

an intriguing tale, which, as I guess most geologists know, involved the role of the social ‘outsider’ William Smith and his geological map, the Society’s own map, compiled by Greenough, and the subsequent ‘canonization’ of Smith as the ‘Father of Geology’. Again as Cherry Lewis writes, this modern reinterpretation of the Society’s history, along with several of the contributions in this volume ‘will become, or continue to be, the starting point for anyone looking back to these events [of a hundred years ago]’.

I was struck in particular by Martin Rudwick’s reproduction of some of Thomas Webster’s wonderful illustrations of the structure of the Isle of Wight and Webster’s letters from 1811–13 describing his observations of the rocks and fossils and their correlation with the Paris Basin. Webster based his correlation on Cuvier & Brongniart’s (1808) recently published essay and section, along with Brongniart’s beautiful illustration of the fossils.

Additionally, Webster’s pioneering work is the subject of Noah Heringman’s contribution, which explores the fascinating link between the antiquarian tradition and discourse on ruins and geological phenomena as the ruins of prehistory. They give a very direct insight into the very considerable level of understanding and expertise of the time that was building on even older European experience, such as depicted in Saussure’s (1779–1796) monumental work on the Alps.

The appended 1808 ‘mission statement’ for the newly founded Society, called ‘Geological Inquiries’, makes fascinating reading. It is a list of geological quests for the membership to pursue and begins with a question as to whether mountains are ‘... solitary, or in groups, or do they form a chain?’ and ends by asking whether ‘among the various organic remains, can any traces be observed of the existence of man? They illustrate just how much has been achieved by geologists over the last 200 years and the Geological Society’s role in these achievements is something that is well celebrated in this volume.

Douglas Palmer

References

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- SAUSSURE, H. B. DE. 1779–1796. *Voyages dans les Alpes. Précédés d’un essai sur l’histoire naturelle des environs de Genève*. 4 vols. Neuchâtel: Samuel Fauche.

ALLABY, M. 2008. *Oxford Dictionary of Earth Sciences*, 3rd ed. Oxford: Oxford University Press. 654 pp. Price £11.99, US \$18.99. ISBN 978 0 1921 194 4. doi:10.1017/S0016756810000221

This is a new edition of a dictionary that has been developing for nearly 20 years. Its third edition now has over 6000 entries and 654 pages, and is very good value at the price, especially for students.

Trying to keep such a work up to date must be an unenviable task for any one author and, inevitably, some subject areas are better served than others. For instance, the palaeontology is uneven in its coverage, with a slightly strange smattering of entries on certain individual fossil genera and species, such as *Aegyptopithecus zeuxis*, *Asteriacites* and *Monotrematum sudamericanum*. Whilst *Aegyptopithecus zeuxis* is certainly important as a basal anthropoid, it is now known as *Propliopithecus zeuxis*. It

is not quite clear how and why these and the other listed species have been selected, and why important genera such as *Eusthenopteron* have been left out.

Also, cross-referencing between entries could be improved. For instance, the genus *Homo* is not listed individually although it does come under the *Hominidae* – fair enough. But under the *Hominidae* there is no mention of any of the species in the genus *Homo*, not even the Neanderthals (*Homo neanderthalensis*) and yet there is an entry for ‘archaic sapiens’ with no cross-reference to or from the *Hominidae*. There is also an entry for *Ardipithecus ramidus*, as the ‘earliest-known member of the human lineage’ (What about *Orrorin* and *Sahelanthropus*?), but it is not mentioned as one of the genera of the *Hominidae*.

These are specialist criticisms for what is a much more general dictionary and I mention them as much out of sympathy as anything else for any single author trying to cover such a huge subject area. If some fossil genera and species are to be covered, where does one stop? You cannot win; someone is bound to complain. I imagine that palaeontology is particularly difficult, simply because of the rate at which significant new finds are made and named, compared with new minerals or rocks.

This edition also has an increased number of line drawings, an additional 50 or so, according to the publisher’s flyer. Earth Science lends itself to useful explanatory diagrams but many of those presented here are over-simplistic, for instance the illustration of a ‘subduction zone’, and there is no illustration of a mid-ocean spreading ridge or plate tectonics in general, which would help the description. Meanwhile, there are a number of very simple drawings of various brachiopods and other fossils which are not particularly illuminating.

This edition is also advertised as ‘web linked’, which amounts to a single page that lists organizations such as the American Geological Institute but does not give web addresses. Instead the reader has to go to <http://www.oup.com/uk/reference/resources/earthsciences> and then follow the links to the relevant site. For palaeontology the only site given is www.palaeos.com.

However, used in conjunction with a book such as the recently published *Earth Science Data* by Paul and Gideon Henderson (2009, Cambridge University Press), this dictionary is still to be recommended to Earth Science undergraduates as a useful starting point.

Douglas Palmer

TREWEN, N. & HURST, A. (eds) 2009. *Excursion Guide to the Geology of East Sutherland and Caithness*, 2nd ed. Aberdeen Geological Society and Dunedin Press. 183 pp. Price £14.99 (paperback). ISBN 978 1 906 71601 1. doi:10.1017/S0016756810000440

We are fortunate, in the British Isles to have some of the most complex and varied geology for any area of comparable size in the world. The northeast corner of Scotland is no exception, though it is perhaps less well known than other areas to many geologists simply because it is remote. Surely, however, this magnificently produced field guide will encourage geologically-minded visitors to explore this splendid region, and to study its unique rock successions.

This book is an updated version of the excellent guide of 1993 by the same authors and editors, and with the same title. Although the basic plan and the excursions are only modified in places, the bulk of the illustrations in the new guide are in full colour, and have reproduced splendidly. Dunedin Press

does these things very well, rendering this guide even more useful as well as attractive.

The book begins with an introduction to the geology of the area, which extends south of Brora, and west of Strathly Point. The oldest rocks, the metasedimentary Moines, deposited some 900 Ma and metamorphosed later, form the basement, and are present in the western part of the area, and as small inliers further east. The great three-humped mass of Scaraben forms the easterly extension of the Moine rocks. They are intruded by the Strath Halladale and Helmsdale granites, of Caledonian age. The latter, close to the sea forms the high ground of the Ord of Caithness, defining the southern boundary of that county. Somewhat further north a line of improbably shaped mountains composed of Lower Devonian conglomerate thrust sharply into the sky. Northwards again the ground becomes flatter and gently undulating but sloping northwards and eastwards towards the sea, to terminate in spectacular sea-cliffs and stacks. This land is underlain by some 4km thickness of Middle Devonian lake deposits, replete, at certain levels, with fossil fish. Upper Devonian sandstones are preserved only on Dunnet Head, the most northerly point of the Scottish mainland; equivalent rocks form most of Hoy, in the Orkney Isles, seen across the Pentland Firth. In the southeastern region the great Helmsdale Fault, hugging the coastline, passes onto land, separating the Devonian from a coastal strip of Triassic and Jurassic, the youngest rocks in the area. These provide an onshore equivalent for productive oil reservoirs lying eastwards, under the sea. Evidence of the Quaternary is limited, but there are relics of two glaciations.

The structure of the region is fairly simple, the Middle Devonian is folded into a gentle east-west anticline, seen on the east coast at Sarclet, and apart from the Helmsdale Fault there are smaller faults in Caithness, within the sedimentary sequence. Igneous intrusions, apart from the granites referred to, are minor and few.

Following the Introduction, which finishes with a fine section on economic geology, discussing, amongst other

issues the still extant, though greatly reduced Caithness Flagstone industry. Then comes a useful Excursion Planner, with map, and finally the excursions themselves. Six areas are covered, each distinguished by a coloured strip along the top edge of the book.

The first four excursions, by Andrew Hurst and Nigel Trewin, cover the coastal area to the southeast, particularly the Mesozoic beds east of the Helmsdale Fault and the Helmsdale Granite. The penultimate excursion has five separate itineraries chiefly in the Middle Devonian, in the northern part of Caithness. The first itinerary covers the famous Achanarras Quarry, where Nigel Trewin has done such sterling work on the succession and ecology of the fish bed, and the Dirlot region where Moine rocks come to the surface. The second itinerary deals with the east coast exposures of John o'Groats, Duncansby and Sarclet, and the only extra locality which might have been included is the spectacular inlet at Whaligoe, where three regular cycles are seen in the cliff, one above the other. But the cyclicity can be very well seen along the northern shore, from west of the Upper Devonian Dunnet Head to Brims Ness (itinerary three). The fourth itinerary is concerned with basin margin deposits at Baligill and Red Point, with further fish beds a little to the east at Sandside Bay.

Excursion six – Kildonan Gold! Here are Moine rocks, shot through with granite and quartz from which came the gold. There was indeed a substantial gold rush in 1868–69, as is illustrated here in old engravings. One can still pan for gold here, and Clive Rice in this fascinating chapter gives instructions on how to do so.

This is a lovely book, easy to read, but a mine of information, and beautifully produced. So much of the geology is quite different from that in other parts of Europe. If you have never visited this remarkable area, may I advise you that the long journey is well worth while for geology and scenery too. And take this book with you!

Euan Clarkson