

## Geology and conservation

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JENKINSON, A. (1986). Geology and conservation. *Proceedings of the Shropshire Geological Society*, **5**, 9–10.  
The account of a lecture describing the development of geological conservation.

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The Shropshire Geological Society provides advice and expertise to the Shropshire Trust for Nature Conservation, who own a number of geologically important sites.

Geological conservation hinges almost entirely on site management. There are twin problems of access and exposures. Geological conservation conserves for academic and educational purposes and does not therefore attract as much general interest as is generated by some biological problems.

The problems of conservation are particularly acute in Shropshire for two main reasons. Firstly because much of the early work, e.g. by Murchison *et al.*, produced sites from which systems, periods, formations etc. are named and are therefore internationally important. Secondly the county has been good collecting ground for a long time, so much so that now it requires hard hunting to find perfect specimens.

The Shropshire landscape is not rocky. Natural exposures thus tend to be rare and this leads to 'student erosion'. This is particularly noticeable at vulnerable and important sites such as the Upper Millichope stream section. Streams often provide the only exposures of a rock type and banks can be quickly undermined and stream courses dammed.

Large numbers of exposures need conserving for academic interest, especially the type localities such as Soudley Quarry (Caradoc) and Comley Quarry. In 1979 Comley Quarry, which is a classic location for the lowest Cambrian fauna, was almost completely filled in and had a "fossil mine" at the top into the hillside under a farmer's field. This was a time of active research into the Cambrian and its classification, which aroused new interest in Comley, which had been examined by Lapworth and Cobbold. The Shropshire Trust for Nature Conservation bought

the quarry from Shropshire County Council, excavated the lower levels, cleared the face and filled in the dangerous 'mine'. This was a positive move to conserve a classic locality.

Other sites then received similar treatment, all of them fossiliferous and with restricted access, e.g. the Onny Valley unconformity and the Hope Bowdler unconformity. The latter was exposed by new road works, and the opportunity was taken to exploit this gift and substitute it for the only previously known exposure, which was under a nearby barn. The Society re-exposed the surrounding Harnage Shales in early 1985.

Road works sometimes provide new exposures, but the public and engineers have a dislike for bare rocks, so often these are regraded and grassed. More should be done to influence a change in this policy, sufficient to allow time for geologists to study what is there. This was done successfully when the Craven Arms to Bishops Castle road was realigned through Horderley Sandstone.

The Hope Valley unconformity provided a similar situation to Hope Bowdler. Here there are Ordovician Hope Shales and Silurian Llandovery Sandstone with fossiliferous beds overlying them. These can now be collected from, have an information board and are receiving an annual clear up.

At Hope Rectory (Hope Shales) a poor situation was improved through negotiation with the owner, when some woodland was removed from above the exposure. Taskers Quarry (Stapeley Volcanics) was donated to the Shropshire Trust for Nature Conservation by Lady More and became their first geological reserve. Here the problem of fly tipping requires a regular clean-up and fence repairs.

In the west of Shropshire, mineral waste tips create the same problem of access, trespass and

danger as well as a public desire to clear them. It is therefore difficult to make a case for their preservation as witness the clearance of the Bog Mine in 1984. Cottages at the Bog contained stone blocks of Silurian Bog Quartzite, thought to have been quarried nearby from a now disappeared quarry. These blocks were very fossiliferous and a number of them were transferred to the adjoining Stiperstones Field Study Centre when the cottages were demolished – another way to conserve important material!

It is of course possible to over-tidy. The West Shropshire Lead mining area would lose much of its character and an important link with the past if wholesale clearance and landscaping were carried out. But it must be remembered that the area contains yet-to-be-located and dangerous shafts, and easy access adits which are equally dangerous. This is also the case at the Ogof Copper Mine at Llanymynech.

At Lincoln Hill, Ironbridge, is a limestone mining area not mentioned in the literature. Here an unconformity between Silurian and Coal Measures could be developed into a good teaching area. Still in east Shropshire, there are a number of working quarries and, although not a great deal can be done to preserve exposures, these could make very good teaching sites. Some investigations were carried out by the Shropshire Geological Society at Ercall Quarry, but working is continuing there. The adjoining Maddocks Hill Quarry is of considerable geological importance including, as it does, mineralogically important camptonite and the contact of sill-baked Shineton Shales with *Dictyonema*.

On Wenlock Edge the situation has worsened over recent years. The Wenlock Limestone is of course a classic Salopian locality. It is highly fossiliferous and contains such features as reef formations. A very restrictive access policy is now operated by the owners, and the working methods have changed for the worse. Because of structural slips (landslides), the faces are now exposed for a short time only before being buttressed up. As a result, superb teaching sites are now lost.

Promoted by the work of the Ludlow Research Group, which led to reclassification of beds in the Ludlovian on palaeontological grounds, more interest was focused on sites in the Ludlow Anticline. Some sites had long running problems,

such as the Ludlow Bone Bed "slot" at Ludford, where excavations led to highway problems. This was a typical conservation problem where there is a very restricted exposure of an important bed which really requires massive excavation to solve it. Also, around the same time, classic sites along the Mortimer road section were opened by the Forestry Commission in conjunction with the Nature Conservancy Council, and a very successful trail formed.

There is an obvious temptation for geology teachers to take students to those sites where they went as students or to follow well established routes, irrespective of their educational value. There is a current re-assessment of the management of geological sites. This will decide to whom they are of interest and will ensure they are published appropriately. In that way it will be possible to dissuade a coachload of junior school children away from a site of higher academic interest, when all they want is to collect a few fossils.

A major problem in geological conservation is to persuade non-geologists that sites are important. There is a clear need for a distinct educational role in order to change attitudes over what others may regard simply as waste ground. There is need for compromise over access and safety especially where quarries and mines are concerned. Although here the narrow view of the Mines and Quarries Act steers some companies towards inflexible access policies. Above all there is a need to identify and publicise more alternative teaching sites and thereby take pressure off the more precious sites.

#### ACKNOWLEDGEMENTS

Based on notes by Joan Jones prepared during a lecture given by Andrew Jenkinson to the Shropshire Geological Society on 13<sup>th</sup> March 1985.

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*ISSN 1750-855x*