

THE VOLCANIC ROCKS OF THE WIRKSWORTH AREA, DERBYSHIRE

Leader: P.H. Speed

Sunday, 5th July, 1964

A party of 37 members and friends attended this field meeting and in brilliant weather were conveyed by coach from Nottingham to Middleton-by-Wirksworth.

The purpose of the meeting was to investigate the characters of the igneous Rocks associated with the Carboniferous Limestone between Wirksworth, Ible and Bonsall.

The locality was described by Sir Archibald Geikie (1897), who was conducted over the area by H.H. Arnold-Bemrose (1894, 1907 and 1910). Bemrose received his first instruction in geological mapping from Geikie in the area around the Grange Mill Vents.

The Wirksworth area is part of the Matlock District described by Bemrose (1907).

The Leader pointed out that there are two prominent series of lava flows outcropping in the area, but that many of the wayboards of clay which would be seen in some of the limestone outcrops might be of volcanic origin. The Upper Lava is about 150 feet below the top of Limestone - Shale boundary at Matlock Bridge and outcrops between Matlock and Matlock Bath, to the east of the area to be visited.

The Lower Lava, which outcrops around Middleton Moor, in Via Gellia and between Bonsall and Elton Common, is about 100 feet below the Upper Lava.

The group left the coach at the northern end of Middleton-by-Wirksworth and took the lane westwards to Hoptonwood Quarry. The feature formed by the Lower Lava was noted. The springs which emerge from the junction between the lava and limestone had for many years provided the water supply for this part of Middleton, the stone troughs and sinks at the top of the lava outcrop still being in existence.

Hoptonwood Quarry (National Grid reference SK 262557)

The easterly extension of the surface workings in this quarry had ceased owing to the large amount of overburden, in the form of the Lower Lava, which is, in parts, about 40 feet thick, it was observed that the southern part of the quarry had also stopped for what appeared to be the same reason; an east-west fault having brought the lava, on the downthrow side, to surface level, this throw it was estimated to be about 50 feet.

The lava is a highly vesicular olivine basalt and in a fresh specimen some phenocrysts of olivine and augite were present, the vesicles are frequently filled with calcite. After lunch the party travelled to

Ible (SK 253568)

A sill of ophitic olivine dolerite outcrops to the south and east of Ible village. A large amount of the rock has been worked for road metalling, but the workings were abandoned some years ago.

The series of stone troughs used for collecting the village water supply from the limestone above the sill were still overflowing with water.

Grange Mill

From Ible the road was followed to Grange Mill passing the outcrop of Tuff, or bedded volcanic ash, the Shothouse Spring Tuff of Bemrose (1907). A section showing the relationship of this tuff with the

Grange Mill Vents is shown by Edward and Trotter (1954). The tuff is basaltic, purplish, turning to brown on weathering and is composed of glassy lapilli in a matrix of volcanic dust. The most interesting group of vents at Grange Mill was next visited, they form two dome-like hills rising about 200 feet above the valley and present a distinct contrast to the surrounding limestone country.

A small quarry in the southern vent, on the eastern side of the Grange Mill - Winster road (SK 245579) provided an excellent section from which fragments of olivine dolerite, limestone and a red quartzite pebble were obtained.

Two small dykes of dolerite, which appeared to traverse the southern Vent, were seen in the road section opposite the houses just south of the quarry.

East of the Vent a well marked escarpment of limestone was traced northwards to Shothouse Spring (SK 240591) where the bed of laminated tuff was again seen. The tuff here is reported to be about 90 feet thick and composed of fine and coarsely laminated bands of lapilli in a calcite cement. It was noted that the limestone above the tuff is nodular and contains numerous minute green lapilli to at least 15 feet above the ash.

The coach was rejoined and a journey made via Bonsall Moor to Moorlands Lane.

Bonsall

The outcrop of the Bonsall Sill from Salters Lane to Upper Town (Approx. SK 280588) was crossed and some very fresh specimens from which slides have been made show it to be an ophitic olivine dolerite.

Numerous springs rise from the surface and parts of the ground was very swampy despite the dry weather of the previous weeks. The dolerite on the south-east boundary of the outcrops was much decomposed, but a slide made from some of the material collected shows the olivine to have been replaced by a quartz mosaic. Much of the limestone near this dolerite-limestone boundary was also found to have been replaced by a quartz rock.

An extension to the excursion was made, via Low Farm, noting the outcrop of the Lower Lava, to Messrs. Derbyshire Stone's extensive opencast fluorspar workings, between the Upper and Lower Lavas and extending from the Heights of Abraham to just south of Salters Lane opposite Jughole Wood (SK 288593).

Some discussion took place as to the mode of deposition and the solution like boundaries between the limestone and the mineralised areas observed.

P. H. S.

References

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