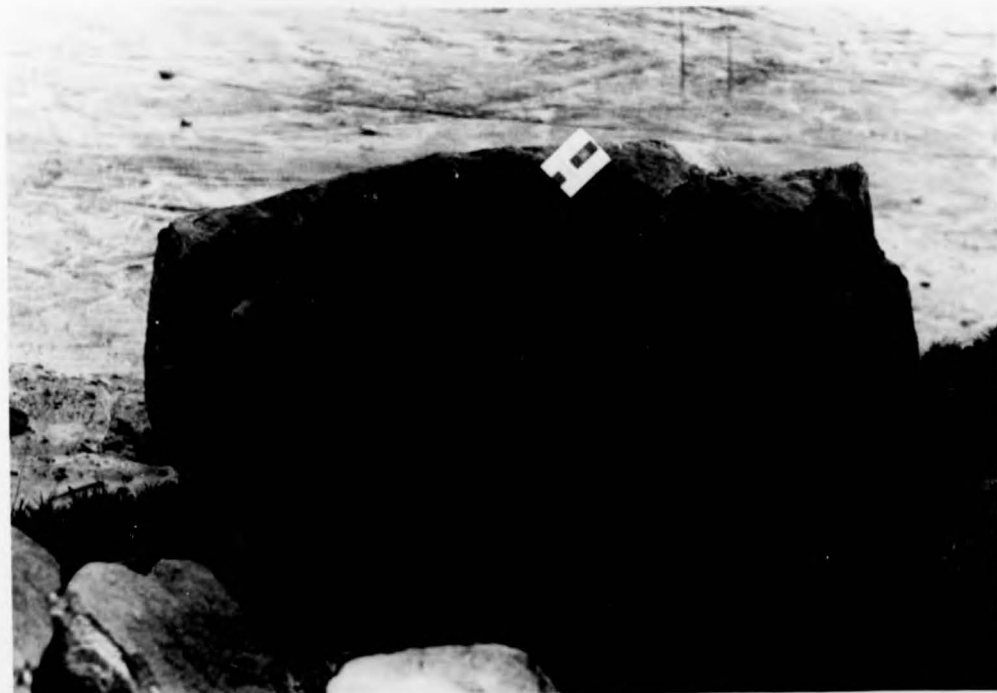
s.

th  
s  
cies 10).



fs.

bedding  
erlying  
thofacies



s.

th  
s  
cies 10).



fs.

bedding  
erlying  
thofacies

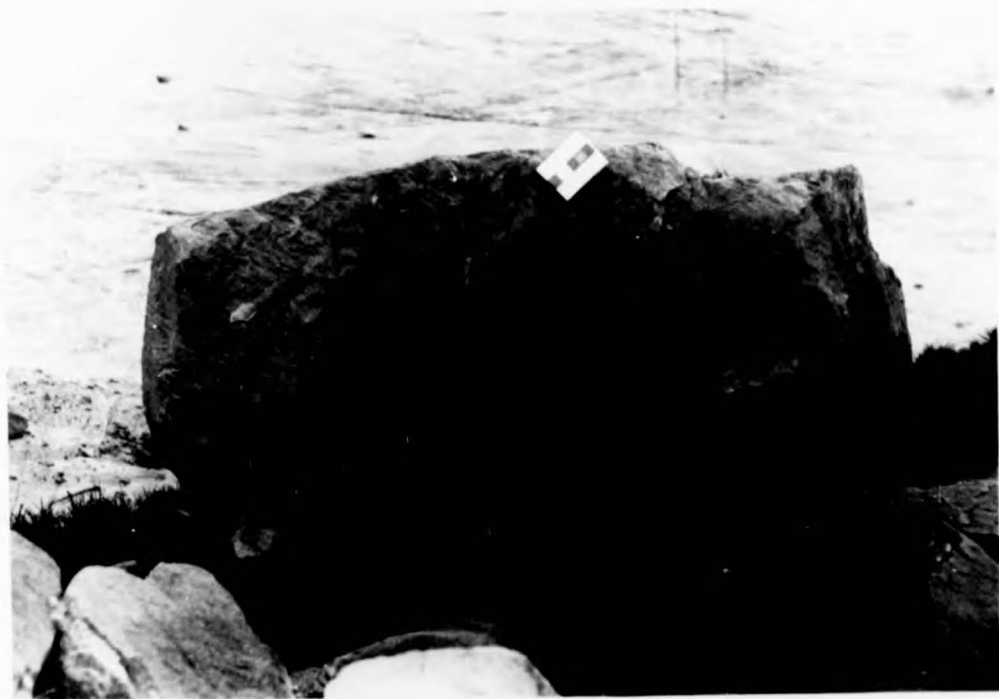


PLATE 58

LOCALITY:

Errwood Reservoir Bridge, Goyt Valley,  
Derbys.

N.G. REF:

SK 0118 7496

DESCRIPTION:

Ripple bedding in medium grained sandstone with laminations picked out by concentrations of micaceous and organic minerals. The form is indicative of climbing alpha ripples (Lithofacies 11).

PLATE 59

LOCALITY:

Goyts Bridge, Goyt Valley, Derbys.

N.G. REF:

SK 0163 7285

DESCRIPTION:

Straight crested, slightly asymmetrical ripples in an otherwise apparently parallel-bedded sequence (Lithofacies 11).

y,

sdstone with  
tions of  
form is  
(Lithofacies 11).

ical ripples  
bedded sequence

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

A —

B —

C —

D —

E —

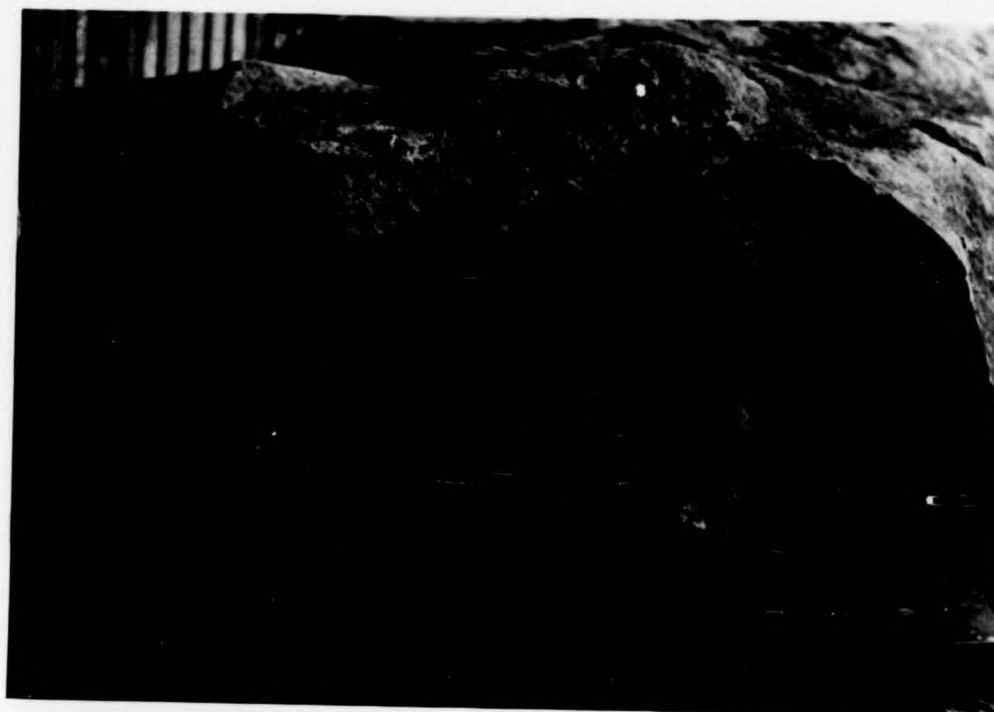
F —

G —

H —

J —

K —



— A

— B

— C

— D

— E

— F

— G

— H

— J

— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

A —

B —

C —

D —

E —

F —

G —

H —

J —

K —



— A

— B

— C

— D

— E

— F

— G

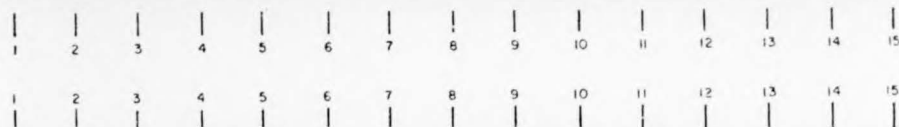
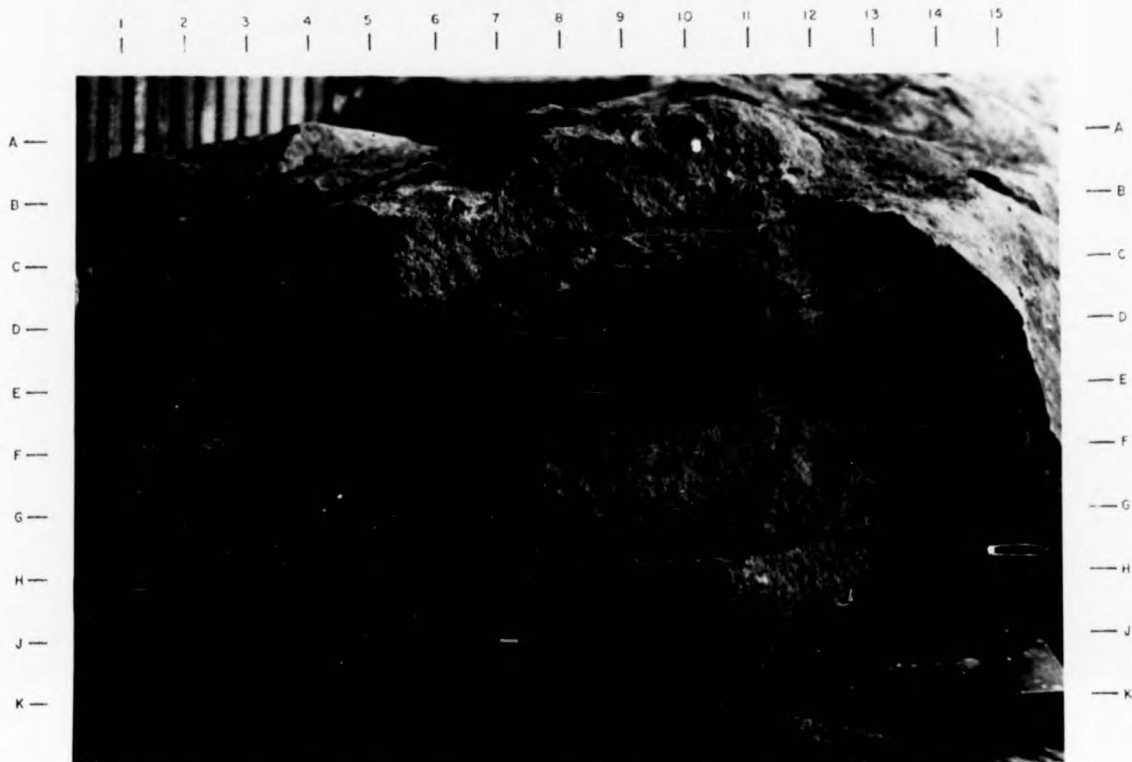
— H

— J

— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

ly,  
 sandstone with  
 tions of  
 e form is  
 s (Lithofacies 11).



ical ripples  
 bedded sequence



PLATE 60

LOCALITY:

Ridgeway Quarry, Derbys.

N.G. REF:

SK 3572 5151

DESCRIPTION

Wave oscillatory ripple-bedding in yellow, fine-grained sandstone with superimposed worm tracks locally filled by brown mudstone.

PLATE 61

LOCALITY:

Goyts Bridge, Goyt Valley, Derbys.

N.G. REF:

SK 0163 7285

DESCRIPTION:

Parallel-bedded and ripple-bedded sequence approximately 7 metres below the Gastrioceras subcrenatum Marine Band. The ripple-bedding of Plate 59 is at lower left.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

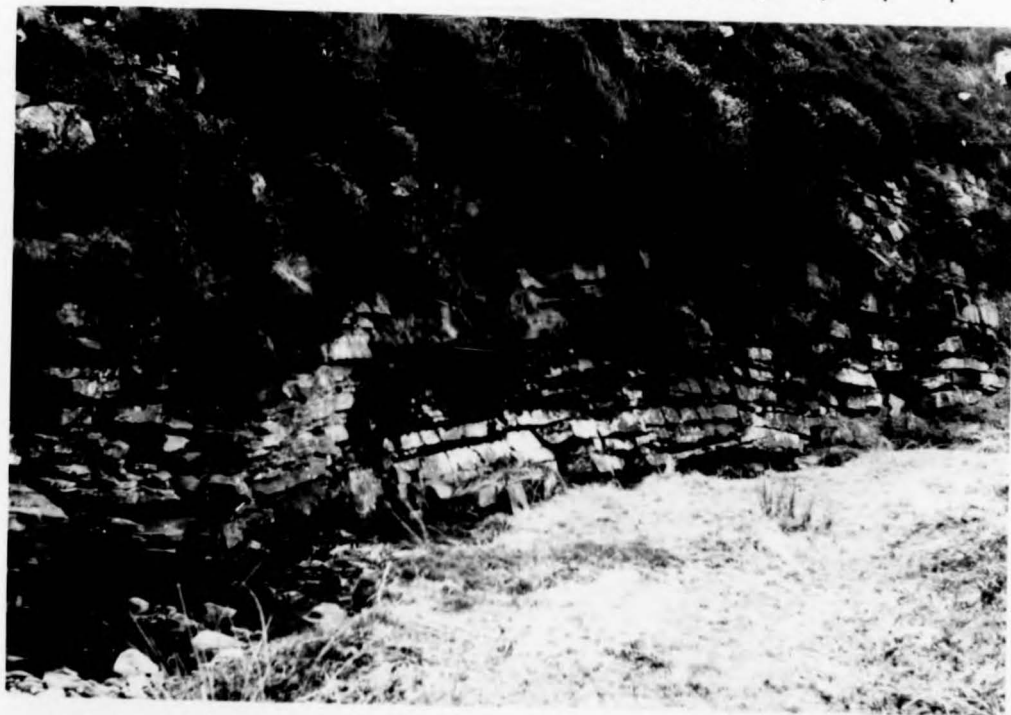
A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
| | | | | | | | | | | | | | |

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

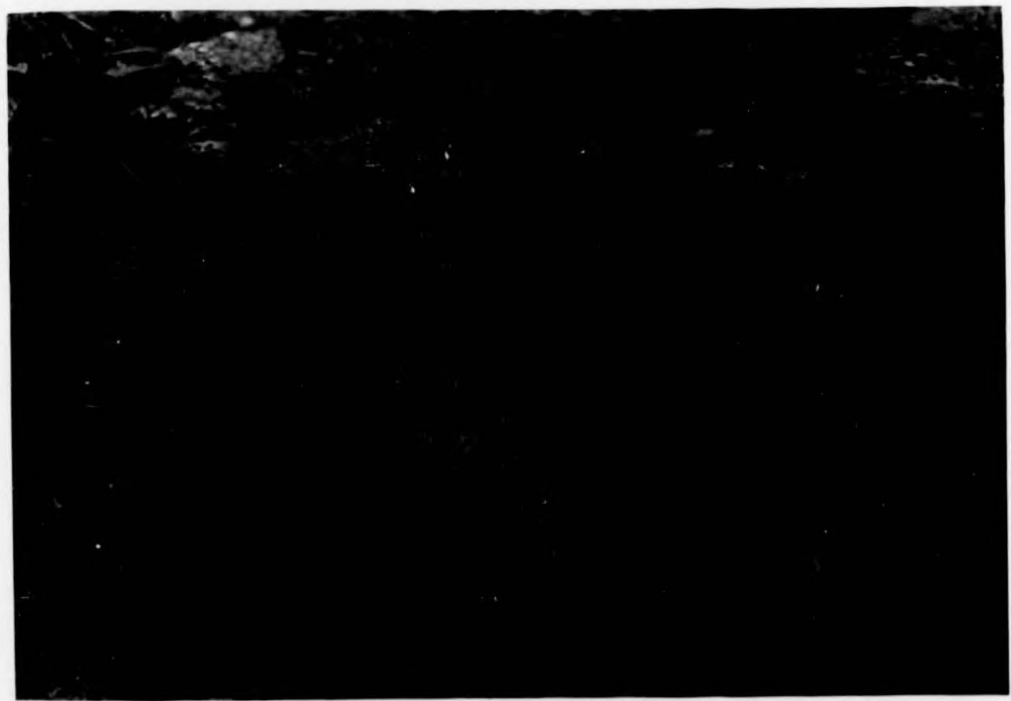
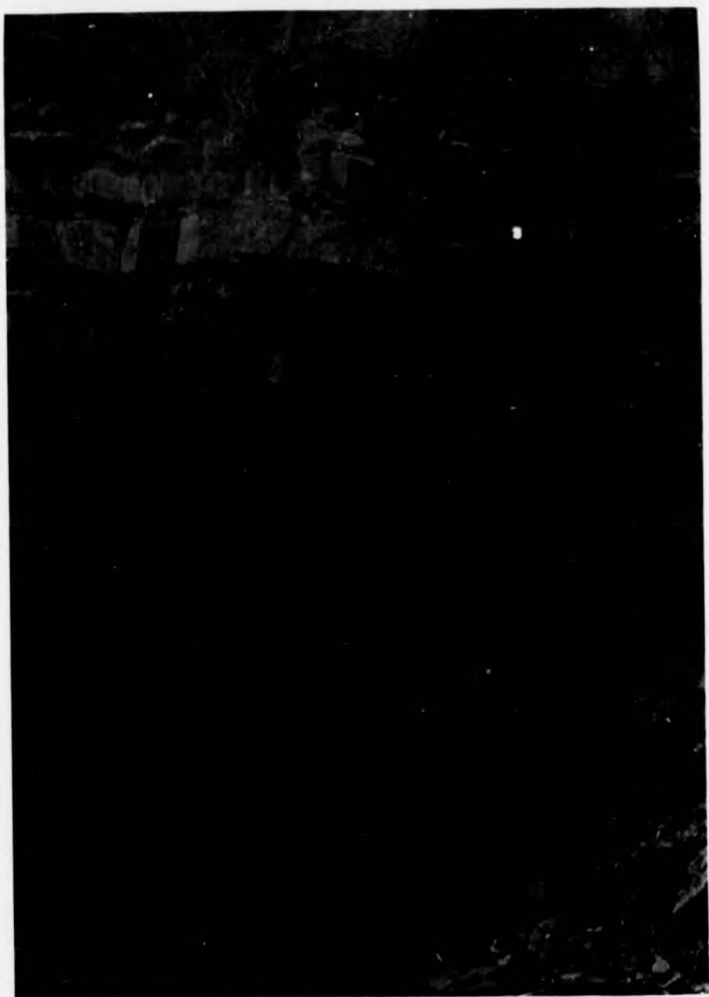
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PLATE 62

LOCALITY: Cracken Edge Quarry, near Chinley, Derbys.  
N.G. REF: SK 0370 8380  
DESCRIPTION: Alternating sequence of parallel-bedded, fine- to medium-grained sandstones and green/black silty mudstones. Trace fossils abound on all of the bedding planes.

PLATE 63

LOCALITY: Cracken Edge Quarry, near Chinley, Derbys.  
N.G. REF: SK 0370 8371  
DESCRIPTION: Surface representation of vertical Pelecypodichnus burrows. Fallen block of thicker beds at top right of Plate 62.



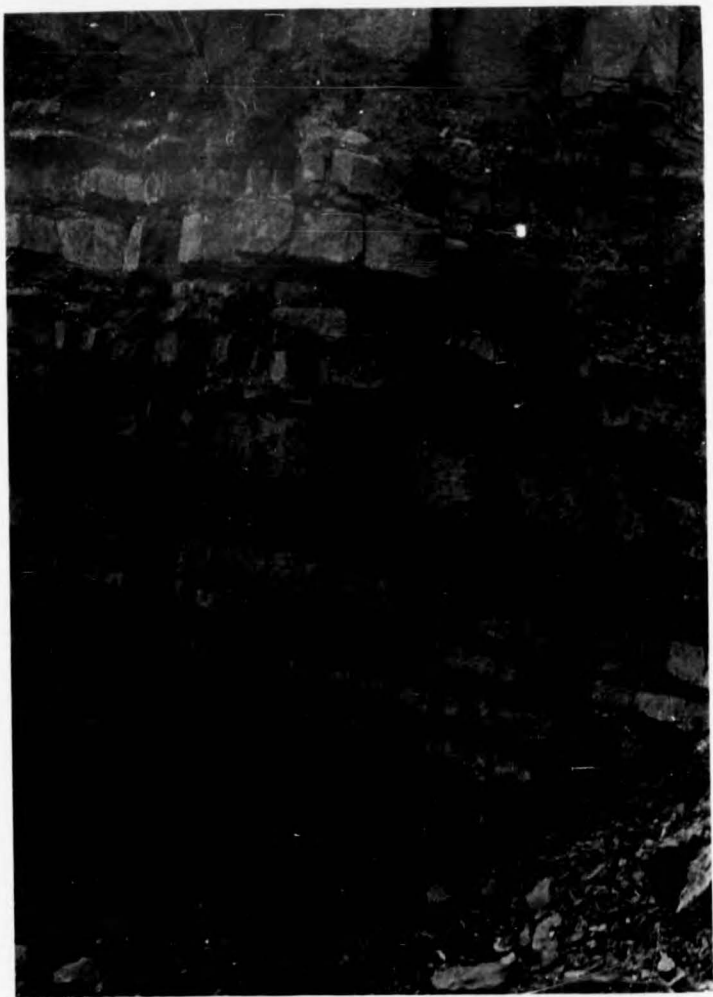


PLATE 64

LOCALITY:

Cracken Edge Quarry, near Chinley, Derbys.

N.G. REF:

SK 0370 8360

DESCRIPTION:

Cochlichnus trails on underside of 0.95 metre thick, medium-grained parallel-bedded sandstone. The plate is of a fallen block derived from close to the northern boundary of a channel sub-association.

PLATE 65

LOCALITY:

Moorside Lodge, near Disley, Ches.

N.G. REF:

SJ 9880 8280

DESCRIPTION:

The erosive base of the upper channel unit (see Plate 15). The basal conglomerate is composed of large log fragments (D12) and mudstone pebbles (B9) in a thick, medium-scaled cross-bedded coarse-grained sandstone. Note the parallel-bedded sandstones of the lower channel unit (H-K 1-15).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A —  
B —  
C —  
D —  
E —  
F —  
G —  
H —  
J —  
K —



— A  
— B  
— C  
— D  
— E  
— F  
— G  
— H  
— J  
— K

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

## GENERAL INDEX FOR ENCLOSURES 2, 3, 4 AND 5

The outcrop of the Rough Rock from which information for this study was taken is detailed, together with the arithmetic mean of palaeocurrent directions at a selection of major localities. For convenience, the study area is broken down into four sub-areas :-

Enclosure 2 - The North Staffordshire Coalfields

Enclosure 3 - The Goyt Trough and East Cheshire

Enclosure 4 - Sheffield

Enclosure 5 - Chesterfield/Derby

Where space permits, the location of the locally important lithofacies is shown (Key as required on Enclosure); more generally the location of the lithofacies associations and sub-associations is shown.

### KEY



Channel



Avulsion/Overbank



Avulsion?



Flood Channel



Interdistributary



Delta Top