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## Chapter 26 Detail of the Red Measures

On account of the importance of the Mainland sections, a few notes on the best that are at present known are given below. But, as that district is not in Anglesey, it has not been mapped by the present writer, and its structures yet remain to be worked out:

### 1 Mainland

On the shore north-east of Carnarvon, red sandy marls, like those of the opposite coast, are obscurely seen; but at the new Brickworks near Griffithis Crossing there is a fine section, showing 50 to 60 feet of evenly bedded red marls, with grey-green bands, and a few gritty and fine pebbly seams. Along the shore overhung by trees, beyond Llanfair-is-gaer Church, the great keratophyre-conglomerate ([E10565](#)); (Plate 28), Fig. 5 is well exposed, evidently emerging from below and faulted up against the marls. Towards Port Pinorwic it reappears among the limestones, but they are faulted against and even thrust over it.

### 2 Foel Ferry

The only section known in this district is that which runs along the Menai shore for about a third of a mile from the Ferry, rising, under the drifts, to a height of some 10 feet. Red marls with thin pebbly sands, like those of the Brick-works, but without their clear even banding, are the only rocks visible. The bedding, indeed, is for the most part obscure, and as the cliff is a strike-section, the low dip of some 5° south-east is inconspicuous. Thin calcite-veins, often at low angles, are abundant.

### 3 Holland Arms

1. The New Cutting on the Red Wharf Branch railway., This is now turfed over. The rocks exposed in it were deep-red but green-mottled sandstones and marls, with calcareous geodes and concretions, the sandstones being micaceous and rather fine. Some were yellow, some even white. There were also blue-grey marls or shales. The dip was 20° to 25° south-east, changing locally to south-south-west.
2. The cutting north of the bridge north of the Station, 83 yards in length. This section has deteriorated of late years very much.
3. The cutting from the Station south-westwards to the stream, 200 yards in length.

The succession seen in the two latter will now be given, but without measurements of the divisions, as the dips are too variable and the exposures not good enough. They are only a yard or two in depth, the upper parts of the cuttings being, apparently, in drift. Each is given from north to south.

**b.**

Thick-bedded sandstone

Yellowish sandstone

Soft red manly beds

Red sandstone

Red marls with thin sandstone (an inch or two being pebbly)

Flaggy grey micaceous sandstone

Red marls with red sandstone

Greyish sandstone (nine inch)

Red marls with thin mica-seams

Greenish white pebbly sandstone (six inch)

Red marls, with a green bed

Compact grey-green shale

**c.**

Dyke

Pebbly sandstone with limestone fragments

Yellowish sandstone

Red marls

Grey shales

(Fault?)

Red sandstone, well bedded

Yellow sandstone, passing into dolomitic breccia

Mottled red and green marls, with sandy beds

(Bridge)

Grey flaggy shales

Obscure space, apparently the same

Grey shale, baked and spotted

Dyke

Obscure: shale and ochreous matter, close to the main Berw fault

In (b) the dips are 25° south-east, and 50° south-south-east; in (a) they vary a good deal, but are chiefly 20° to 25° north-west, that is to say, away from the great fault.

#### **4 Llangaffo section**

Fine red sandstones and grey-green marls, visible in a small roadside section under a hedge on the north side of the railway, 50 yards from the alluvium, and opposite a little farm, dipping gently to the north-west.

#### **5 Berw shafts material**

This is chiefly, at any rate what now remains in the walls along the road to the old engine chimney, the massive red sandstone with secondary quartz, rather coarse, but seldom pebbly. Some is finer, with mica-partings.

## 6 Morfa-Mawr shafts material

Much of this is of the same type; but a great deal is pebbly, and most of the pebbles examined were obtained at this place.

## 7 The shaft and boring records

None of the cores from the old borings appear to have been preserved, and those from the recent ones have not yet been seen by a geologist, but from Ramsay's description and the records that have been kept, it is evident that the rocks passed through were of the same character as those now visible. Time after time they record red sandstone, with conglomerates and marls, and often with considerable thicknesses of blue shale', evidently the kind of shale that is exposed in the railway cuttings. Sandstone with blue shale' is the Prevalent record in the north-eastern, Sandstone with conglomerate and marl' in the south-western borings. Abstracts of 15 records will be given here, with detail of 'C', 'L', and 'O'. The details of the others may be consulted in the offices of the Geological Survey. In the abstracts, all but the marls may be taken to be red sandstone. Dip is only recorded in 'M', 'N', and 'O', so that in all the other borings the measurements are of depth, not of thickness, but the difference would not be great. A more serious drawback is the uncertainty that prevails as to the real position of the base of the formation in eight of the borings, which has now to be inferred from the verbal descriptions.

	Depth	Total Marl
A. Berw Engine Shaft	210 feet	—
B. Berw New Engine Shaft	288 feet	24 feet.
C. Berw Boring No. 1	235 feet	43 feet.
D. Berw Boring'Parc Rhosydd'	100 feet	29 feet.
E. Berw Boring No. 4	50 feet	29 feet.
F. Anglesey Colliery Co.'s Engine Shaft	200 feet	—
G. Morfa-mawr Shaft (Ramsay)	70 feet	—
H. Morfa-mawr Boring No. 1	112 feet	27 feet
I. Morfa-mawr Boring No. 1a	225 feet	43 feet
J. Morfa-mawr Boring No. 3	150 feet	23 feet
K. Morfa-mawr Boring No. 4	125 feet	—
L. Hendregadog Boring No. 2	312 feet	119 feet
M. South of Main Railway, Boring No. 1	0 feet	—
N. South of Main Railway, Boring No. 2	365 feet	with conglom. and marl
O. South of Main Railway, Boring No. 3	700 feet	with conglom. and marl

The small depths in E. and G. are due to the positions being nearer to the outcrop of the base. The first six are all grouped around the old workings to the north-Vest of Plâs Berw. The Morfa-mawr borings have not been located with precision, but lie to the south-west of the Berw group. 'M' is situated 300 yards to the NNW., 'N' 1,000 yards to the east of Pen-y-bont, and 'O' (the Llangaffo deep boring) to the NW. of Tyddyn-isaf.

### 'C'. Berw Boring No. 1, 833 yards west of Plâs Berw House

	Feet	Inches
Red sand	4	0
Blue shale	4	6
Red sandstone	44	6
Blue shale	18	0
Red sandstone	15	0
Blue shale	21	0
Red sandstone	127	10

### 'L'. Hendregadog Boring no. 2, 600 yards north-north-west of Hendregadog House

	Feet	Inches
White shale	15	0
White 'rock'	3	0
White shaly 'rock'	9	0
'Floor'	1	0
Red rock	13	9
'Floor'	1	0
Red rock, some pebbly	54	6
'Floor'	2	0
Red rock, some pebbly	61	6
'Floor'	0	5
Red rock	23	0
'Floor'	0	8
Red rock	1	3
'Floor'	2	7
Red rock	12	3
'Floor'	2	0
Red rock	10	6
Shale, red with blue band	42	6
Red rock	4	4
Red shale	52	2
	312	5

'Rock' is certainly sandstone. 'Floor', a marl or shale.

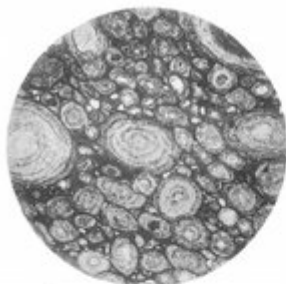
**'O'; Llangaffo Deep Boring.** In the Malldraeth Marsh, about 60 yards to the south of the main line of Railway, and 314 yards from the point where it enters the Alluvium.

	Feet	Inches
Red marl	21	6
Red sandy marl	51	0
Red marl	20	0
Red sandstone	85	0
Red and blue marl	23	0
Red marl	13	0
Red sandstone	7	0
Red marl	4	0
Conglomerate	1	0
Red marl	10	0
Conglomerate	2	0
Sandstone and marl	16	0
Red and grey marl	25	0
Red sandy marl, band of conglomerate	7	0
Red marl and sandstone	37	0
Red marl	18	0
Red and grey marl	45	0
Red sandstone	2	0
Light marl	1	0
Marl and red sandstone	17	0
Red marl and red sandstone	6	6
Conglomerate	3	6
Red marl, bands conglomerate	3	0
Red sandstone	93	0

Soft sandstone, bands marl	3	0
Red sandstone	15	0
Conglomerate	9	6
Red sandstone conglomerate	28	0
Conglomerate	31	0
Red conglomerate	29	0
Red marl	1	0
Conglomerate	8	0
Red conglomerate	21	0
Conglomerate	21	0
Conglomerate, bands red marl	4	0
Red marl	2	0
Fine conglomerate	11	6
Sandy marl	1	6
Fine conglomerate	3	0
	700	0

The slides from the Red Measure pebbles are [\(E10548\)](#) [SH 474 645], [\(E10549\)](#) [SH 463 725], [\(E10550\)](#) [SH 455 715], [\(E10551\)](#) [SH 455 715], [\(E10552\)](#) [SH 455 715], [\(E10553\)](#) [SH 455 715], [\(E10554\)](#) [SH 455 715], [\(E10555\)](#) [SH 236 838], [\(E10556\)](#) [SH 251 806], [\(E10557\)](#) [SH 236 816], [\(E10558\)](#) [SH 437 936], [\(E10559\)](#) [SH 448 938], [\(E10560\)](#) [SH 461 936], [\(E10561\)](#) [SH 461 936], [\(E10562\)](#) [SH 438 936], [\(E10563\)](#) [SH 260 770], [\(E10564\)](#) [SH 445 813], [\(E10565\)](#).

*Plate XXVIII.*



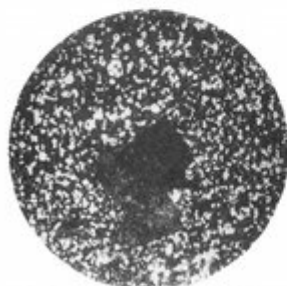
*1. Oolitic Ironstone.*



*2. Palaeozoic felsitic dyke.*



*3. Palaeozoic basic dyke, core and selvage. 4.*



*5. Keratophyre pebble in Red Measures.*



*6. Late olivine-dolerite dyke.*

*(Plate 28) Microphotographs of rocks later than the Mona Complex. 1. Oolitic Ironstone. 2. Palaeozoic Felsite Dyke. 3, 4. Palaeozoic Basic Dyke. 5. Keratophyre Pebble in Red Measures. 6. Late Olivine-Dolerite Dyke. See Appendix 3.*