

Short notes

Charles Darwin's notes on his 1831 geological map of Shrewsbury

As a young geologist Charles Darwin made use of hand-drawn maps and sections (Herbert, 1991; Rhodes, 1991; Secord, 1991; Stoddart, 1995; Roberts, 2000). One of his early maps (reproduced in Roberts, 2000), made in 1831 during the interval between the completion of his university education and his departure on the voyage of HMS *Beagle*, is of the environs around his home in Shrewsbury. On this map Darwin noted four sites, which he labelled A, B, C and D. We offer here a transcription of notes kept by Darwin relating to these four sites. Roberts (2000: 71) pointed out that a school presently occupies site A, and no outcrop is visible. Site B is a long outcrop of red flaggy sandstone (5–6 metres high by 80 metres long), which has probably been quarried. In present-day terms, these late Carboniferous “red beds” are the earliest development of the New Red Sandstone facies, and are, thus, appropriately marked as New Red Sandstone. Site C has no obvious exposures visible today. Site D was mismarked on Darwin's map (see Roberts, 2000: 71). Darwin's notes confirm that he was indeed at Nesscliffe, one mile to the northwest of Great Ness, and, importantly, where, in an area covered by pine and deciduous woodland, there are excellent exposures of cliffs of New Red Sandstone. In his notes Darwin also remarked on the appearance of the sandstone. For example, he described its carious nature at Hopton.

Darwin's notes to his Shrewsbury map show him using a clinometer for angular measurements of dip of strata (as at site B). This helps to date Darwin's map and his notes, for on 11 July 1831 Darwin wrote to his mentor J. S. Henslow that he had recently purchased a clinometer (Burkhardt and Smith, 1985: 125). Another sign of the date of the notes is that in them Darwin employed the term “direction” rather than the term “strike” that he began to use after his excursion with Adam Sedgwick in August 1831 (Barrett, 1974: 155). Thus these notes were likely produced sometime between mid-July and the first week of August 1831 when Darwin departed with Sedgwick on a geological excursion through North Wales (Roberts, 1998, 2001; Lucas, 2002). These notes are thus roughly contemporary with Darwin's notes on Llanymynech in Wales (Roberts, 1996). Finally, the notes in their inclusion of comments and queries oriented towards theory (as in the last sentence for site D) suggest a continuity with Darwin's later note-taking style (Herbert, 1987).

The notes transcribed here are contained in a bound, vellum-covered notebook now catalogued as DAR 210.11.37 (formerly DAR 210.17) in the collection of Darwin manuscripts housed at Cambridge University Library. The notebook seems to have been originally the property of Albert Way (1805–1874), a fellow student with Darwin at the university. The cover is inscribed “AV. Trin. Coll.” (the “V” suggests the direction of Way's interests, the classical Latin alphabet having no W). Possibly Darwin had in mind returning Way's notebook to him, for in the letter to Henslow, previously quoted, he asked “Do you know A. Ways direction?” In any event, the notebook remained with Darwin.

ACKNOWLEDGEMENTS

The authors are grateful to the Syndics of Cambridge University Library for permission to publish the manuscript. One of us (S. Herbert) thanks Marsha Richmond for having drawn her attention to these notes some years ago, and we both thank Sheila Ann Dean for proofreading the transcription.

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TRANSCRIPTION OF DARWIN’S TEXT

Following the editorial conventions used in Barrett *et alii* (1987), in this transcription Darwin’s deletions are indicated by < > and his insertions by < « ». Square brackets enclose the present authors’ insertions.

(A)

A Large gravel pit. worked for mending the roads: the lower beds chiefly sand: under which is a red marl. — The gravel like that of the rest of Shropshire. consists of various sorts of rocks. — Limestone. Trap. Clay Slate. Grey Wacke[.] Quartz. Granite. In the gravel there are numerous balls of sandstone, dark red and almost spherical. — I have not observed them in other pits. —

(B)

An escarpment of sandstone, which follows the course of Meole Brook. — Within a few yards on the other side «of the stream» are old coal pits. — Its direction is W.N.W. & E S.E. — dipping at an $\text{\textcircled{D}}$ of 20° to N.N E. The sandstone is much stratified & of a very hard consistence: — is covered on parts of its face by a stalactite: —

(C)

On the Southern bank of brook, strata of Slate clay appear; they are irregularly stratified & full of bits of shining coal. —

(D)

The Nessclif hills «consisting of red Sandstone» begin«ning» about 1/4 of mile south of Great Ness & run«ning» in a N E by N direction towards Boreatton Park. In this range I include the hills called Clive & Hopton. — Their escarpment generally bears W.S.W. facing the plain. which lies between the Breddin & Llanemynech [Llanymynech]. The escarpment in different portions of the range appears to vary. sometimes it is even N E. — The direction of the Strata very difficult to be ascertained. The best observation I made was on the top of hill

(D)

called Hopton. where the sandstone is more distinctly stratified. of a darker colour, much harder but carious. — here the D was N by W & S by E dipping at 8° to E by N. — Nearer to Nessclif. the D is more Western being W.N.W — Again in other places W S W & E N E & S W & N E [.] Generally speaking the Strata are nearly horizontal; but both the inclination & direction is difficult to be ascertained owing to the number of fissures or seams which run through the whole bed of rock. These are generally horizontal but occasionally

(D)

vertical. & divide the rock into beds of various thickness generally about 6 feet. — The stone is soft, but used for inferior buildings, it is generally red. dappled with white; but occasionally altogether white. — The surface is in many places ‹is› honeycombed. ‹&› or rather corroded into holes of various sizes; when a piece is broken off. there may be observed patches of a darker hue: it is apparently from the easier decomposition of the blacker spots. that the surface takes the

(D)

described appearance. — The stone is very little covered with Lichens. The general red colour, abrupt escarpement & wooded top of these hills gives much picturesque beauty to that part of Shropshire. — The most curious thing I observed in this rock were numerous veins of a harder sandstone running in straight lines often quite through the main bed of rock. From their resisting decomposition longer than the surrounding stone they project outwards & are very visible. — These veins are about a line in thickness. are generally vertical. but sometimes oblique &

(D)

occasionally curved. — They are more numerous in the upper beds. & these frequently cut each other: But what is most important the[y] ‹cut› pass through the seams or stratifications in the rock. This indeed first led me to suppose that most of the regular lines of apparent stratifications were not really such. but merely fissures caused by some force after-wards their deposition. These veins of harder sandstone I do not think could be formed by cracks afterwards filled up by infiltration[.] their remarkable uniformity in thickness

(D)

& ‹consti› appearance. together with the manner in which they cut each appear to me to preclude this idea. — It is on this supposition that ‹I think› the continuity of the veins through the seams in the rock, prove that [they] were caused by some force & not by a succession of depositions. —

Received: 2 March 2001. Accepted: 13 May 2001.

SANDRA HERBERT

Department of History, University of Maryland Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250 USA.

MICHAEL B. ROBERTS

The Vicarage, 5 Lancaster Road, Cockerham, Lancaster, LA2 0EB, UK.