Palaeozoic Palaeobotany of Great Britain. C. J. Cleal and B. A. Thomas. Geological Conservation Review 9 (Joint Nature Conservation Committee). Chapman and Hall, London, 1995, xii + 295 pp, £75 (hardback only), ISBN 0-412-61090-6.

With more lives than a cat, more guises than Sherlock Holmes, and what sometimes felt like a longer genesis than the universe, a few of the originally projected 50 volumes of this repeatedly threatened series are finally escaping the clutches of the Joint Nature Conservation Committee. Although the preface states that these volumes are written to the highest scientific standards, the difficulties of producing such an ambitious series must be especially great at present. Since the inception of the Geological Conservation Review project in 1977, British earth science activities in general and geological conservation in particular have experienced radical changes. Scientific experts well qualified to produce these learned texts are decreasing in number but increasing in their range of responsibilities; those still on board the project will be further pressured by the obligation to complete the GCR by the specified deadline of the year 2000.

This book, ostensibly the first of three reviews of British Palaeobotanical sites, is collated and co-authored by two internationally renowned Palaeozoic empiricists. The first few pages offer a sketchy outline of the peculiarities of fossil plants (for example, the multiple parallel classifications of different organs of the same species) and the history of their study. The remainder of the volume is essentially a series of stratigraphically delimited chapters, covering the Silurian (7 sites, 0 in Scotland and the Borders), Devonian (10, 6), Dinantian (16, 13), Silesian (6, 1) and Permian (3, 0). Although readers may be surprised at the paucity of sites encompassing the familiar Silesian coal-swamp foliage, this inequality of site numbers through time accurately reflects the relative importance of British Palaeozoic sites on the world stage, and within Scotland emphasises the significance of Devonian and especially Dinantian plants.

Each of the 42 plant-bearing sites is described in considerable detail (typically several pages). Most localities are well illustrated with geographical and geological maps, and sketches or indifferently reproduced photographs of stratigraphic sections and plant fossils. Although the different site entries are kept to a shared format (and to an unhappily conservative higher classification), the quality of coverage varies considerably among sites. This may in part reflect the relative degree of consultation with several expert advisors, including the junior author of this review! We were surprised that little attempt was made to justify the selection of sites, or to inform the reader about the current conservation status of each (though we recognise that status changes frequently, in accordance with the prevailing winds of policy).

On more detailed study, many minor errors and discrepancies become apparent. Take the Devonian. From an admittedly parochial viewpoint, failure to emphasise and illustrate specimens in the National Museums of Scotland (NMS) has resulted in an inadequate account of Sloagar, Fair Isle. This location is portrayed via a nondescript photograph of the site but no specimens are illustrated, despite the assertion in the text that this is the type locality for Svalbardia scotica (the only species of this taphonomic form-genus known from Britain; the holotype and supporting specimens reside in the NMS collections). One might also mention NMS specimens of Dawsonites roskiliensis from a nearby location on Fair Isle – after all, this plant helped to determine the stratigraphic position of Svalbardia. Turin Hill is acknowledged as probably the best known site for Parka decipiens, but the only illustrated specimen of the enigmatic early land-plant Parka is from Carmyle. One of the two Zosterophyllum myrotenianum specimens illustrated in the section on Turin Hill is from Balgavies Quarry, and the type material of Cooksonia caledonica held at NMS does not merit illustration.

Despite such criticisms of details, the book undoubtedly justifies its place on the library shelf. It is well produced (as it should be, given the £75 price tag) in a large format with a striking cover. Some new information is presented, and it constitutes by far the most comprehensive account of British Palaeozoic floras – a fact reflected in a useful bibliography of over 1000 references. Its coverage of sites is thorough and its detail impressive – but also worrying. The combination of illustrations and six-figure grid references lays bare our most valuable palaeobotanical localities. Plant fossils may have less commercial value than animals, but we have recently picked our way through the remains of arguably the finest Jurassic plant fossils in Britain, smashed and casually tossed aside by a recent spate of collectors hunting ‘sexier’ dinosaurs and ammonites at the locality. In this context, the introductory statement that ‘this volume is not intended for use as a field guide’ (p. x) seems naïve – this book, intended to aid the conservation of British palaeobotanical sites, could actually cause their ruin. On the other hand, to keep such sites secret from their primary users effectively renders them valueless. Such is the paradox of palaeontological conservation.

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Northumbrian Rocks and Landscape – a field guide. Colin Scrutton (editor). Ellenbank Press for Yorkshire Geological Society, 1995, 216 pp, £9.99, ISBN 1-873551-11-8.

In the tenth century an invasion of SE Scotland by Anglo-Saxons reached as far as Edinburgh. This led to the colonization of the Lothians and the distinctive character of this region of Scotland. In the 1990s another invasion, this time by the Yorkshire Geological Society in the cause of science, has reached as far as Burnmouth, Eyemouth, Siccar Point and Cove. How? In a field guide, entitled Northumbrian Rocks and Landscape. No apology – just ‘Northumbria is defined as Northumberland, Durham, Tyne & Wear, and Cleveland north of the River Tees’ (p. 9).

Despite such provocation, the Yorkshire Geological Society are to be congratulated on launching another excellent field guide on to the market. But for the work of such societies, geology would be much the poorer with many interesting and informative localities remaining terra incognita.

First impressions are given by the front cover, and are all important if such a guide is to break out into a bigger market. Full marks for the eye-catching colour photo of – Harthope Burn in the Cheviots (the caption took a bit of locating on the back cover). Good, too, that the guide is one of a recognizable series with Lakeland and Yorkshire. Pocket size is just right, though this pays a price in the size of some illustrations. Introductory information is kept to a minimum, mainly an excellent and clear geological history of Northumbria (and southern Scotland) essential for those unfamiliar with the region.

One buys a field guide, though, for the excursions, in this volume all 17 of them. These score very highly, with both geographical and stratigraphical range: from the early Devonian volcanic rocks, granite and basement of The Cheviot to the Carboniferous shore sections from Burnmouth to Tynemouth; from the Whin Sill with its Roman Wall to the en echelon dykes of Holy Island; from the Magnesian Limestone of Seaham to the Northern Pennine Orefield of Weardale and Nenthead or the Quaternary of South Tyndale. And, should the weather turn inclement, you can always visit one of the region’s excellent museums listed in the final (unnumbered) chapter.

Each chapter has a consistent layout, listing Purpose, Logistics, Maps, and Geological Background, before going on to the Excursion Details. It is a tribute to the editing that the chapters have an outward appearance of uniformity without detracting from the individual styles. The detail given is just right, mainly descriptive, but pausing from time to time to enlarge the discussion of a particular point or principle. There is a surprising lack of uniformity and wordiness in Chapter titles. Better to use only the locality and/or stratigraphical unit; ‘Upper Teesdale’ seems snappier than ‘The geology and landscape of Upper Teesdale’, particularly in a book entitled ‘Rocks and Landscape’, anyway.

Of paramount importance are the excursion location maps. These are clear and will guide the reader exactly to each locality. The small type in figures 5.2 and 5.3 could pose a problem. Most are portrait, but a few are landscape and less conveniently printed sideways. This could have been avoided with a little more forethought, and figure 2.2 of Eyemouth–Burmouth would not have ended up with north pointing to the bottom of the page. A list of figures in the contents would have been useful, particularly as their numbering is rather subtle. Better, too, would have been differentiating the photos as plates. Photographs in books promise much, but often disappoint, as is the case here; line drawings of the localities or of common fossils and minerals might have been preferable.

The Glossary is excellent, as is emboldening the first instance in each chapter of a glossary-defined entry, an idea well worth wider use. Cross-references are neatly done with bold italics, but almost too clever as some errors creep in: quartz instead of quartz in the ‘igneous’ entry. The timescale is useful, if a little on the small side and one might question the accuracy to 0.5 Ma. The index is excellent, but why the small type size? Errors are unavoidable but happily rare; ‘Alston’ becoming ‘Alson’ on p. 63 seems the worst.

My recommendation? Go out and buy a copy (excellent value at £9.99) and take the book out to the field or even better arrange some excursions from it. Remember too, your purchase will help fund the next title in the series – and acknowledge the dedicated work of all the authors.

Finally: no, I shouldn’t really have complained about the cross-border raid; Scottish Borders Geology included Berwick as far as Scremerston. The more coverage for geology the better! The Siccar Point excursion appears in at least three guides: Lothian Geology, Scottish Borders Geology and, now, Northumbrian Rocks and Landscape.

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A revised correlation of the Precambrian rocks in the British Isles. W. Gibbons and A. L. Harris (eds). Geological Society Special Report Series 22, 1994, 110 pp, £19.00, ISBN 1-897799-11-X

This volume, published nine years after the first version of Harris et al., 1985, is the second in a revision of an older series, which, in sequence, dealt with the stratigraphy of the British Isles. This revision is timely, covering ten areas of Precambrian rocks in the British Isles, including those of the Channel Isles.

In the opening chapter Gibbons and Harris cite the factors which have changed our views of the Precambrian geology in this country, through nine years of further investigation. The biggest single factor has been isotope geochemistry which has clearly led to a greater understanding of the basement geology. But overwhelmingly it has been the ability of workers to resolve more clearly what processes age determinations actually date. This has particular significance in the case of zircon U–Pb ages
where either a phase of overgrowth or neomorphic crystals can be ascribed to specific events.

They also emphasize the role that changing intellectual frameworks have had in focusing attention on the more significant areas of study. Of particular importance is the distribution of basement blocks with respect to early continent and megacontinent reconstructions. There is a need therefore for more accurate characterization of basements not only with respect to lithology but also with respect to geological history.

The change to a mobilistic view of continents, also means that the characteristics of basements well outside the UK become important in the larger scaled reconstructions. It is all the more important therefore for the geological community at large that the detailed descriptions of the ensuing chapters are framed in such a way that they will have a use well beyond the exercise in objective documentation.

The Lewisian–Torridonian chapter is clearly and succinctly presented by Park, Cliff, Fettes and Stewart, all of whose feet and heads are familiar with the ground. The writing clearly shows that the younger Lewisian ages are still a tangle of uncertainty, although a few tightly collected and expertly analysed U–Pb dates are significant.

Our understanding of the Moine Supergroup has dramatically changed in nine years thanks to the great efforts of the Liverpool group orchestrated by Harris. The layout here is particularly clear, perhaps a good deal clearer than the structural and stratigraphic affinities of the rocks being described. One is able to get to information very well without the obtrusive overtone of interpretation, although a concluding paragraph or two on the latest views of the group would have been welcome.

The chapter on the Dalradian (Harris, Hazelock, Kennedy and Mendum) is the longest in the book and for the reader unfamiliar with the ground, the most difficult both to read and to obtain clear information from. Those who are familiar with the Dalradian will, however, appreciate the complete, often detailed, coverage. The greyness of uncertainty, which permeates some of the writing, is almost certainly the result of close scrutiny of difficult rocks of this type. One is left with the impression that the detailed descriptions are there because of no consensus on the general. There is, one feels, a new era of synthesizing structure and stratigraphy about to dawn on the Dalradian. There is a very real sense of flux in this chapter, and perhaps there should be. The apparent stratigraphic continuity of basement over major shear zones, with blocks displaced from substantial depths, is only one of several problems which are so clearly visible.

Colonsay and associated basement is the relative newcomer, causing quite a ripple when first described. This block along with the Annagh Gneiss complex and the Ox mountains have never satisfactorily been placed in the various schemes invoked to unite the basements of the north into a single theme. Here they are well documented by Muir et al. and the now-essential geochemical work has allowed, as it has elsewhere, discrimination and division that was not convincingly done on lithology and structure alone.

The inclusion of a chapter on the geophysical ‘correlation’ of the Precambrian rocks of northern Britain is essential – if only to justify the expense of the hopeless task of identifying and correlating basements beneath cover. Continuity of basement is often not realistically achieved when they can be clearly seen at the surface. Still, Rollin has made a fine effort to see some correlations and has at the same time flagged up some interesting interpretations of the basements beneath cover. It was a good idea to have this chapter here and it was addressed with skill.

Southern Britain is covered in only a few pages. Anglesey, brought to life by Gibbons and his co-workers, is discussed together with the Llyn and SE Ireland. Again, there is a clarity in the writing and organization of the chapter which permits easy access to the information. The role of geochemistry is once again clear not only in establishing ages but in discrimination of blocks. There is either an unfortunate typographical error on p. 82 or a new, sharp eyed researcher has suddenly appeared on the Anglesey scene. The remaining chapters on the Precambrian to the south are informative and brief.

This is a welcome report in a useful series. Well documented and clearly written information is of particular value to researchers beyond this country who wish to use the rocks we have here to reconstruct a larger picture of the roles of basement in the early and to a lesser extent the later history of the earth. This volume, and one hopes those to follow, have achieved this.

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