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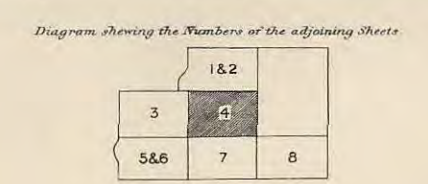


- Blown Sand
- Alluvium
- Corallian Beds
- Oxford Clay with Kellaways Rock
- Cornbrash
- Great & Inferior Oolite Series
- Upper Lias
- Middle Lias
- Lower Lias
- Keuper Marl (with Rhaetic)
- Keuper & Bunter Sandstones
- Sandstone Marl &c.
- Magnesian Limestone
- Coal Measures
- Millstone Grit
- Limestone Series
- Basement Conglomerate
- Conistone Flags, Stockdale Shales &c.
- Conistone Limestone
- Skiddaw Slates
- Andesites & Tuffs (Borrowdale Series)
- Basalt & Dolerite In Sheets (D)
- In Dykes (M)
- Faults

RECENT
 JURASSIC
 TRIASSIC
 PERMIAN
 CARBONIFEROUS
 SILURIAN
 ORDOVICIAN
 IGNEOUS

Roads, First Class
 Second Class
 Third Class
 Railways
 County Boundaries
 Church

Redrawn from the One-Inch (New Series) Map of the Geological Survey 1896.
 Published 1907. J. H. Toall, M.A., D.Sc., F.R.S., Director.
 3rd Edition 1882. W. J. Pugh, O.B.E., D.Sc., F.R.S., Director.
 1,000/52.



Scale of Four Miles to One Inch 1:253,440

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

The Altitudes are given in Feet above the assumed Mean Level of the Sea at Liverpool, which is 0.650 of a foot below the general Mean Level of the Sea, and are indicated thus (526)

Index to the One Inch Maps in this Sheet

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New Series

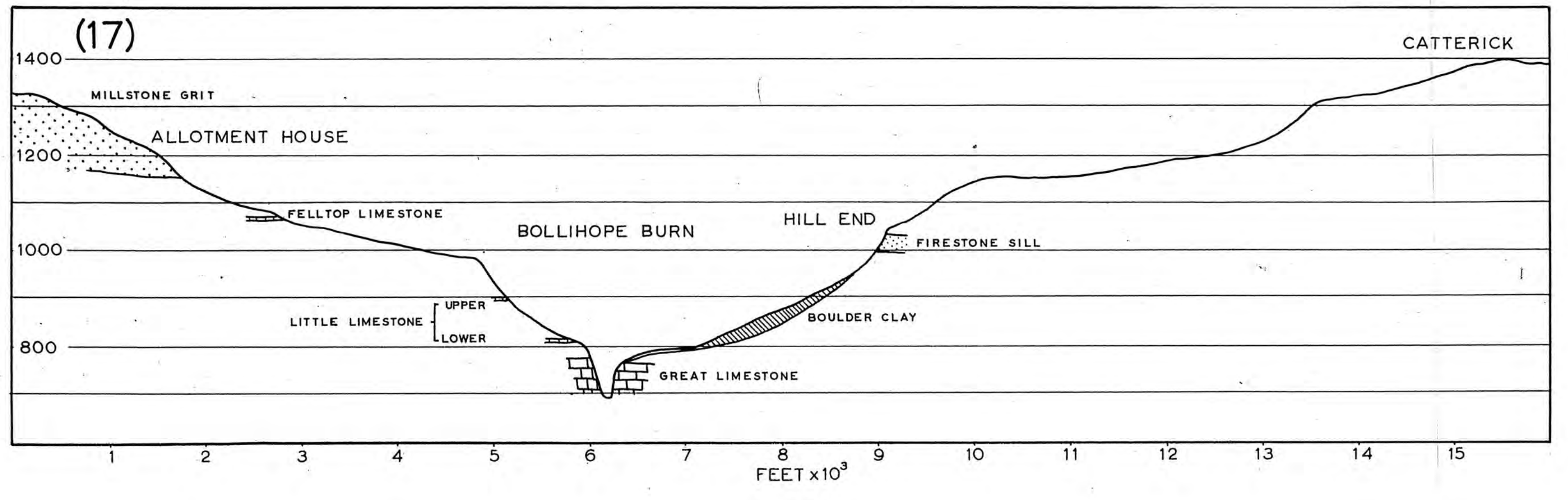
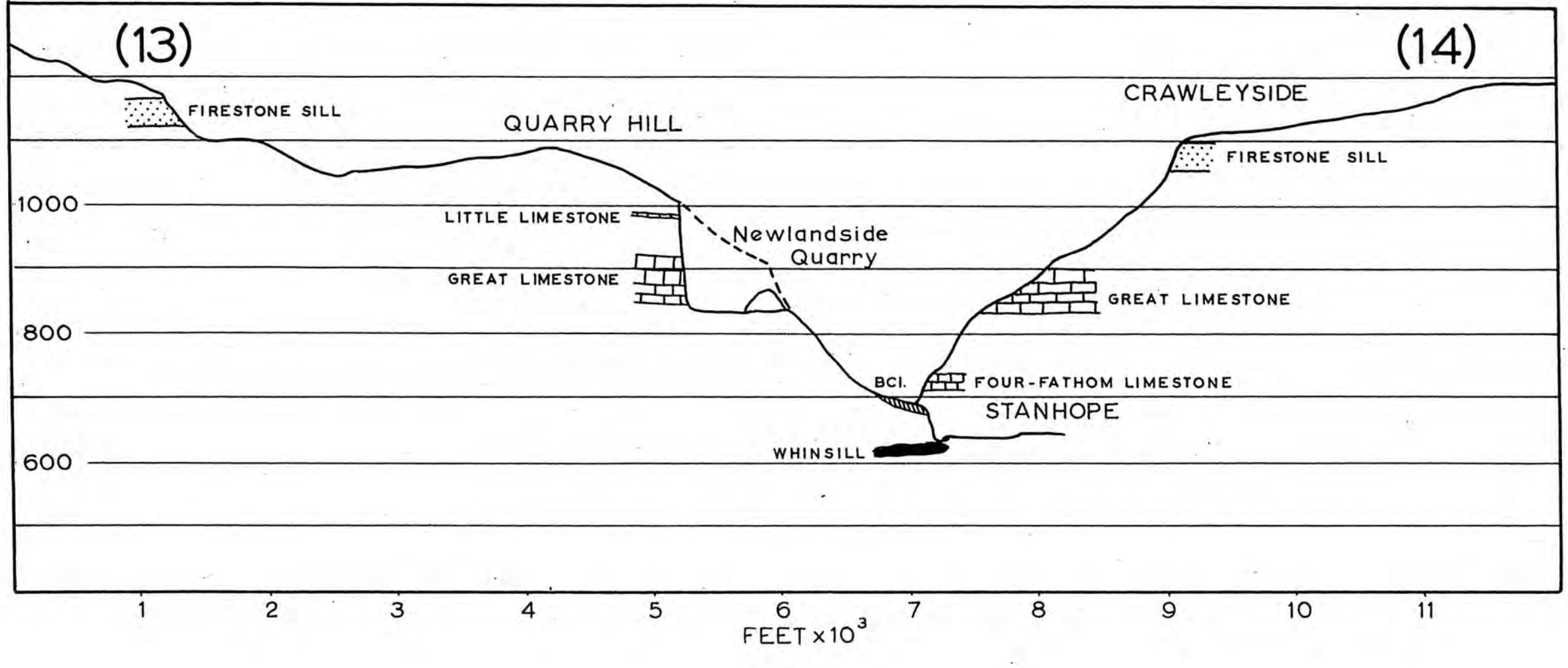
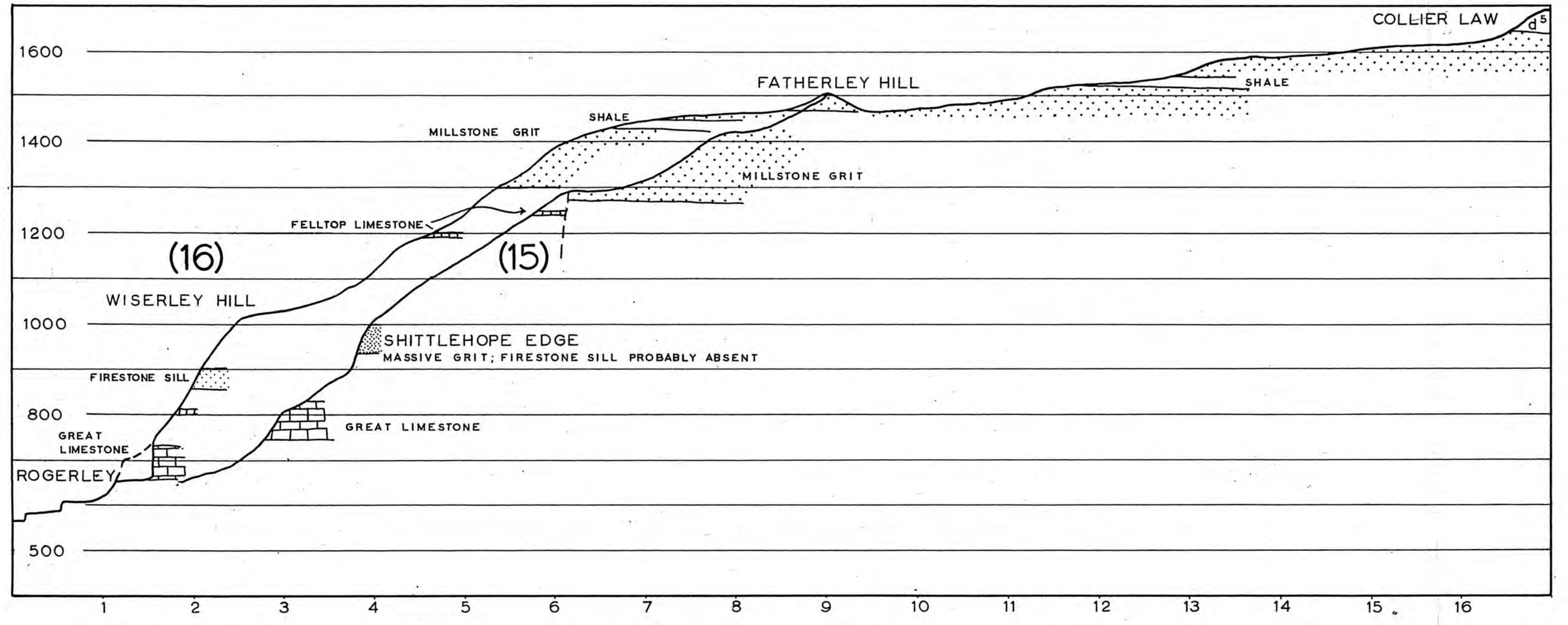
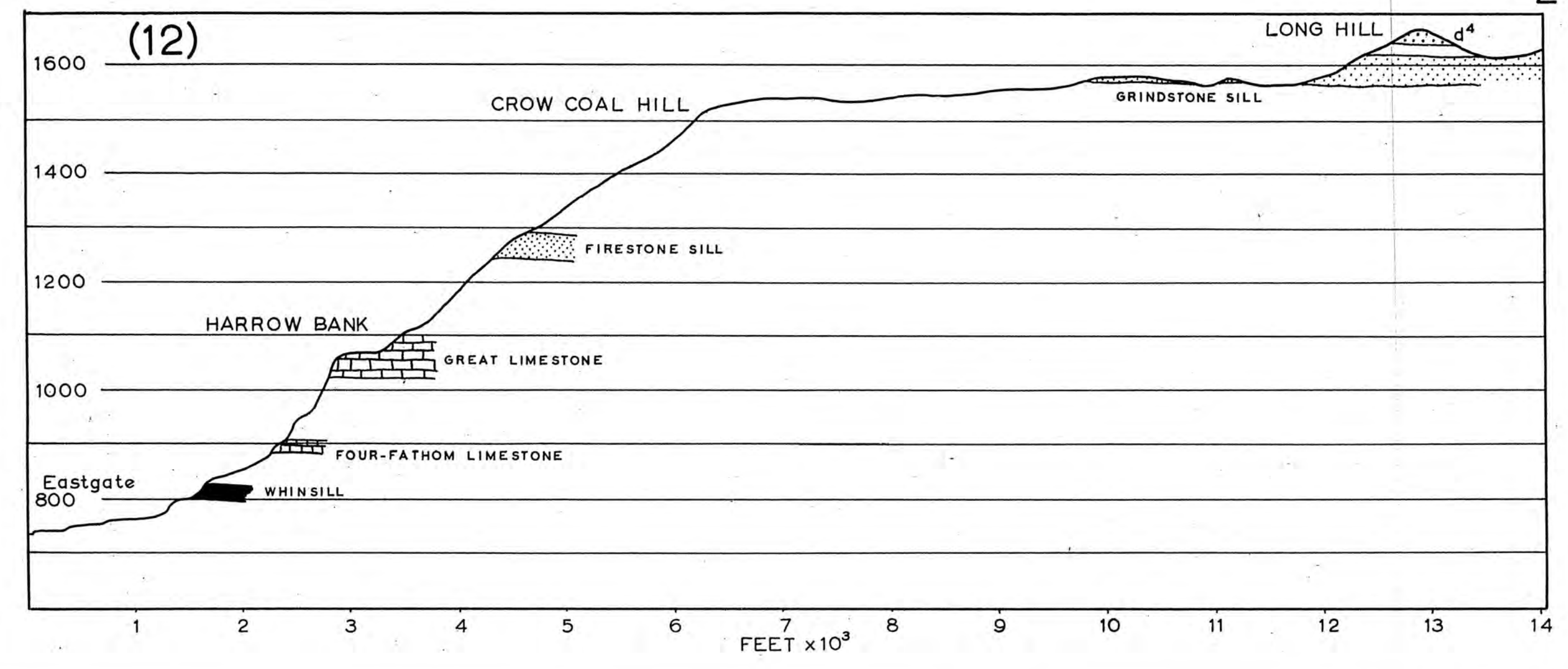
Engraved and Published at the Ordnance Survey Office, Southampton, 1900.
 Reduced from the One Inch Map.
 Revised 1894-97.
 Railways inserted to October 1905.

N.B. The representation on this map of a fault is an evidence of the existence of a right of way.
 Printed and Published by the Director General of the Ordnance Survey, Chislington, Surrey, 1852.

LOWER WEARDALE
 INTERFLUVE AND SPUR PROFILES
 VERTICAL EXAGGERATION x5

- (12) BASED ON O.S. DATA; SOME TRIGNOMETRIC CONTROL
- (13) BASED ON O.S. DATA ONLY
- (14) " " " " "
- (15) SURVEYED BY PLANE-TABLE
- (16) " " " "
- (17) " " " "

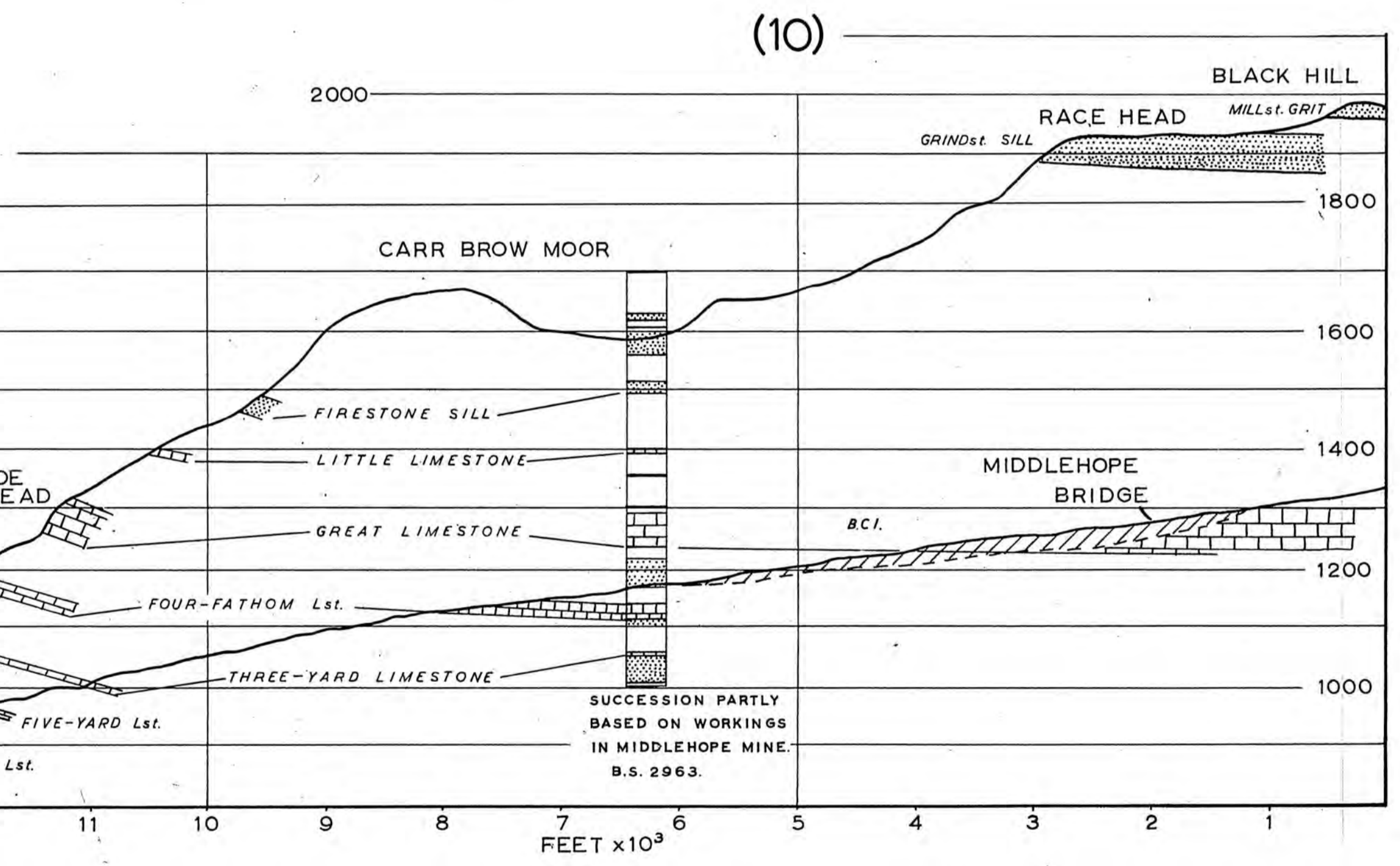
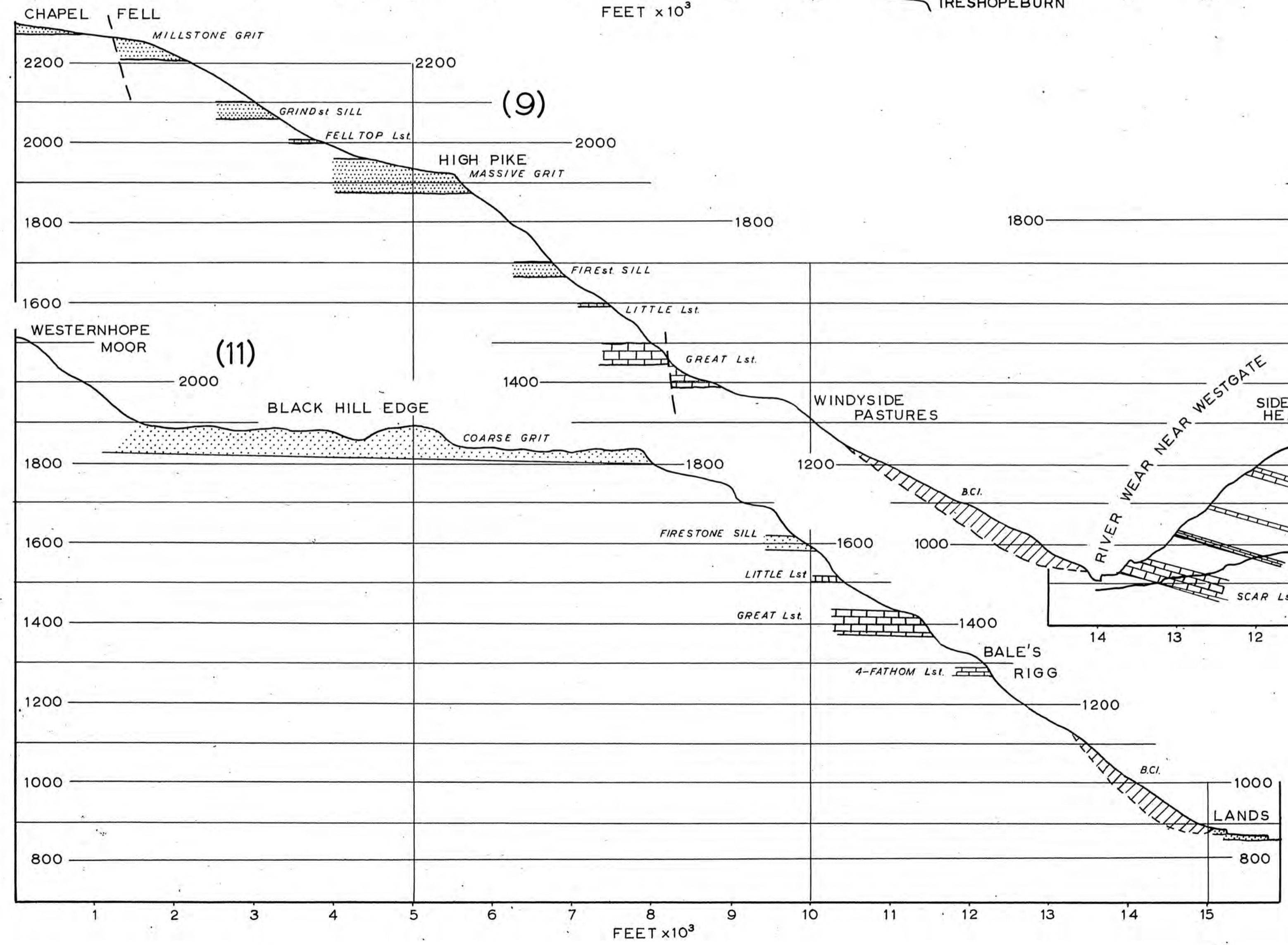
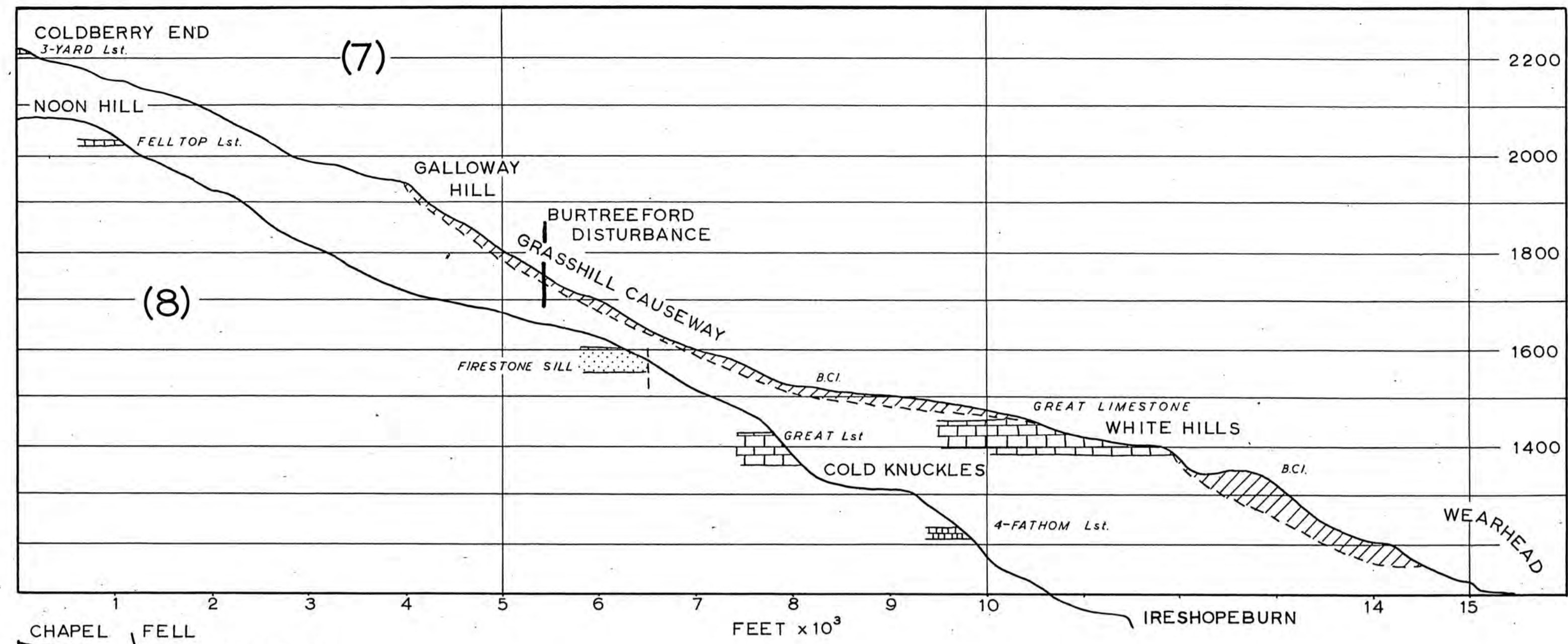
GEOLOGICAL HORIZONS FROM PRIMARY SURVEY
 DURHAM SIX-INCH SHEETS: XXIII, XXIV, XXXII



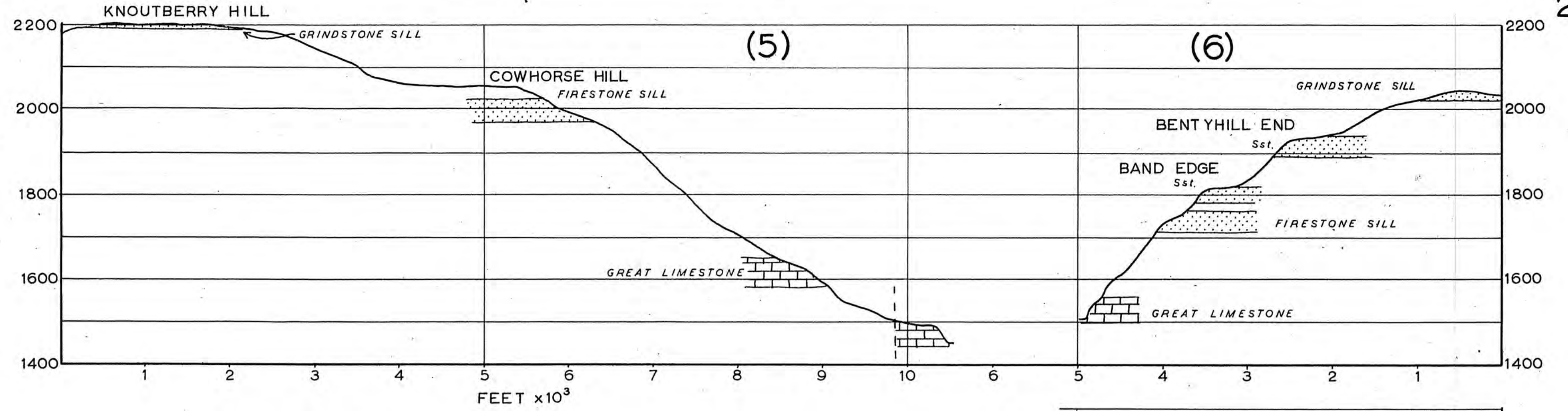
UPPER WEARDALE INTERFLUVE AND SPUR PROFILES VERTICAL EXAGGERATION x 5

- (7) SURVEYED BY ANEROID WITH O.S. CONTROL.
- (8) BASED ON O.S. DATA ONLY.
- (9) SURVEYED BY ANEROID WITH O.S. CONTROL
- (10) " " " " TRIGONOMETRIC CONTROL.
(LONGITUDINAL PROFILE OF MIDDLEHOPE BURN MEASURED BY
LEVELLING.)
- (11) BASED ON O.S. LEVELLING.

GEOLOGICAL HORIZONS FROM PRIMARY SURVEY. DURHAM 6-INCH,
SHEETS XXII, XXIII, XXX & XXXI.



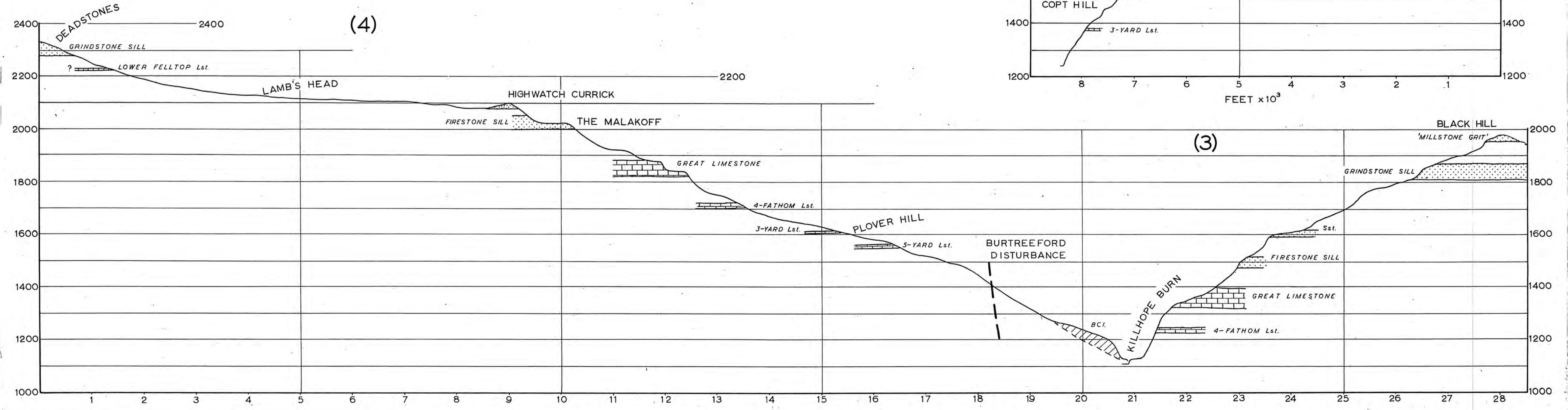
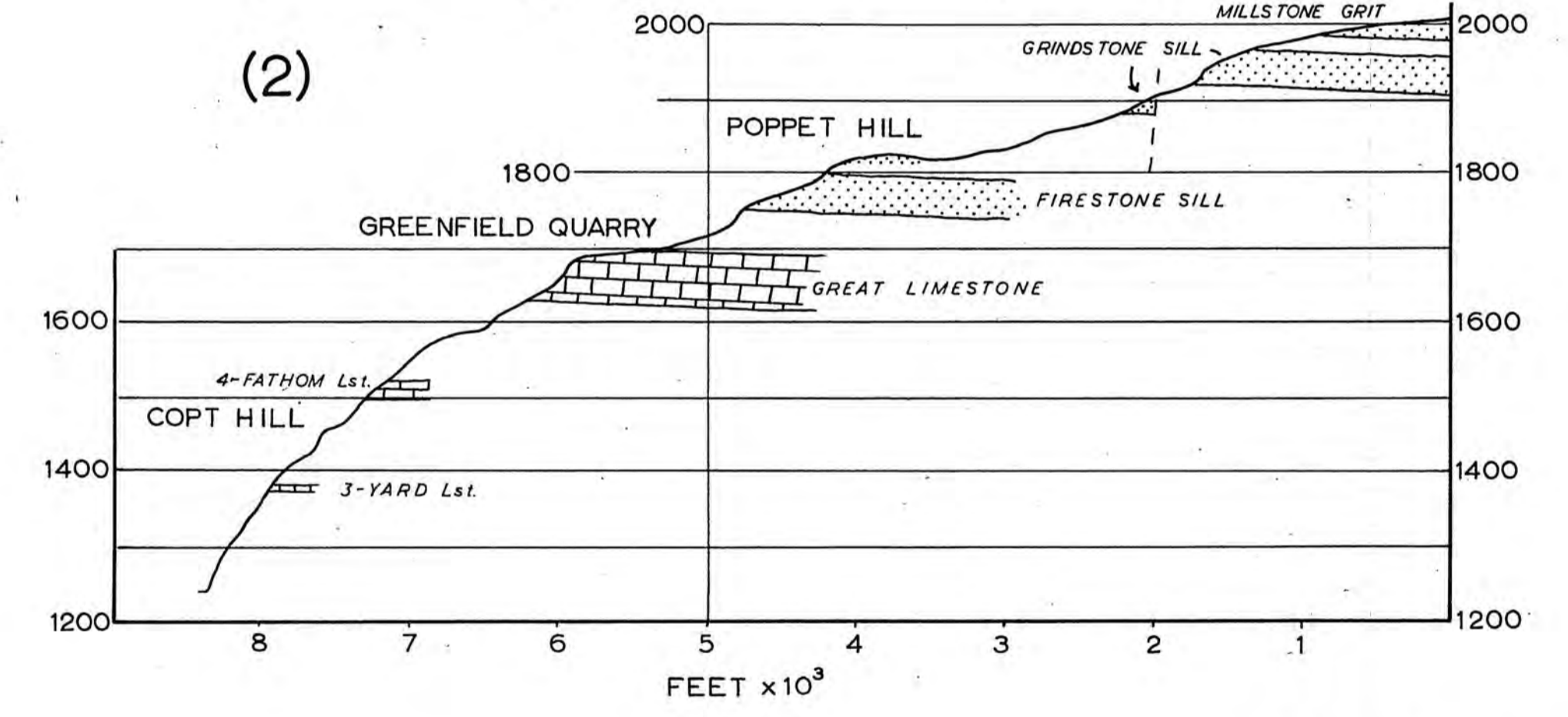
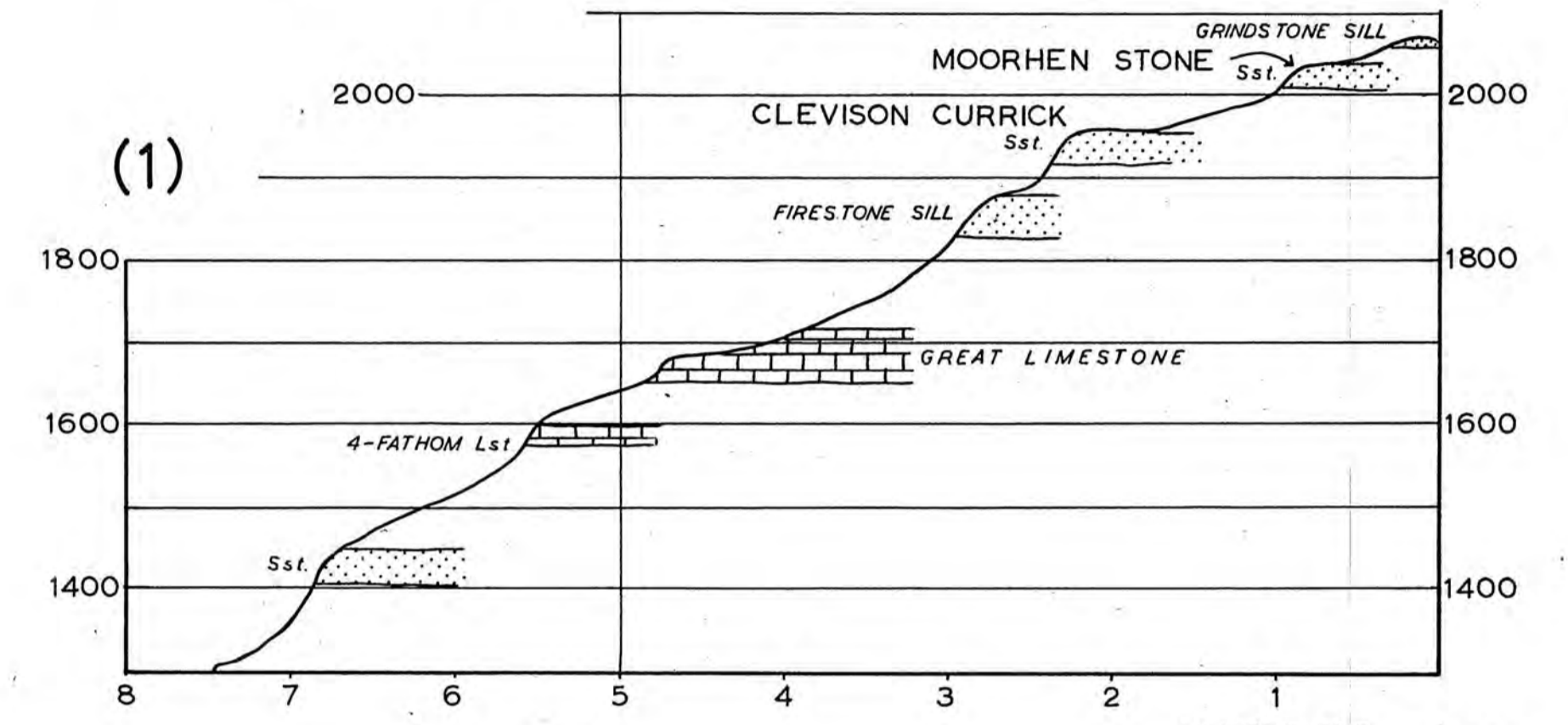
SUCCESSION PARTLY
BASED ON WORKINGS
IN MIDDLEHOPE MINE.
B.S. 2963.



THE HEADWATERS OF THE RIVER WEAR INTERFLUVE AND SPUR PROFILES

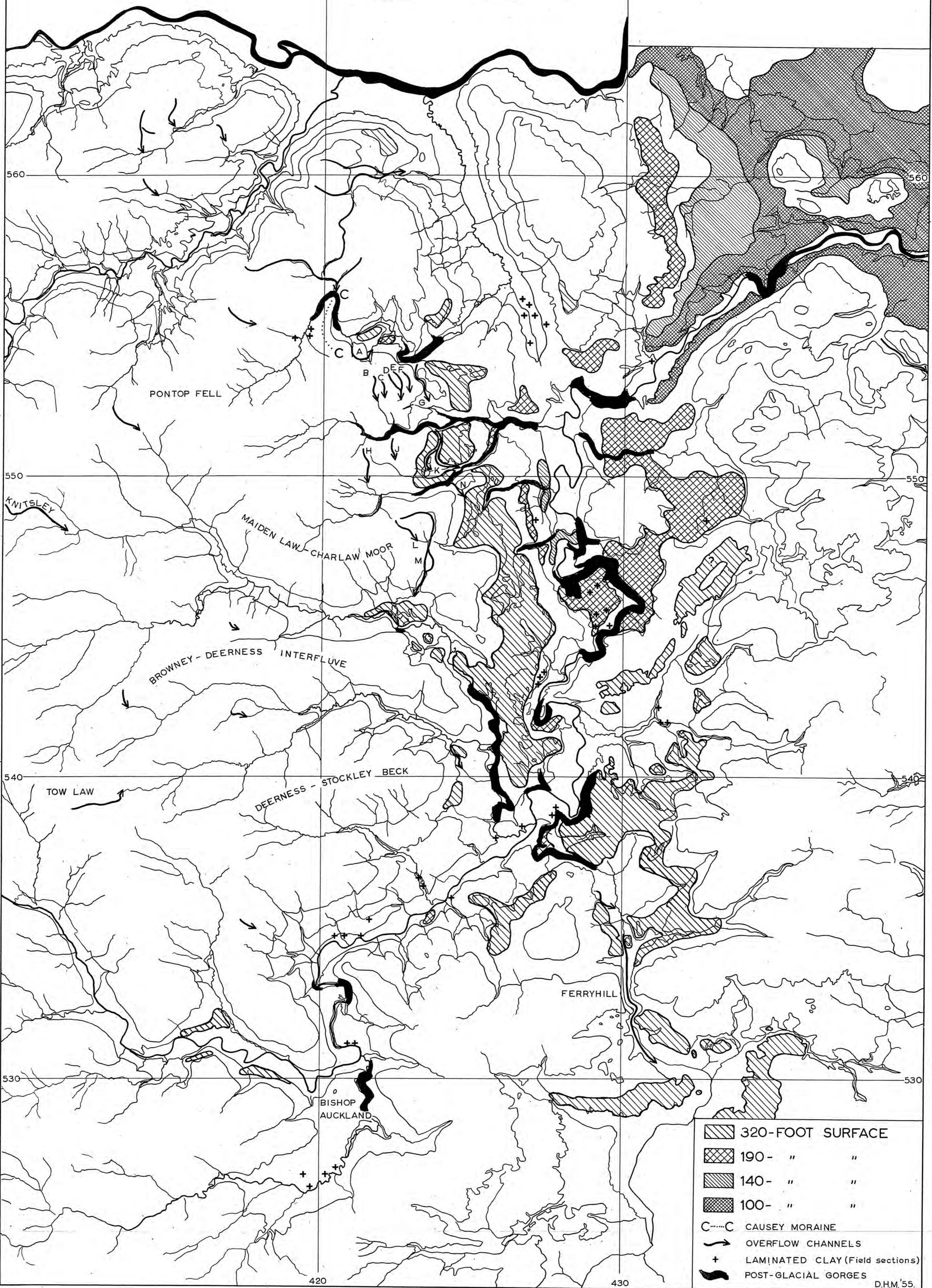
VERTICAL EXAGGERATION x 5

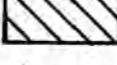



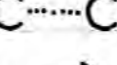
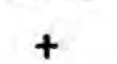


- (1) SURVEYED BY ANEROID WITH O.S. CONTROL ONLY
 - (2) " " " WITH TRIGNOMETRIC CONTROL
 - (3) " " " " " " "
 - (4) " " " " O.S. CONTROL ONLY
 - (5) BASED ON O.S. DATA ONLY
 - (6) PART SURVEYED BY ANEROID
- GEOLOGICAL HORIZONS FROM PRIMARY SURVEY: DURHAM 6-INCH SHEET XXII.

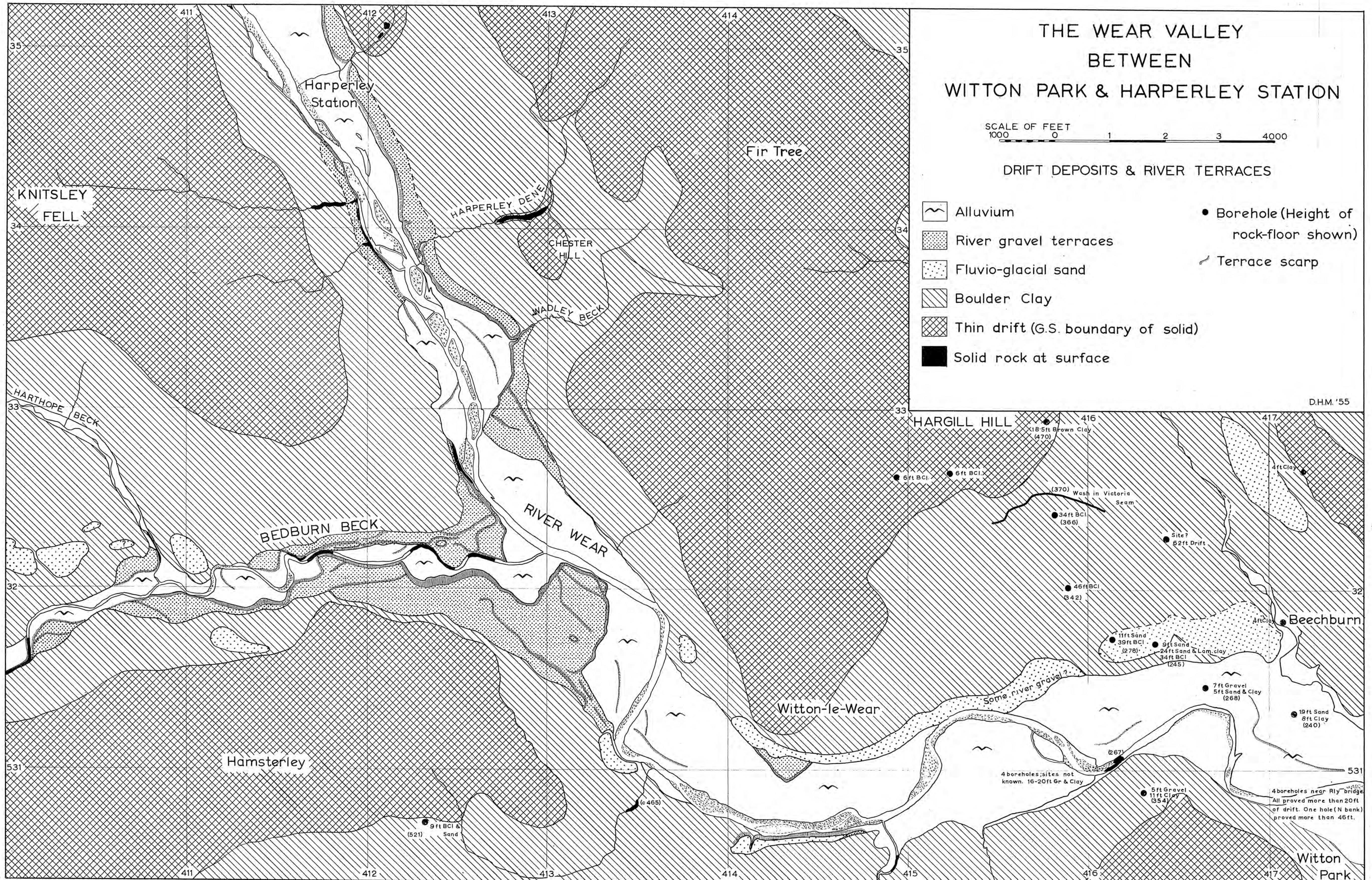


THE POST-GLACIAL SURFACES OF THE WEAR VALLEY

0 1 mile 2 3 4



-  320-FOOT SURFACE
 -  190- " "
 -  140- " "
 -  100- " "
 -  CAUSEY MORAINE
 -  OVERFLOW CHANNELS
 -  LAMINATED CLAY (Field sections)
 -  POST-GLACIAL GORGES
- D.H.M. '55.



THE WEAR VALLEY BETWEEN WITTON PARK & HARPERLEY STATION

SCALE OF FEET
1000 0 1 2 3 4000

DRIFT DEPOSITS & RIVER TERRACES

- Alluvium
- River gravel terraces
- Fluvio-glacial sand
- Boulder Clay
- Thin drift (G.S. boundary of solid)
- Solid rock at surface
- Borehole (Height of rock-floor shown)
- Terrace scarp

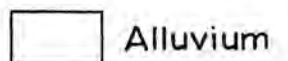
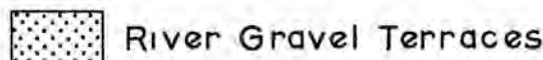

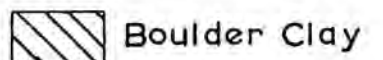
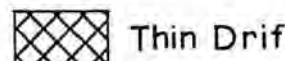
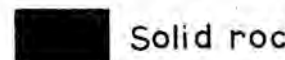

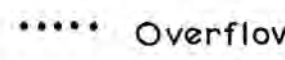

D.H.M. '55

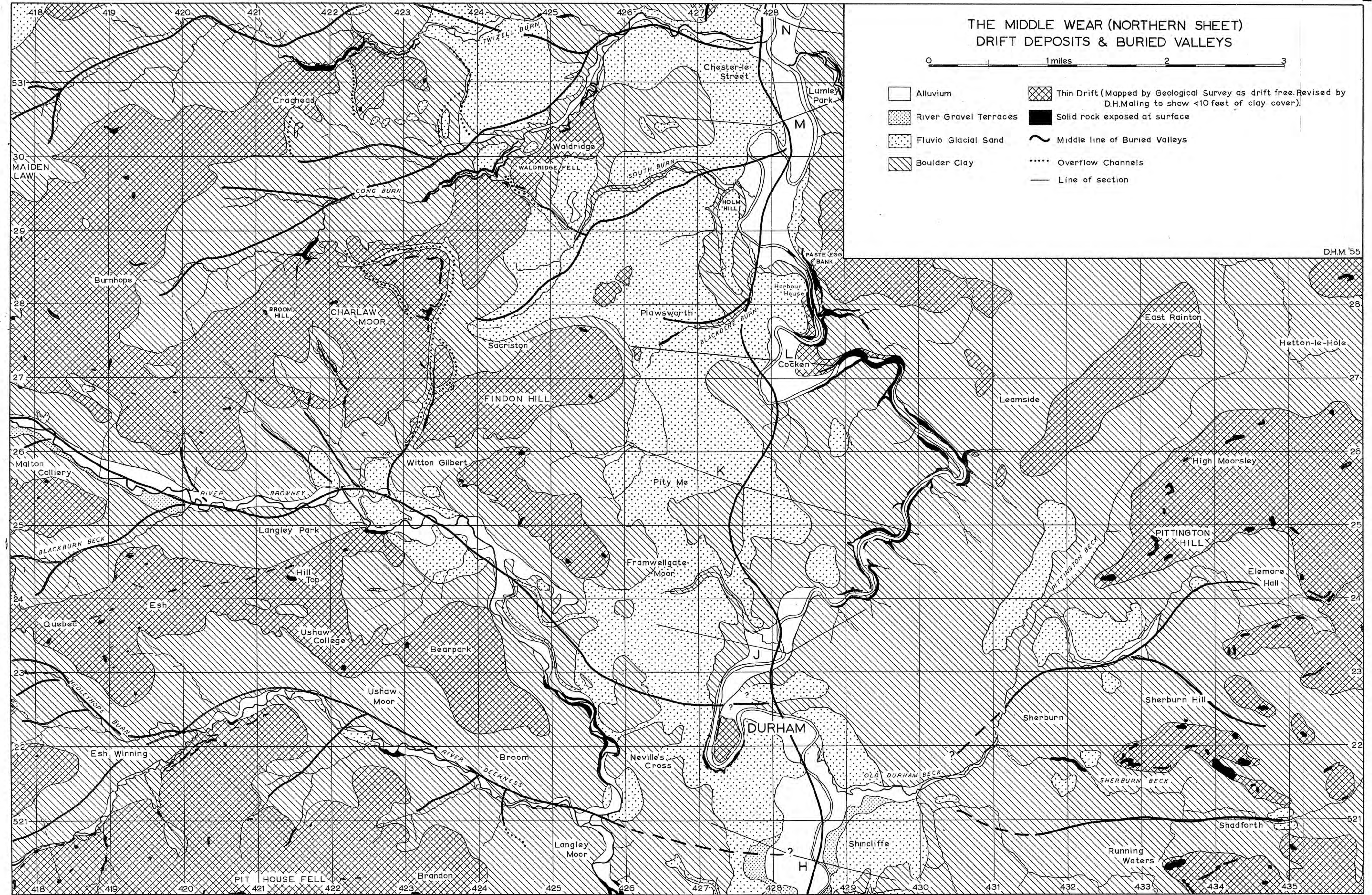
4 boreholes, sites not known. 16-20ft Gr & Clay

4 boreholes near Rly bridge. All proved more than 20ft of drift. One hole (N bank) proved more than 46ft.

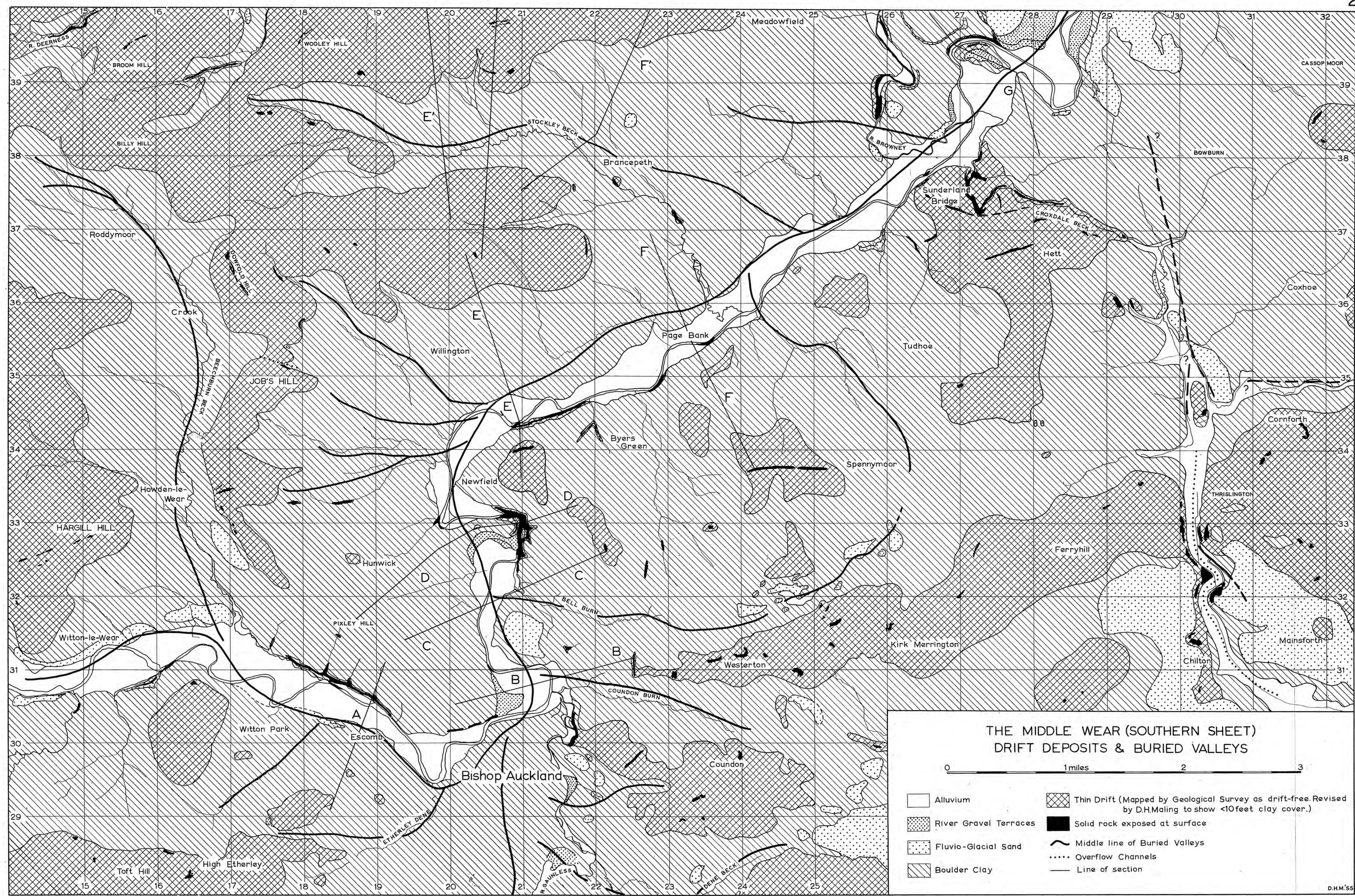
THE MIDDLE WEAR (NORTHERN SHEET) DRIFT DEPOSITS & BURIED VALLEYS



-  Alluvium
-  River Gravel Terraces
-  Fluvio Glacial Sand
-  Boulder Clay
-  Thin Drift (Mapped by Geological Survey as drift free. Revised by D.H.Maling to show <10 feet of clay cover).
-  Solid rock exposed at surface
-  Middle line of Buried Valleys
-  Overflow Channels
-  Line of section



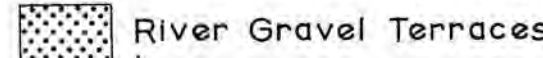
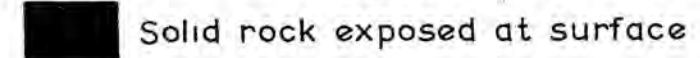
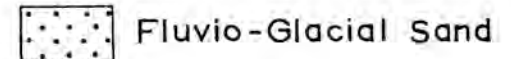
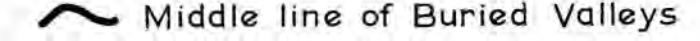
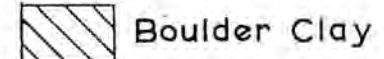
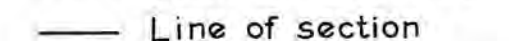



DHM '55

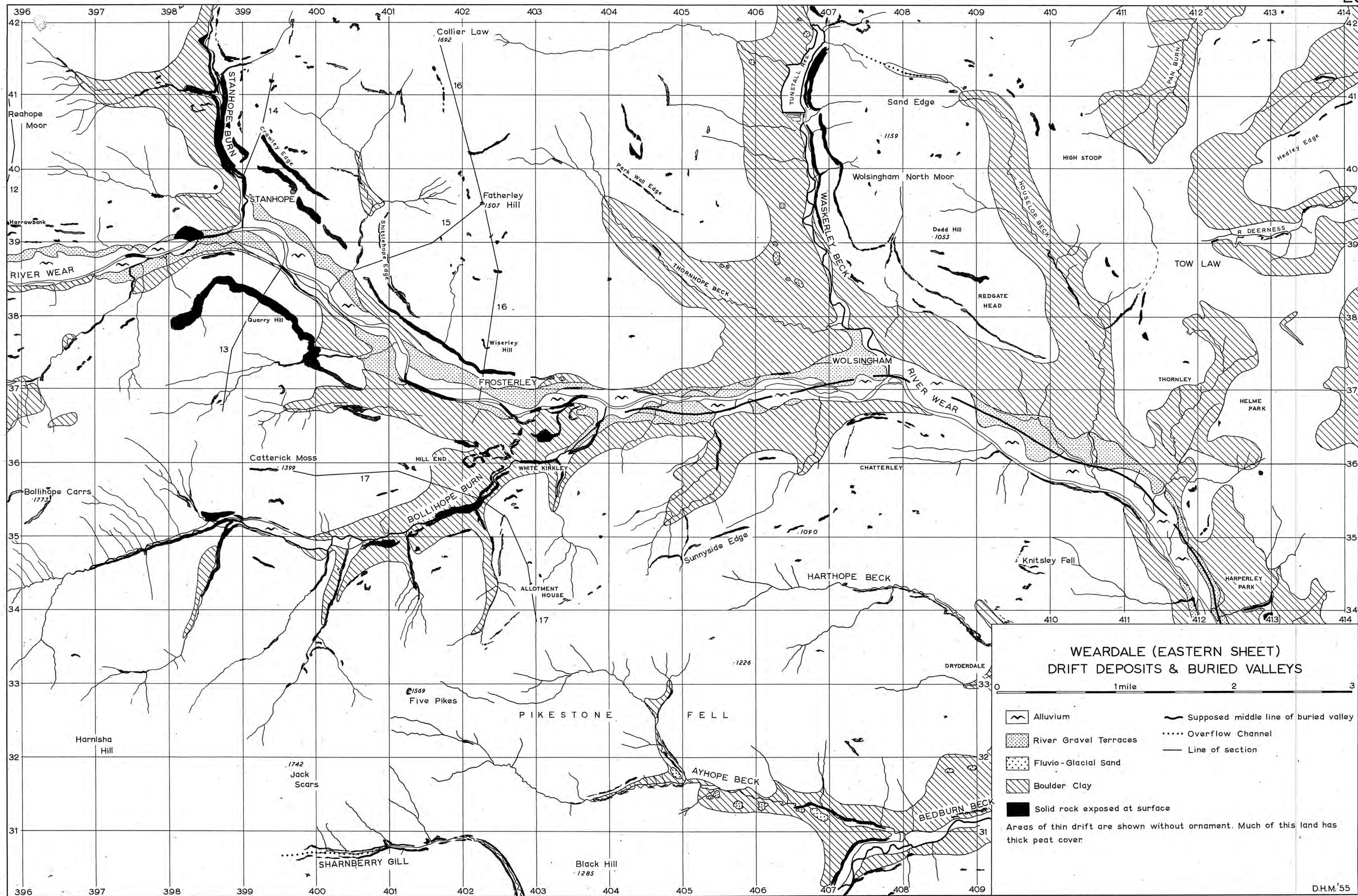


**THE MIDDLE WEAR (SOUTHERN SHEET)
DRIFT DEPOSITS & BURIED VALLEYS**

0 ————— 1 miles ————— 2 ————— 3



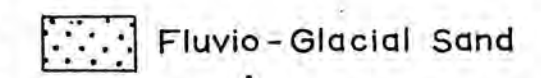
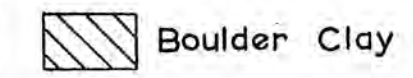
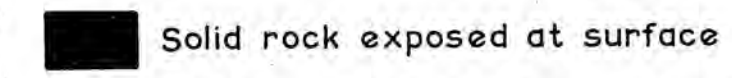
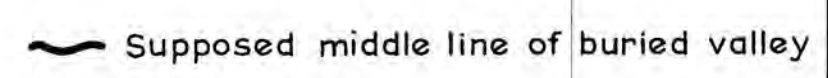
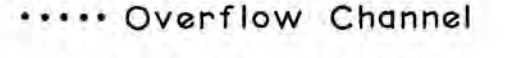
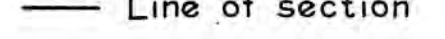
 Alluvium	 Thin Drift (Mapped by Geological Survey as drift-free. Revised by D.H.Maling to show <10 feet clay cover.)
 River Gravel Terraces	 Solid rock exposed at surface
 Fluvio-Glacial Sand	 Middle line of Buried Valleys
 Boulder Clay	 Overflow Channels
	 Line of section

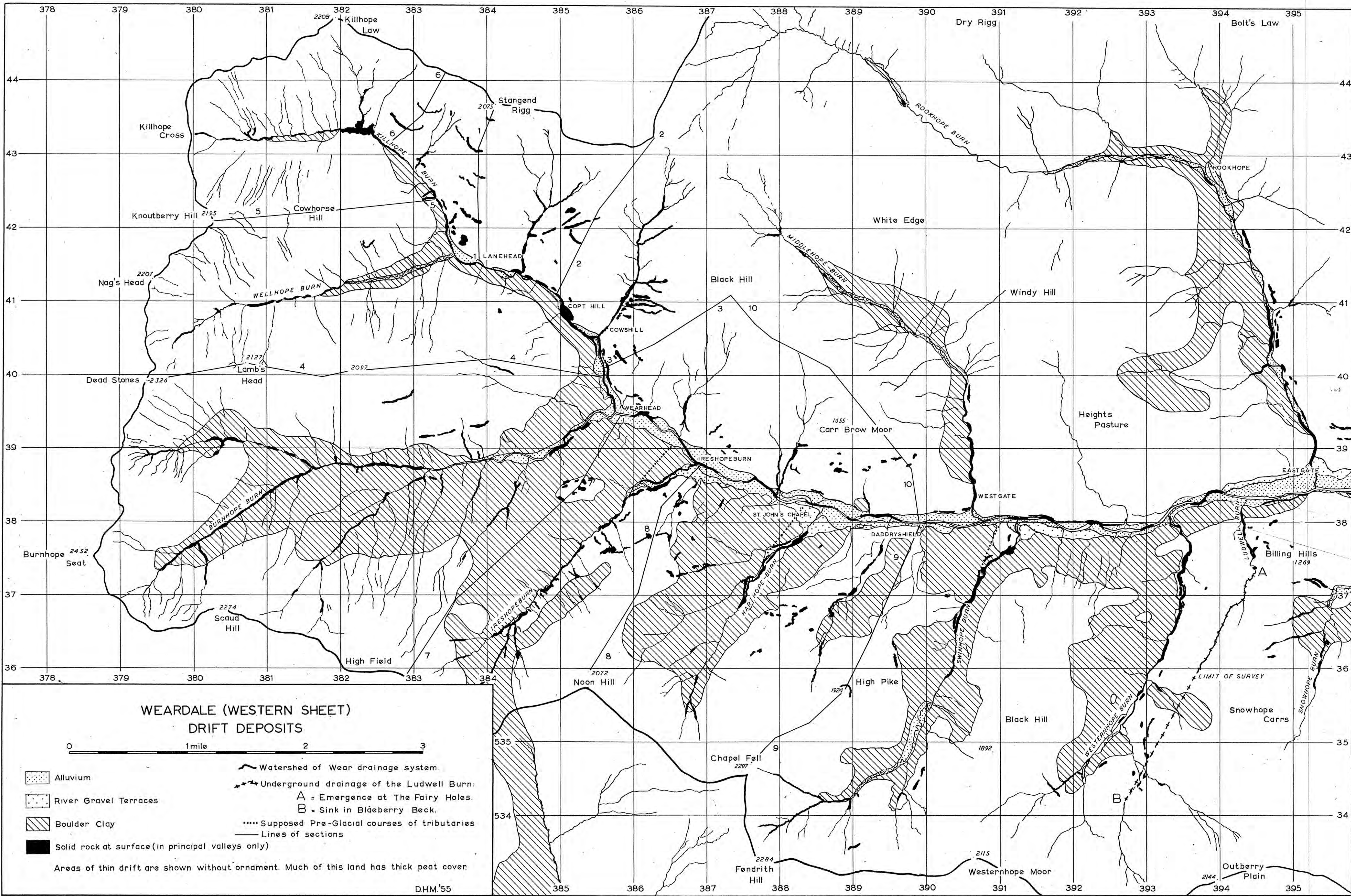
D.H.M.55



**WEARDALE (EASTERN SHEET)
DRIFT DEPOSITS & BURIED VALLEYS**

1mile 2 3

-  Alluvium
 -  River Gravel Terraces
 -  Fluvio-Glacial Sand
 -  Boulder Clay
 -  Solid rock exposed at surface
 -  Supposed middle line of buried valley
 -  Overflow Channel
 -  Line of section
- Areas of thin drift are shown without ornament. Much of this land has thick peat cover.



**WEARDALE (WESTERN SHEET)
DRIFT DEPOSITS**

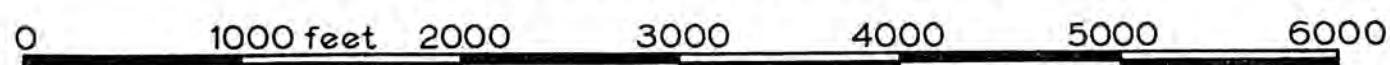
0 1 mile 2 3

- Alluvium
- River Gravel Terraces
- Boulder Clay
- Solid rock at surface (in principal valleys only)
- Watershed of Wear drainage system.
- Underground drainage of the Ludwell Burn:
 - A = Emergence at The Fairy Holes.
 - B = Sink in Blæberry Beck.
- Supposed Pre-Glacial courses of tributaries
- Lines of sections

Areas of thin drift are shown without ornament. Much of this land has thick peat cover.

D.H.M.'55

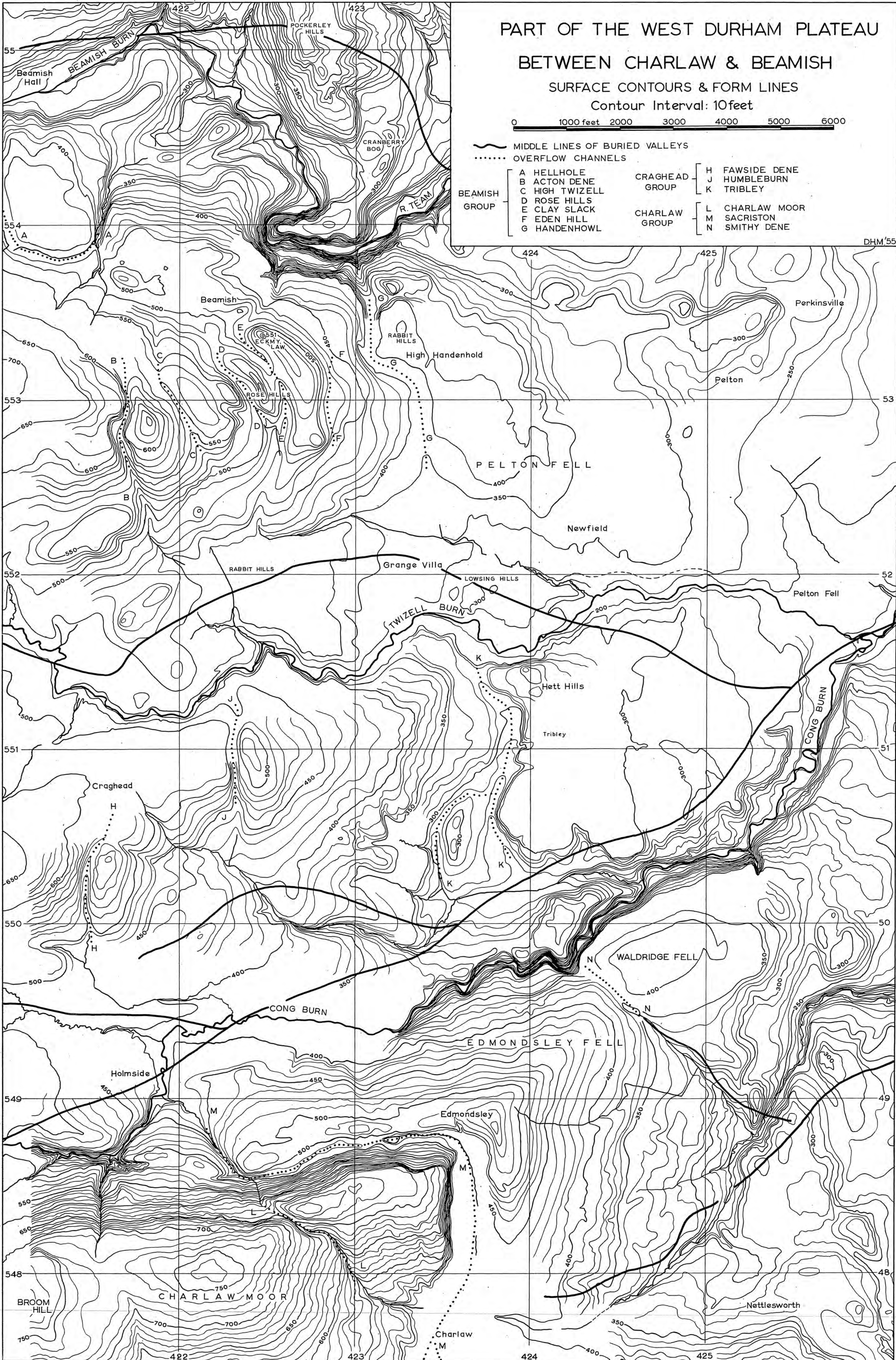
PART OF THE WEST DURHAM PLATEAU
 BETWEEN CHARLAW & BEAMISH
 SURFACE CONTOURS & FORM LINES
 Contour Interval: 10 feet



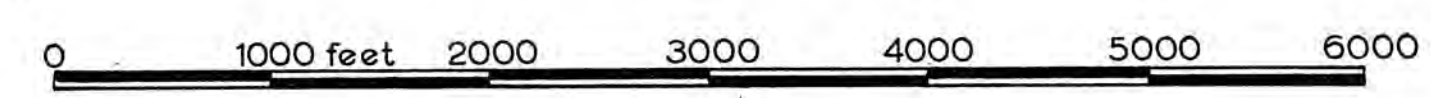
— MIDDLE LINES OF BURIED VALLEYS
 OVERFLOW CHANNELS

- | | | | |
|---------------|----------------|----------------|----------------|
| BEAMISH GROUP | A HELLHOLE | CRAGHEAD GROUP | H FAWSIDE DENE |
| | B ACTON DENE | | J HUMBLEBURN |
| | C HIGH TWIZELL | | K TRIBLEY |
| D ROSE HILLS | CHARLAW GROUP | L CHARLAW MOOR | |
| E CLAY SLACK | | M SACRISTON | |
| F EDEN HILL | | N SMITHY DENE | |
| G HANDENHOWL | | | |

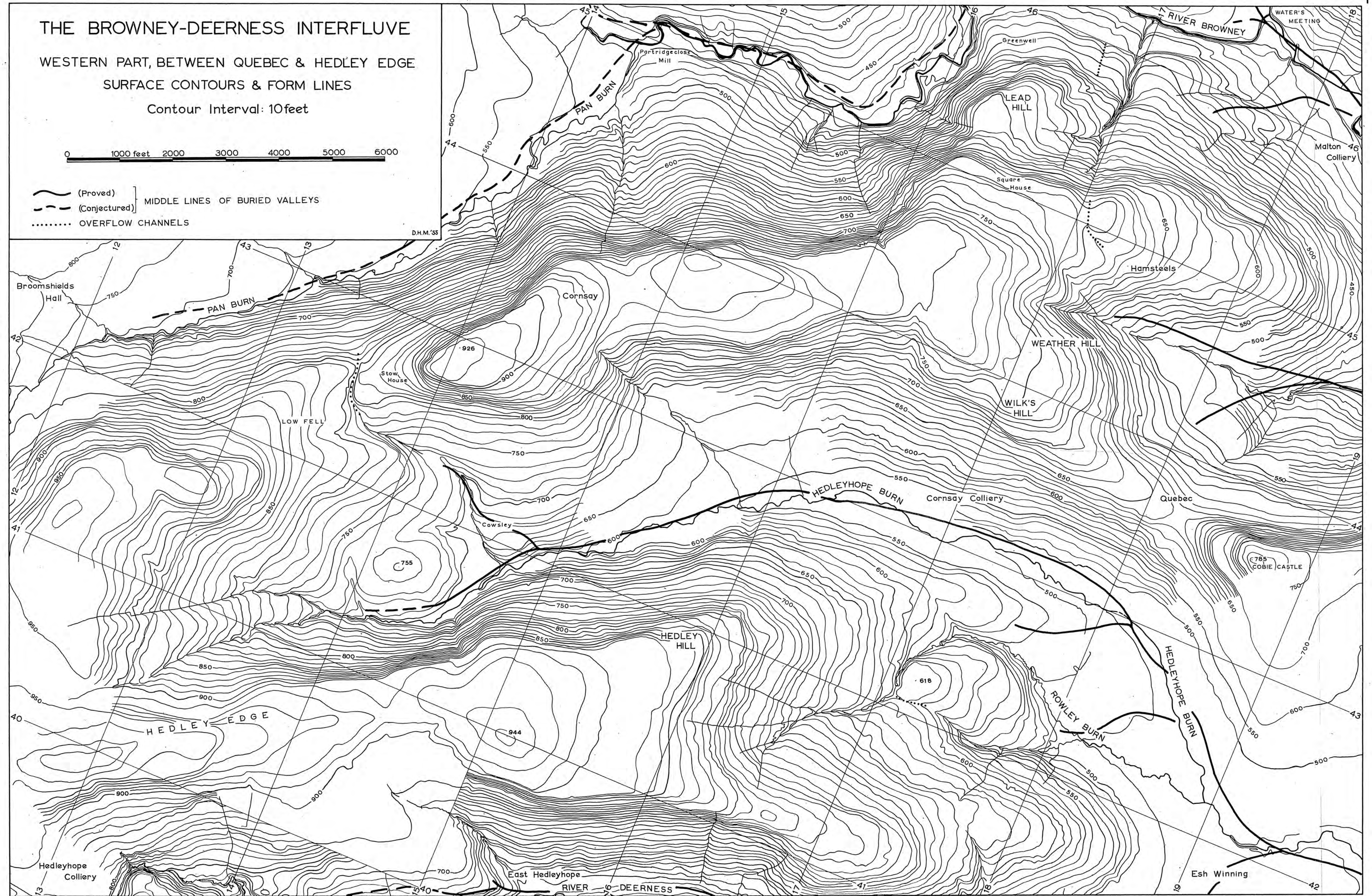
DHM '55



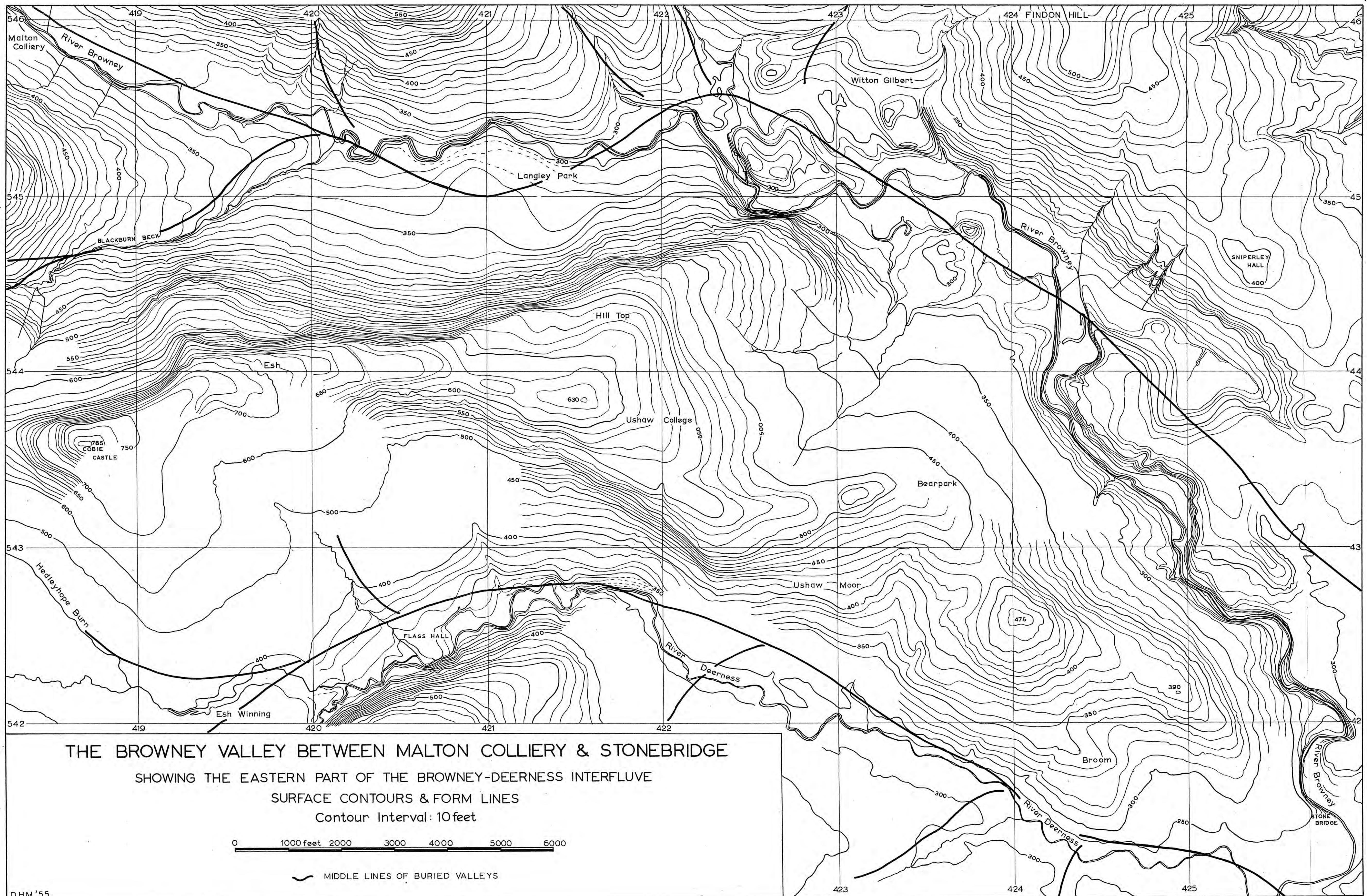
THE BROWNEY-DEERNESS INTERFLUVE
 WESTERN PART, BETWEEN QUEBEC & HEDLEY EDGE
 SURFACE CONTOURS & FORM LINES
 Contour Interval: 10 feet



(Proved) } MIDDLE LINES OF BURIED VALLEYS
 (Conjectured) }
 OVERFLOW CHANNELS



D.H.M.'55

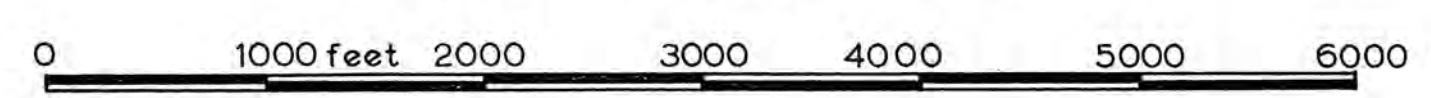


THE BROWNEY VALLEY BETWEEN MALTON COLLIERY & STONEBRIDGE

SHOWING THE EASTERN PART OF THE BROWNEY-DEERNESS INTERFLUVE

SURFACE CONTOURS & FORM LINES

Contour Interval: 10 feet



— MIDDLE LINES OF BURIED VALLEYS

THE WEAR VALLEY NEAR LAMBTON CASTLE

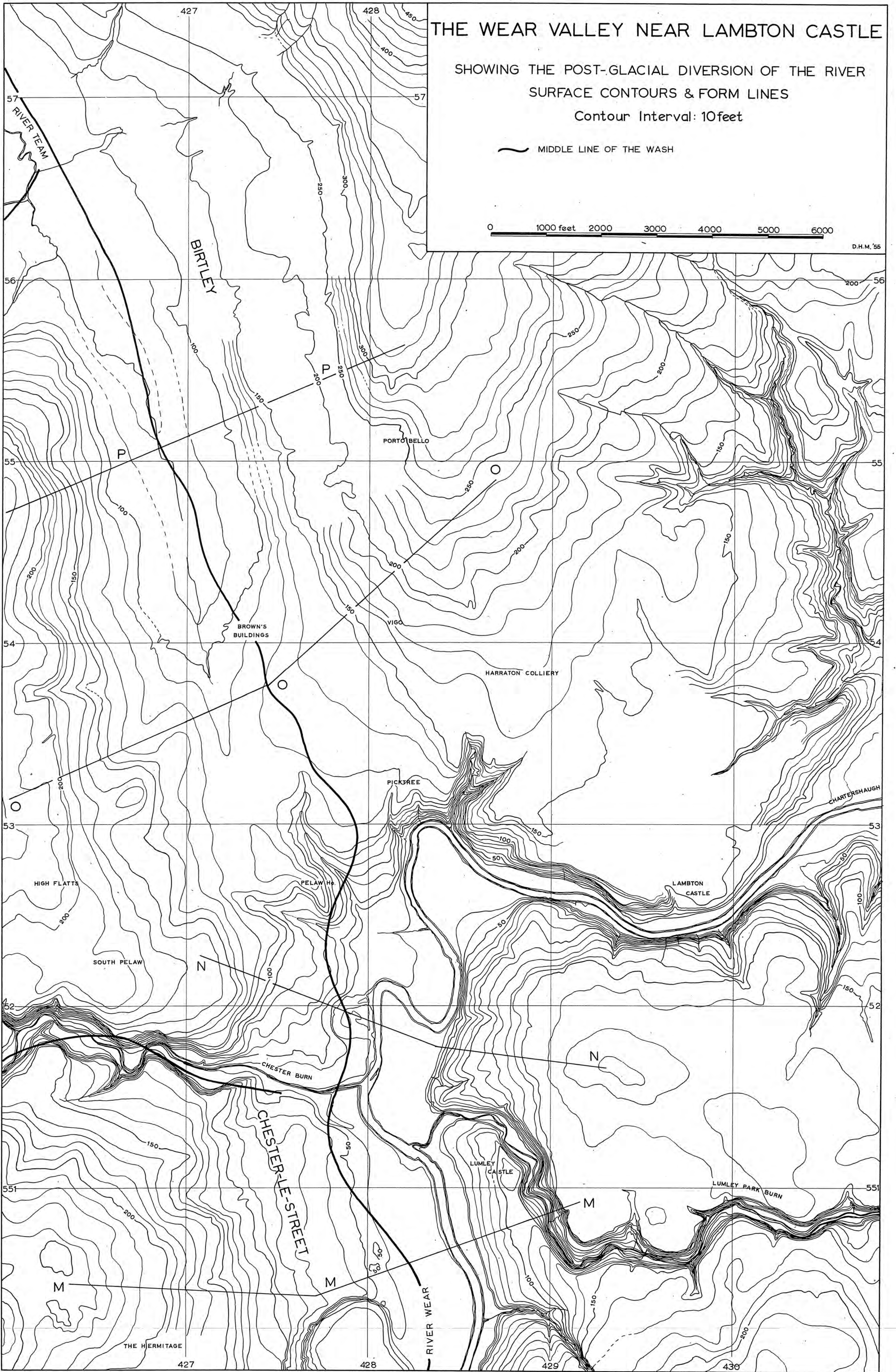
SHOWING THE POST-GLACIAL DIVERSION OF THE RIVER
SURFACE CONTOURS & FORM LINES

Contour Interval: 10 feet

— MIDDLE LINE OF THE WASH


0 1000 feet 2000 3000 4000 5000 6000

D.H.M. '55

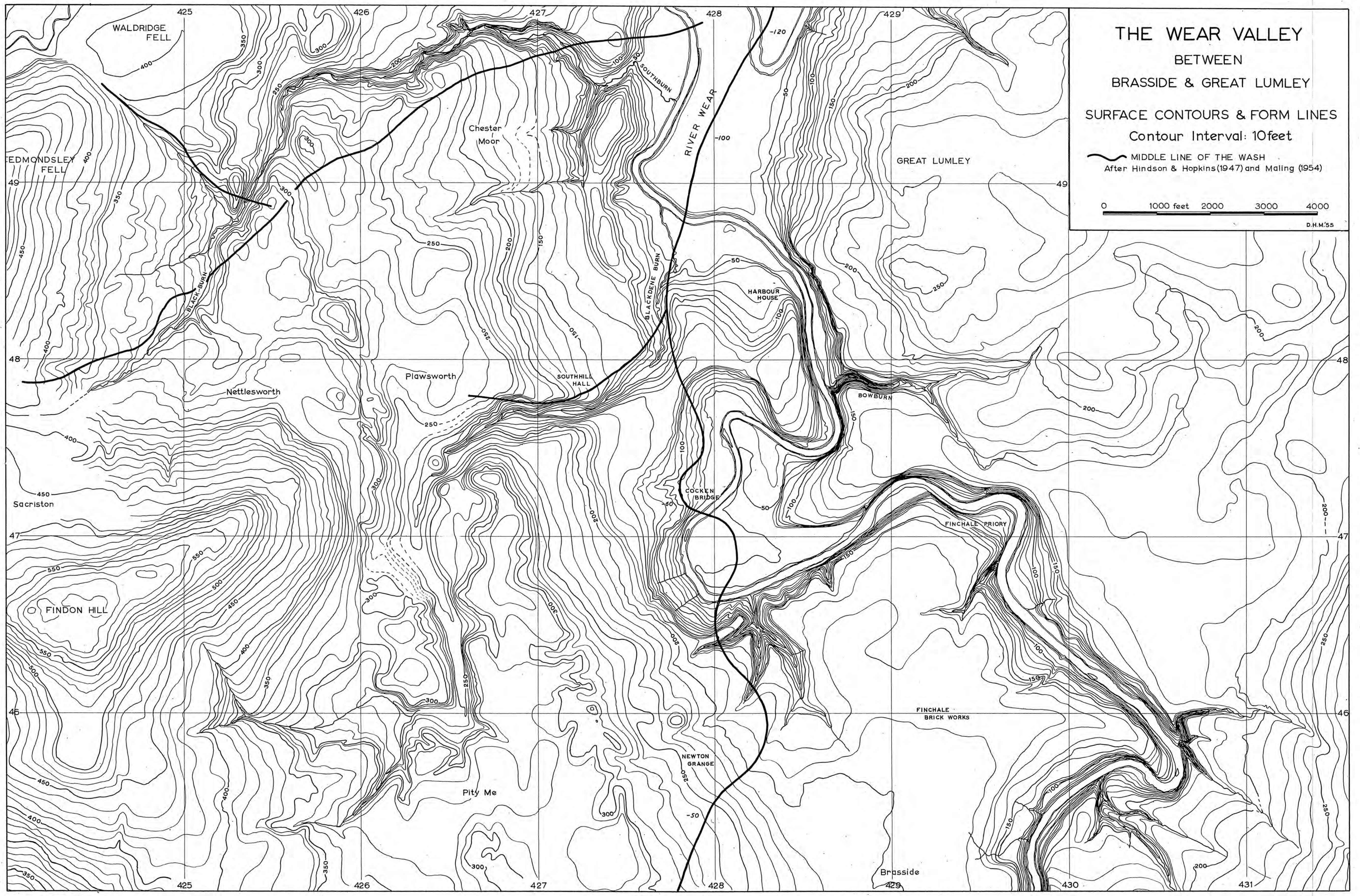


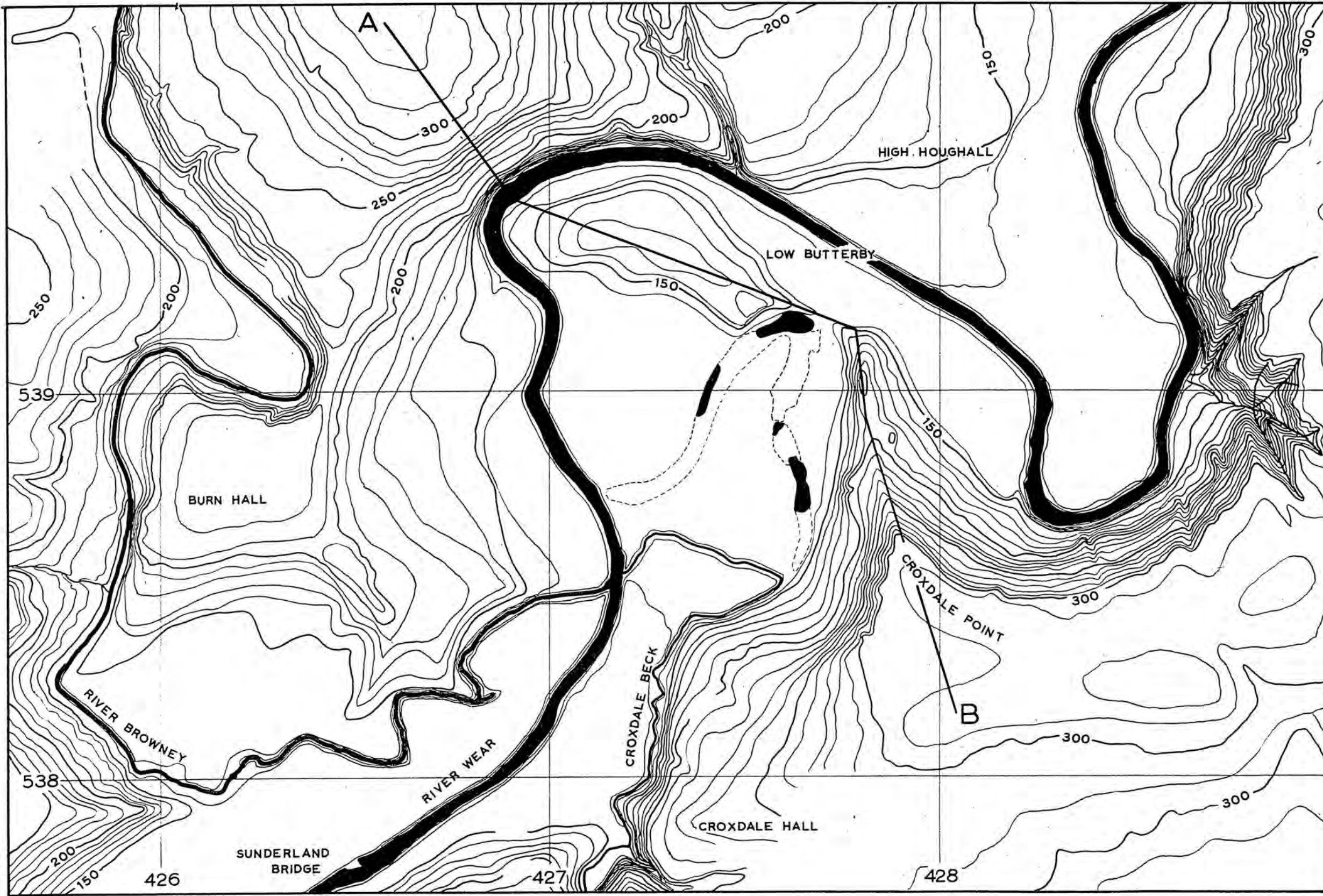
THE WEAR VALLEY
 BETWEEN
 BRASSIDE & GREAT LUMLEY

SURFACE CONTOURS & FORM LINES
 Contour Interval: 10feet

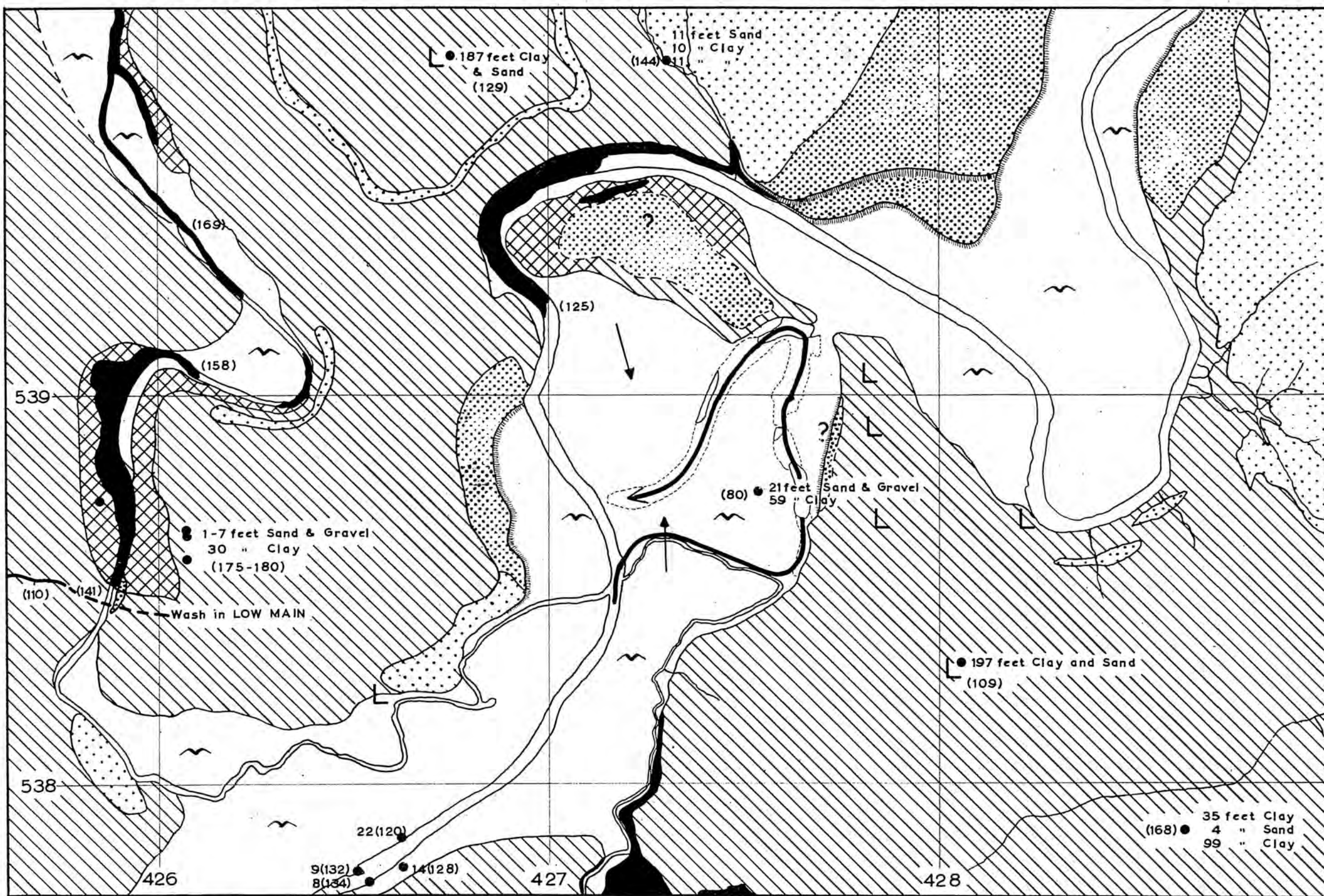
 MIDDLE LINE OF THE WASH
 After Hindson & Hopkins(1947) and Maling (1954)

0 1000 feet 2000 3000 4000
 D.H.M.'55



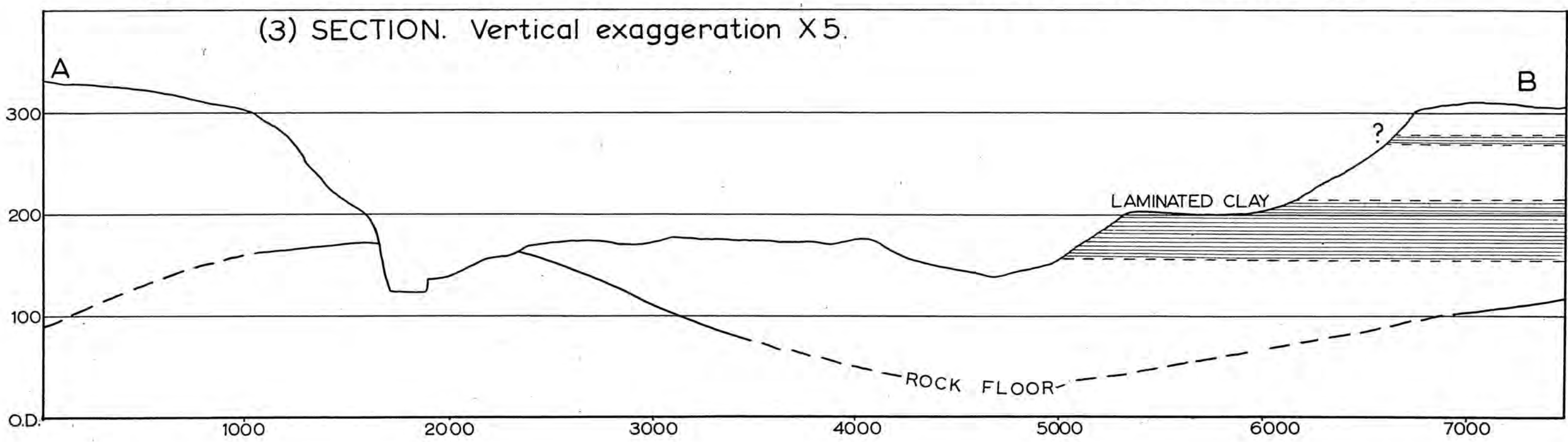


(1) SURFACE CONTOURS & FORM LINES. Contour interval: 10 feet.
Based upon plane-table survey and flood-plain levels, 1953-1954.



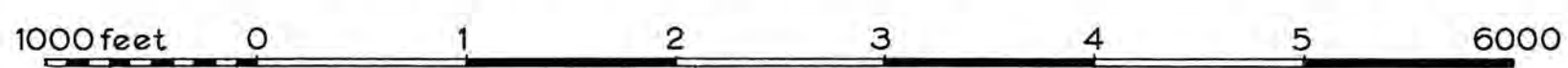
(2) DRIFT DEPOSITS & RIVER TERRACES

- | | | |
|---|---|-----------------------------|
| ALLUVIUM | BOULDER CLAY | THIN DRIFT |
| RIVER TERRACE GRAVEL | FLUVIO-GLACIAL SAND | SOLID ROCK AT SURFACE |
| BOREHOLE (Height of rock floor in brackets) | TERRACE SCARP | FORMER COURSE OF RIVER WEAR |
| LAMINATED CLAY EXPOSED OR PROVED BY BORING | APPARENT DIRECTION OF MEANDER MIGRATION | |



(3) SECTION. Vertical exaggeration X5.

THE WEAR VALLEY BETWEEN SUNDERLAND BRIDGE & HIGH HOUGHALL



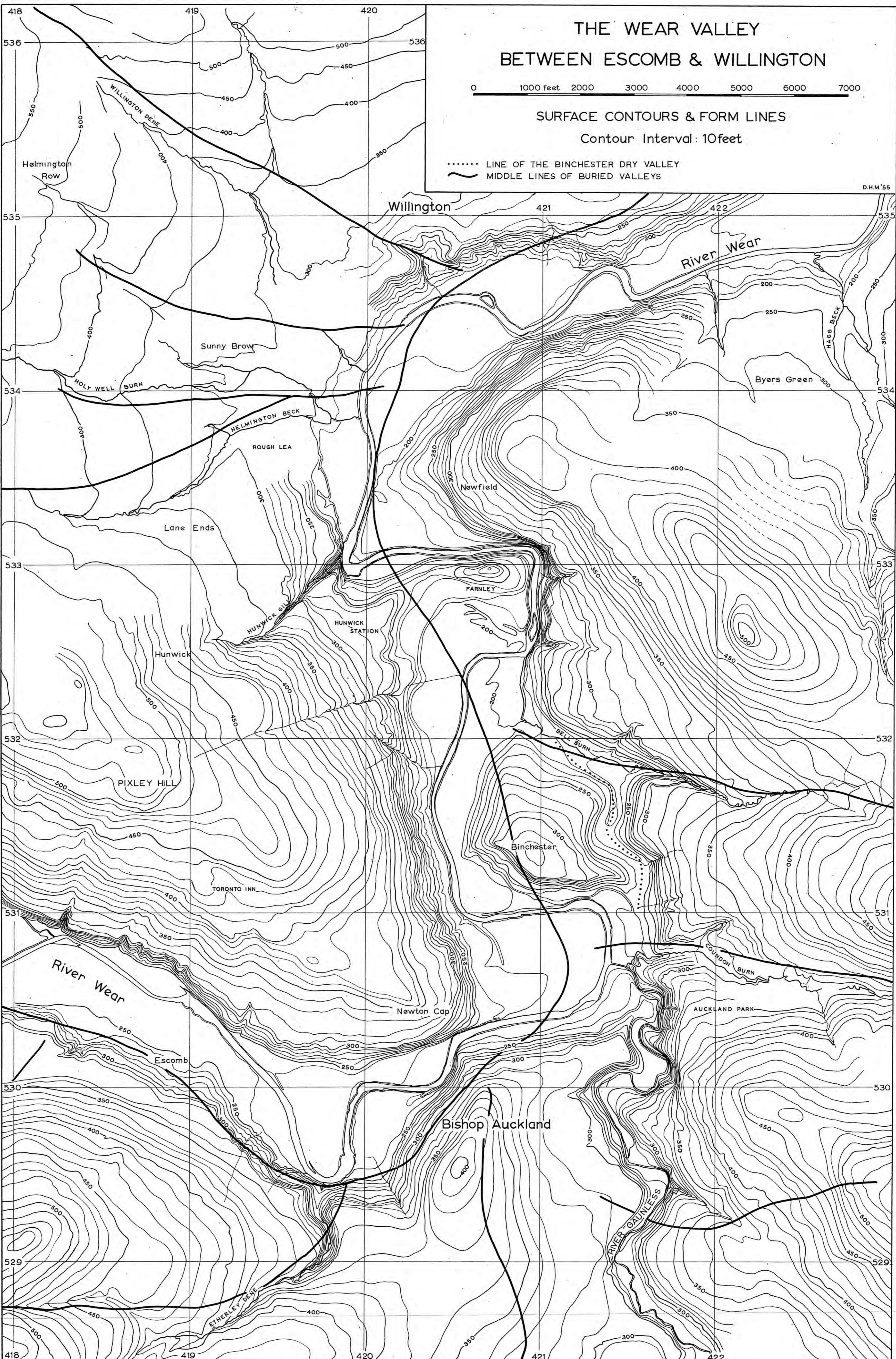
THE WEAR VALLEY BETWEEN ESCOMB & WILLINGTON

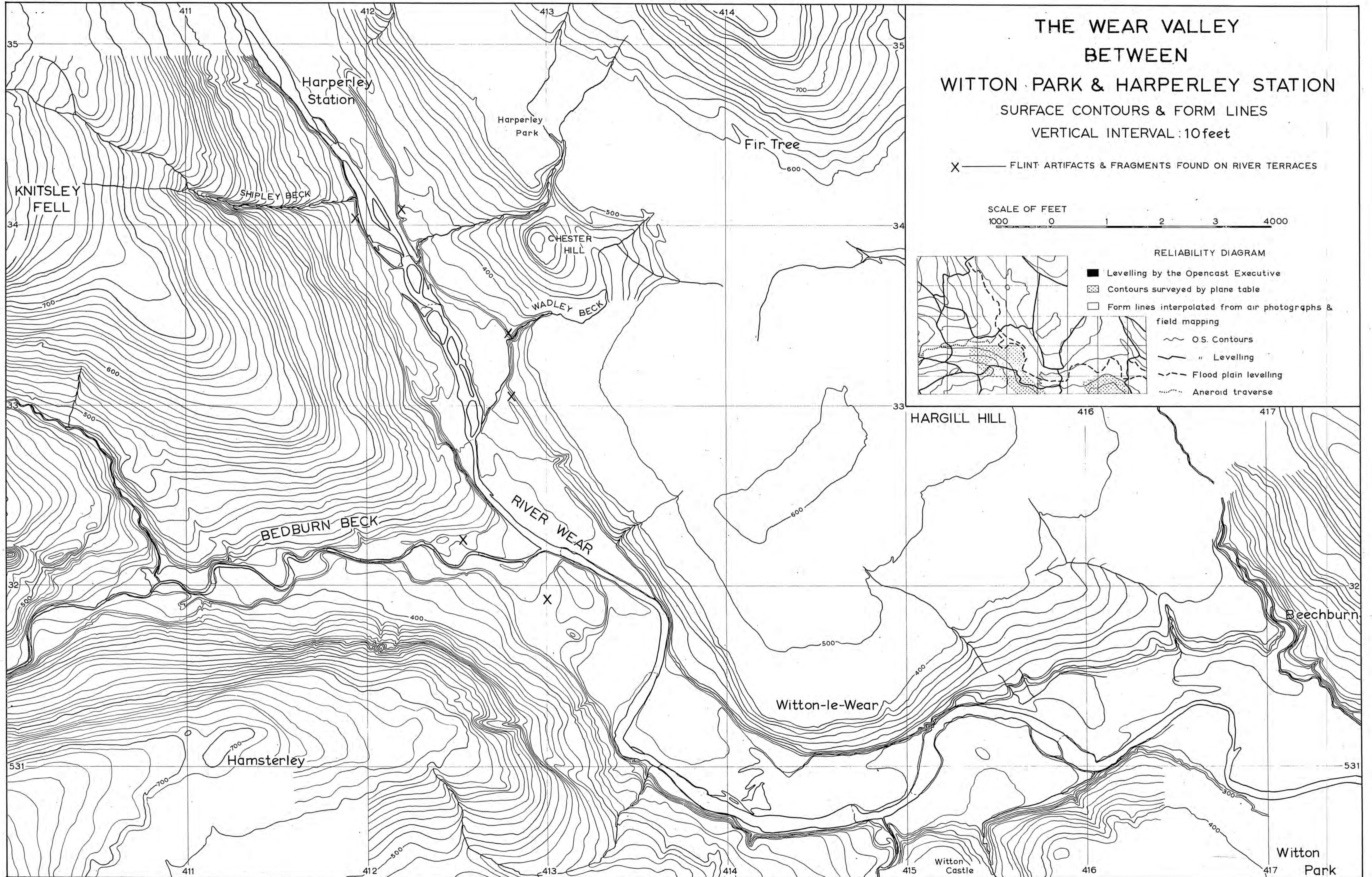
0 1000 feet 2000 3000 4000 5000 6000 7000

SURFACE CONTOURS & FORM LINES
Contour Interval: 10 feet

..... LINE OF THE BINCHESTER DRY VALLEY
~ MIDDLE LINES OF BURIED VALLEYS

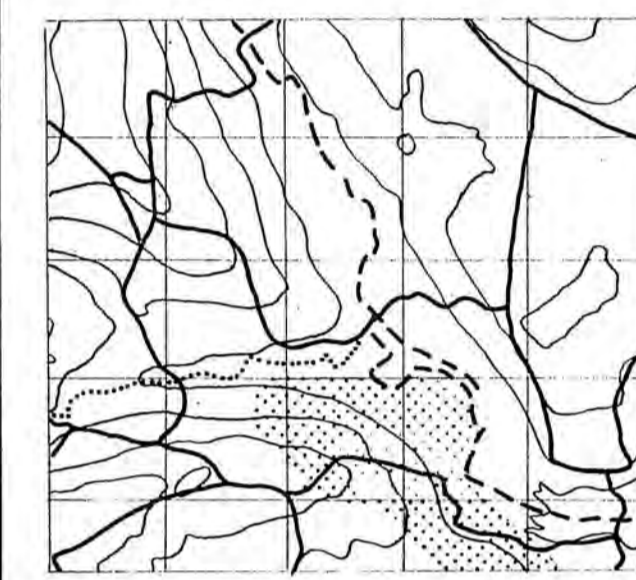
D.H.M.'55



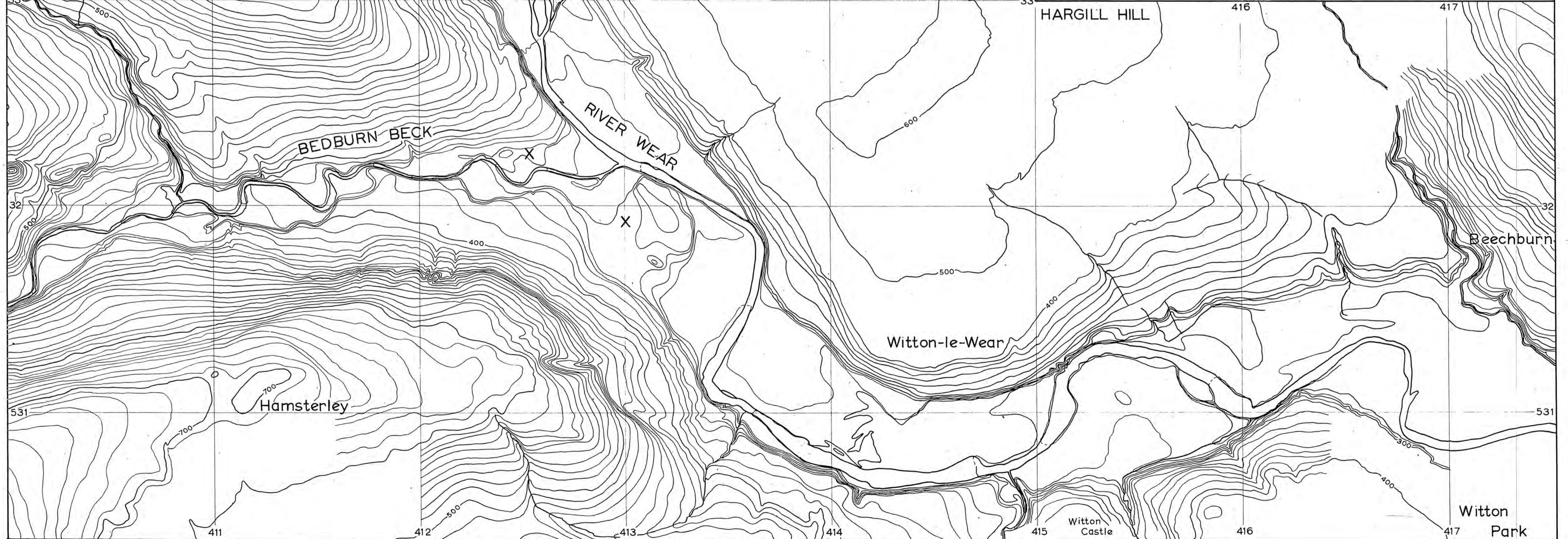


**THE WEAR VALLEY
BETWEEN
WITTON PARK & HARPERLEY STATION**
SURFACE CONTOURS & FORM LINES
VERTICAL INTERVAL : 10 feet

X ——— FLINT ARTIFACTS & FRAGMENTS FOUND ON RIVER TERRACES



- RELIABILITY DIAGRAM
- Levelling by the Opencast Executive
 - ▨ Contours surveyed by plane table
 - Form lines interpolated from air photographs & field mapping
 - ~ O.S. Contours
 - " Levelling
 - - - Flood plain levelling
 - ⋯ Aneroid traverse



THE WEAR VALLEY & WASKERLEY BECK NEAR WOLSINGHAM

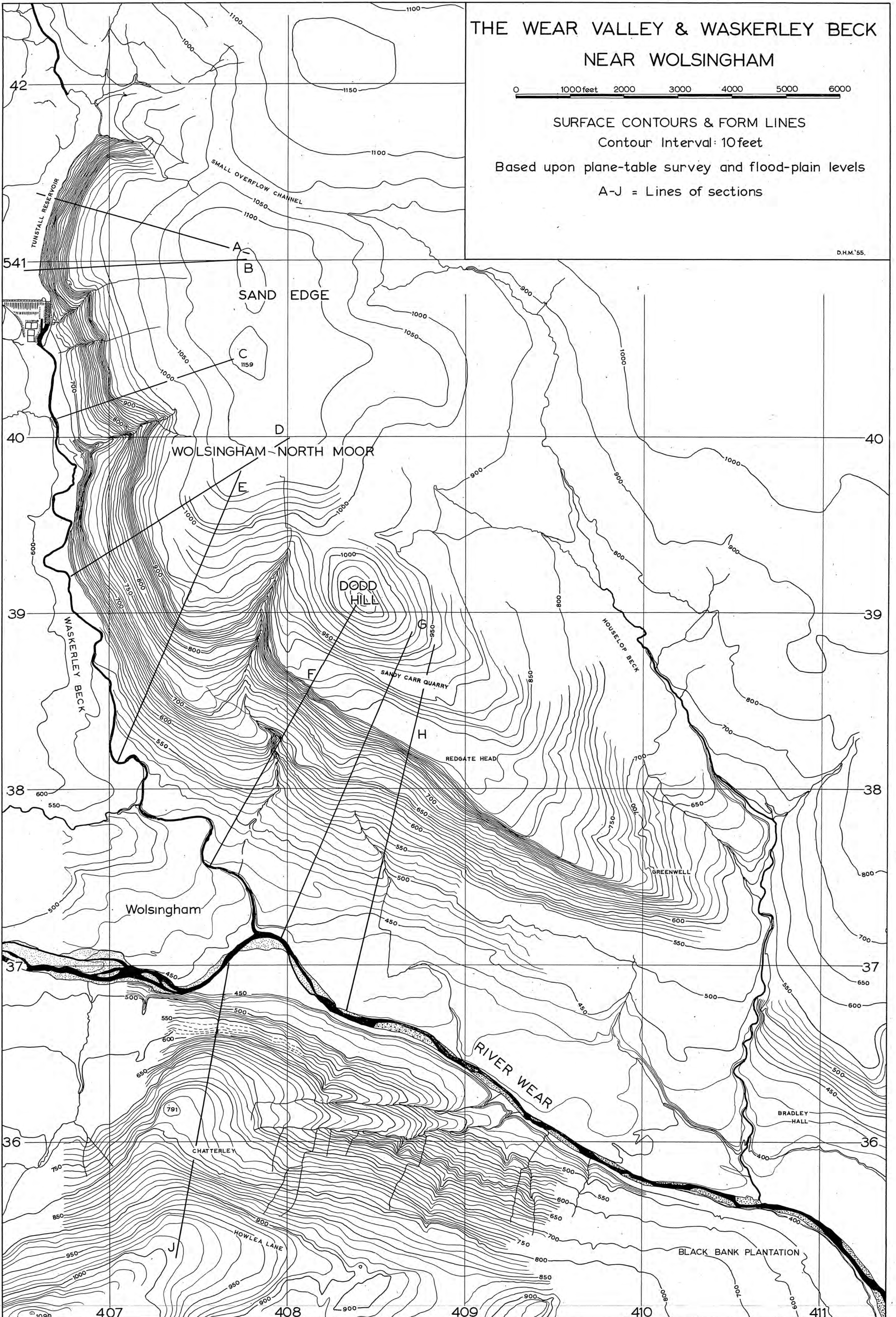
0 1000 feet 2000 3000 4000 5000 6000

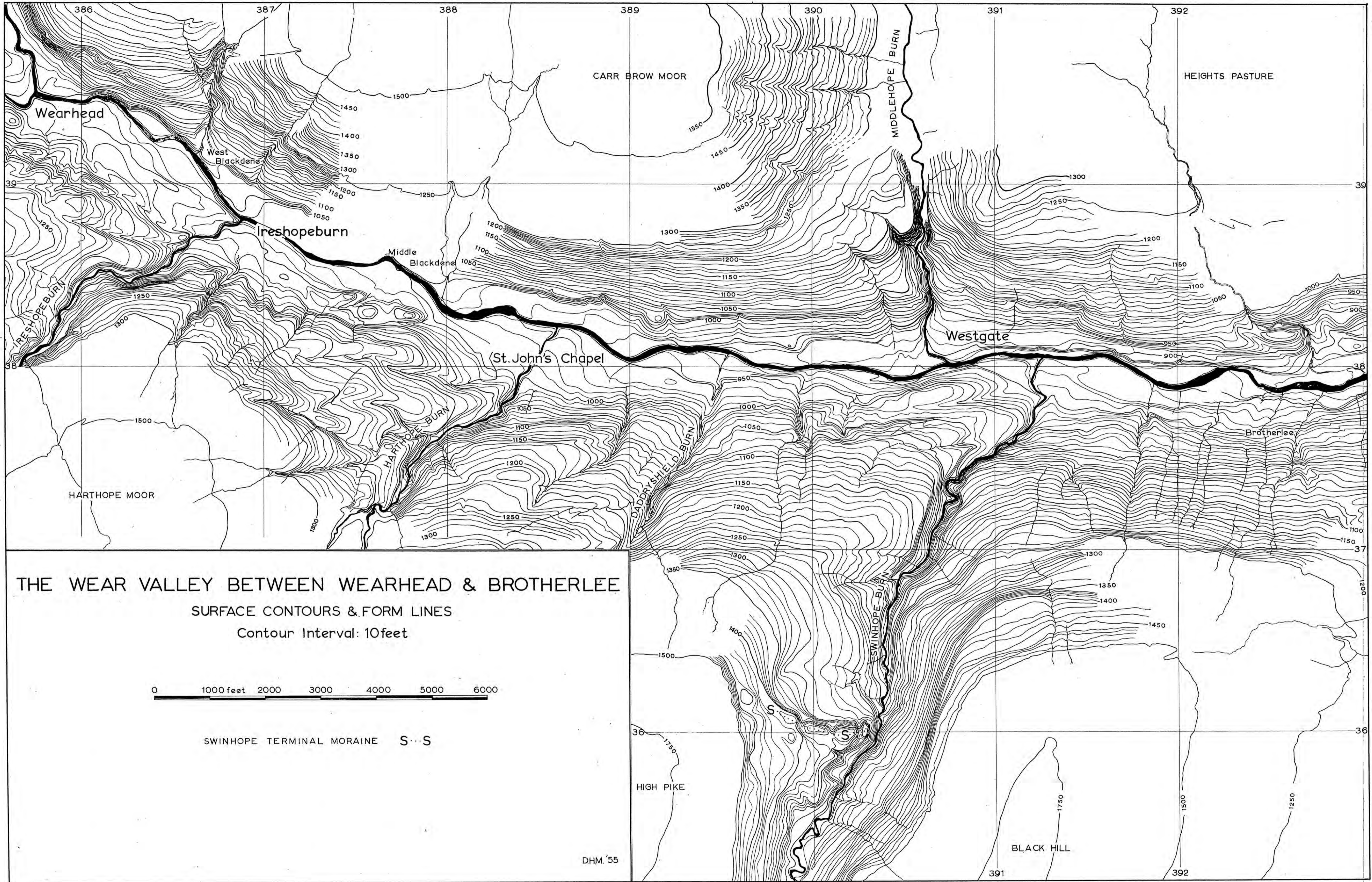
SURFACE CONTOURS & FORM LINES
Contour Interval: 10 feet

Based upon plane-table survey and flood-plain levels

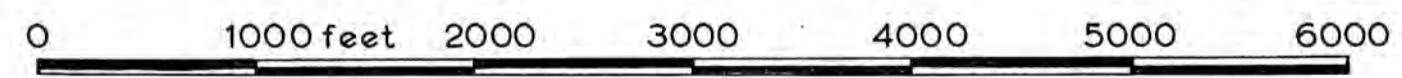
A-J = Lines of sections

D.H.M.'55.



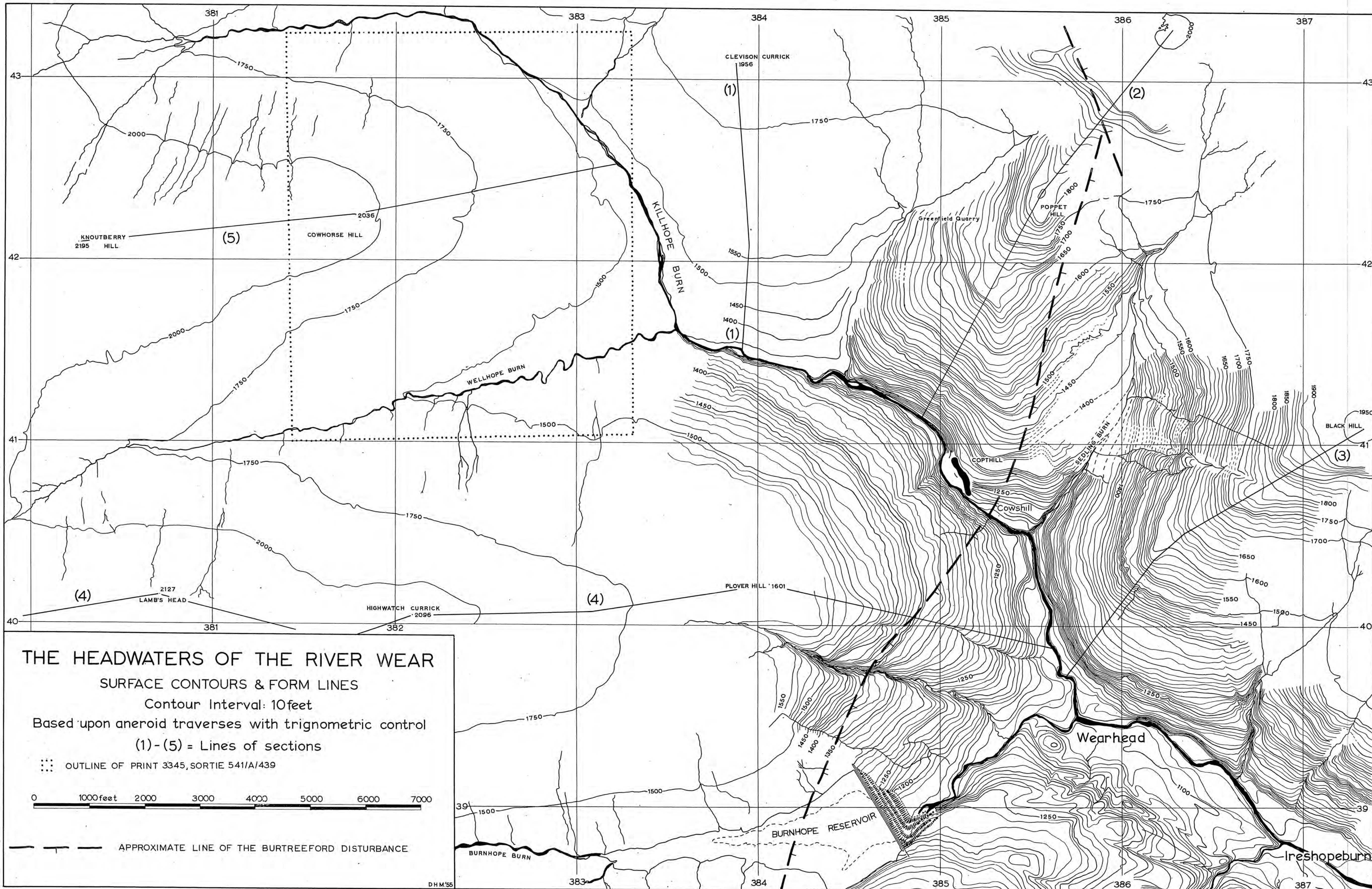


THE WEAR VALLEY BETWEEN WEARHEAD & BROTHERLEE
 SURFACE CONTOURS & FORM LINES
 Contour Interval: 10feet



SWINHOPE TERMINAL MORAINES S-S

DHM '55



KNOUTBERRY
2195 HILL

COWHORSE HILL

CLEVISON CURRICK
1956

Greenfield Quarry

POPPET HILL

BLACK HILL

PLOVER HILL 1601

Wearhead

BURNHOPE RESERVOIR

BURNHOPE BURN

Ireshopeburn

(5)

(5)

(1)

(1)

(2)

(3)

(4)

(4)

LAMB'S HEAD
2127

HIGHWATCH CURRICK
2096

381

383

384

385

386

387

43

43

42

42

41

41

40

40

39

39

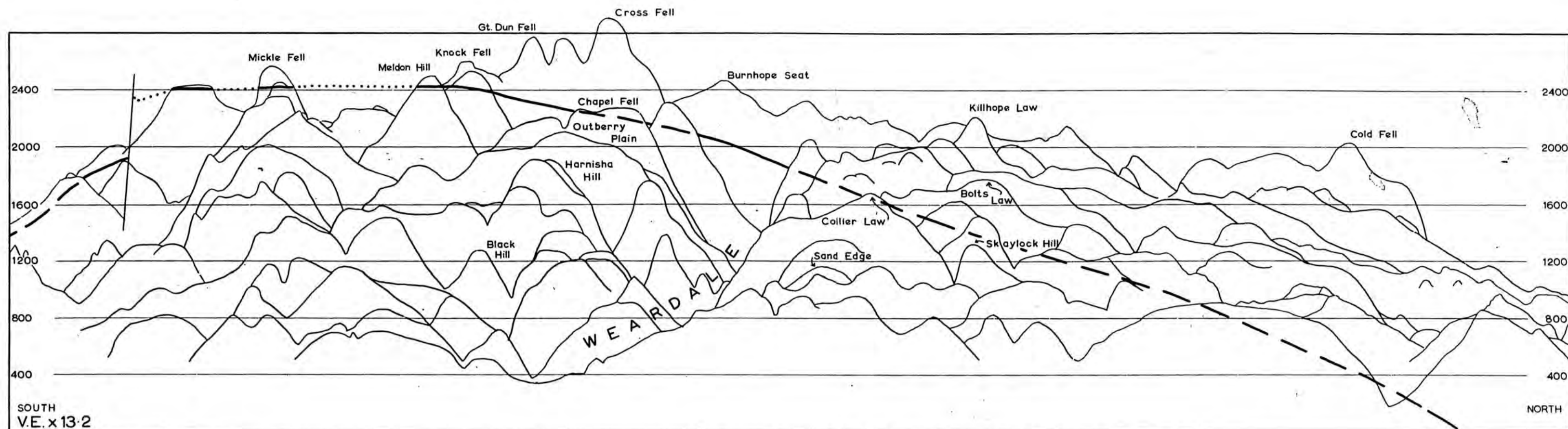
383

384

385

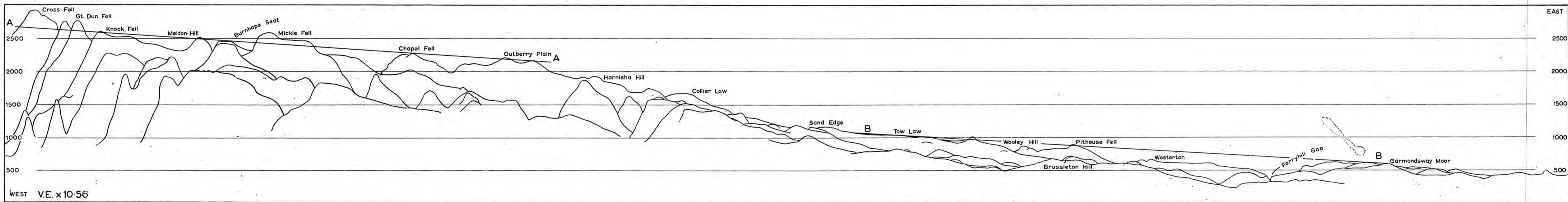
386

387

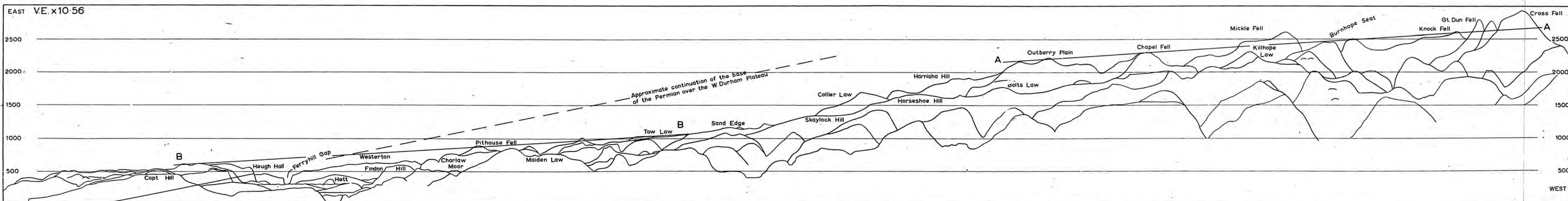


(1) PROJECTED PROFILE OF THE ALSTON BLOCK, VIEWED FROM 410 Kms. EAST. (NAT. GRID)

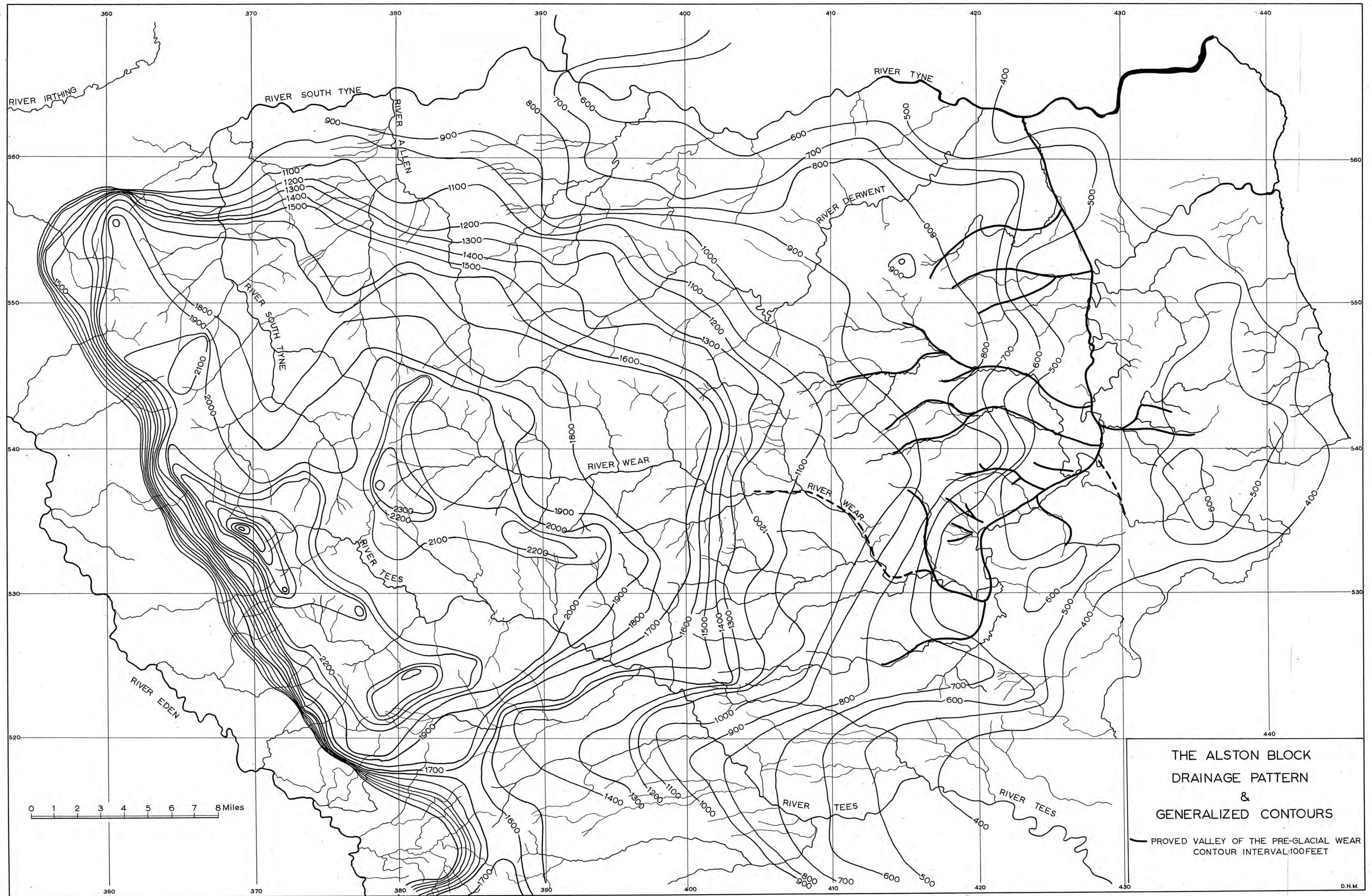
----- APPROXIMATE HORIZON OF GREAT LIMESTONE IN THE WESTERN HILLS (Section through Mickle Fell, Meldon Hill, Burnhope Seat & Killhope Law).



(2) PROJECTED PROFILE OF THE ALSTON BLOCK, VIEWED FROM SOUTH.

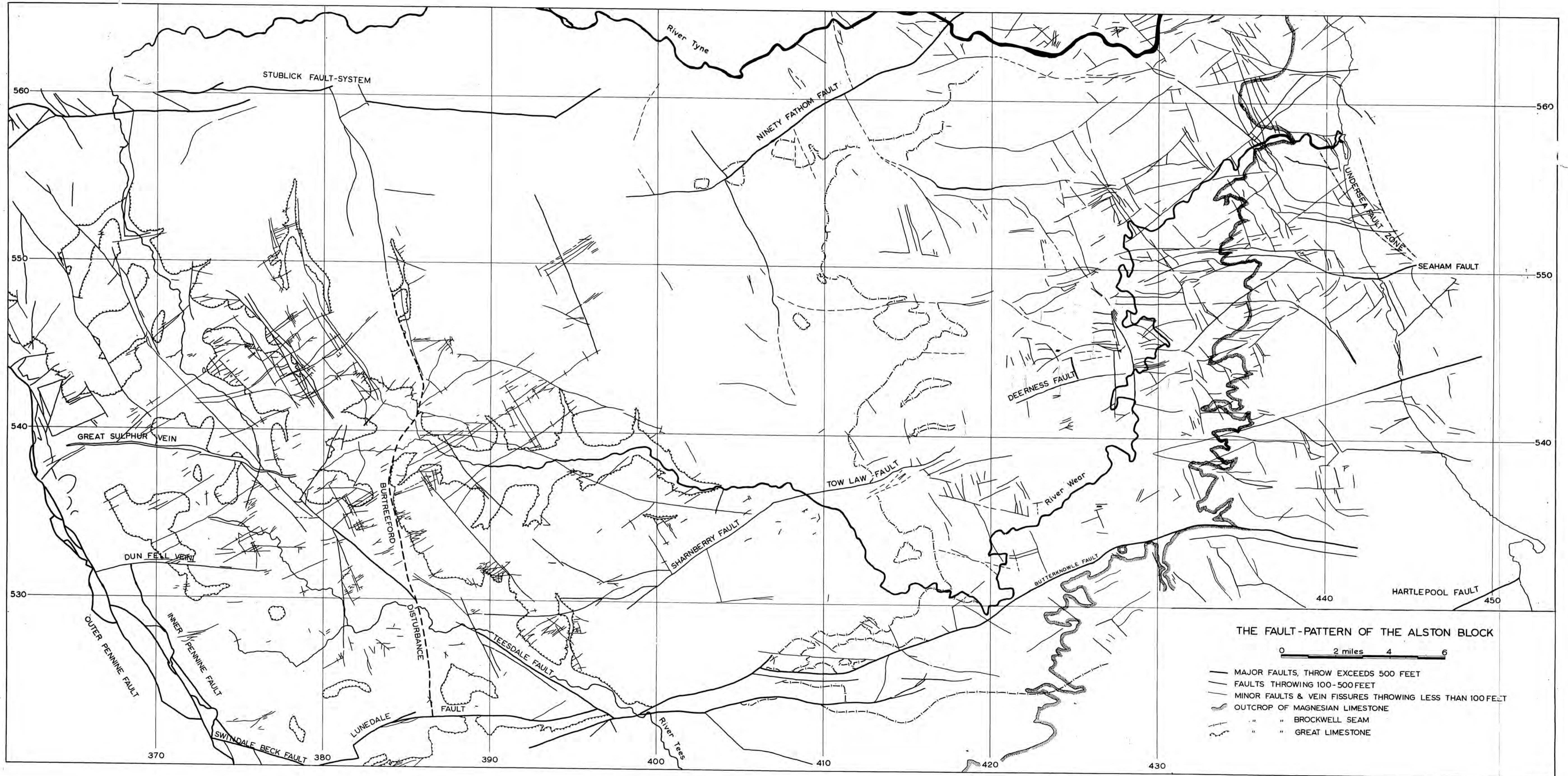


(3) PROJECTED PROFILE OF THE ALSTON BLOCK, VIEWED FROM 550 Kms. NORTH. (NAT. GRID)

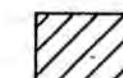



THE ALSTON BLOCK
 DRAINAGE PATTERN
 &
 GENERALIZED CONTOURS

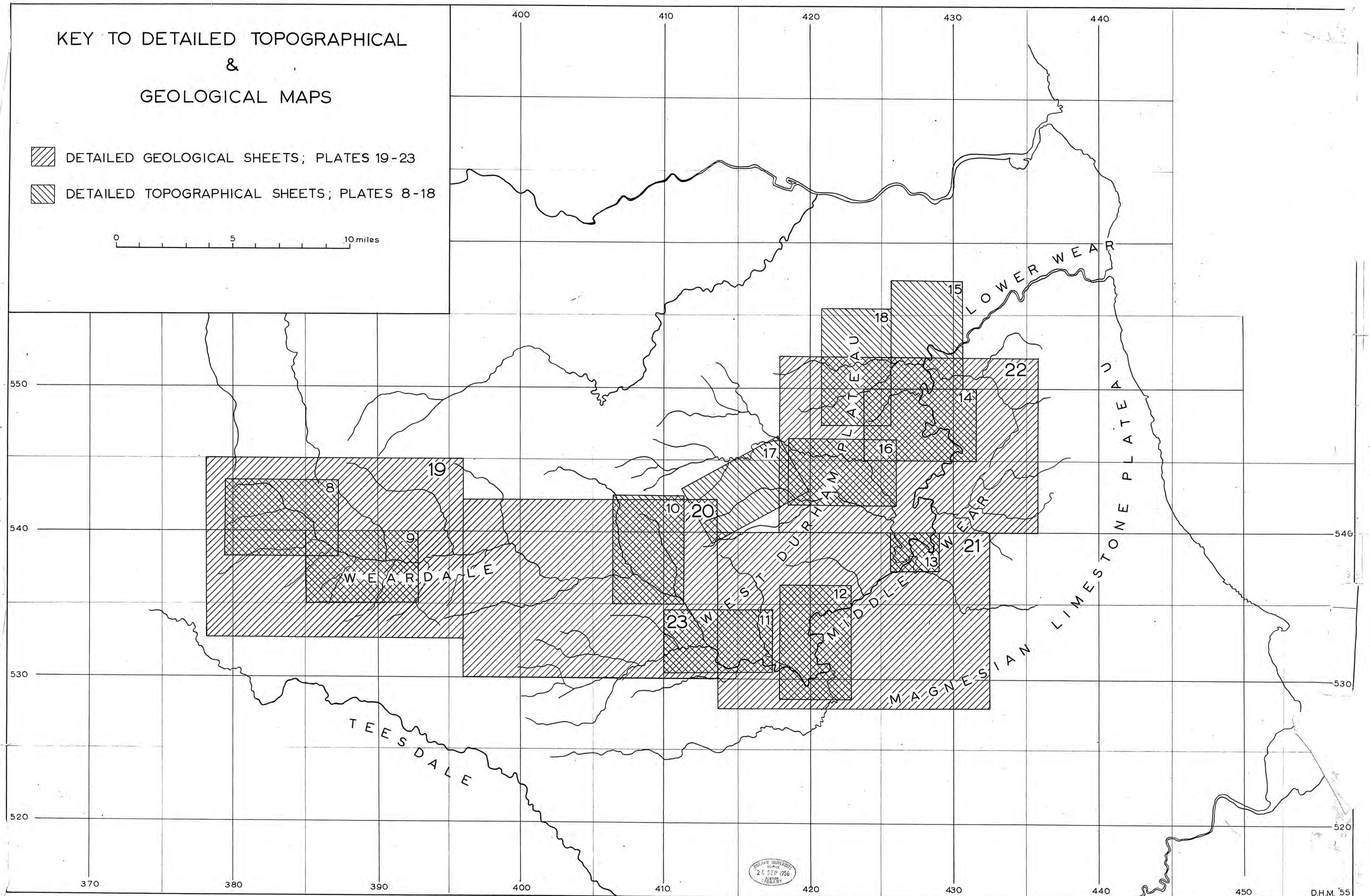
— PROVED VALLEY OF THE PRE-GLACIAL WEAR
 CONTOUR INTERVAL: 100 FEET



KEY TO DETAILED TOPOGRAPHICAL & GEOLOGICAL MAPS

-  DETAILED GEOLOGICAL SHEETS; PLATES 19-23
-  DETAILED TOPOGRAPHICAL SHEETS; PLATES 8-18

0 5 10 miles



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