REVIEW

FRED BROOK and MARTIN ALLBUTT 1973: *The Shropshire lead mines.* Hartington, Derbyshire: Moorland Publishing Co., 92+2 unnum.pp., 20 pls., 21 text-figs. £1.80.

The heyday of the Shropshire lead mines coincided with that of the Derbyshire mines - the late 19th Century - and their decline, like that of the Peak mines, was a consequence of increasing availability of cheaper foreign ores. In other respects, however, their history was quite different. Both areas were worked by the Romans, but after their departure the Shropshire ores were left unworked for almost fourteen centuries, whereas the Peak mines never really ceased to be worked. The history of Derbyshire lead mining thus spans 2,000 years, the Peak developing a unique community of free miners whose character is still evident in the whole landscape. That of the Shropshire mines spans only about 150 years; its influence on the landscape has been much less profound and the very fact that west Shropshire was once an important lead-producing area is already almost forgotten.

The mines of Shropshire were concentrated into the two NNE - SSW lines outcrops of the Mytton Beds (Ordovician flags and grits). These outcrops are brought to the surface by major faults and intersected by other faults; the veins generally have a southwest to northeast trend, but the geology varies greatly from mine to mine, occasioning many problems in prediction and exploitation to the mining companies. Mining recommenced in the mid-eighteenth century, on the Grit sett (local term for a mining property) in the western outcrops; development of the rich Snailbeach mines on the eastern outcrop and of many other mines, soon followed. Initially the mines were shallow, with water raised to the surface in barrels by horse-power. However, as drainage problems became more serious, it became necessary to construct drainage adits and eventually steam engines were used to pump the mines dry.

The area suffered a recession, brought about by falling prices, around 1835 and lead exploitation virtually ceased. It recovered in the early 1850's, however, and Cornish miners were brought in to develop the field; in consequence, the mine architecture became typically Cornish, with its high-chimneyed engine houses, and quite different in character from the mine buildings of the Peak. A second recession swiftly followed, brought to an end by the discovery of rich ore deposits at Tankerville and Roman Gravels. Production reached a peak in the 1870's. After that, declining lead prices made mining in Shropshire progressively less economic; by 1895, only the Snailbeach mine remained in operation and it too closed, its deposits virtually exhausted, in 1911. Thus, although a little "scratch" mining for lead by one or two men has occurred subsequently and although gangue minerals (especially barite) have been won from the tips, lead mining in Shropshire effectively ended over 60 years ago. The tips are growing over now, the mine buildings falling into ruin, and the last of the miners, some of them sufferers from the silicosis from which the Peak mines were free, fading away.

To rescue a part of the heritage so rapidly being lost, the Shropshire Mining Club was formed a decade ago; and now we have this book, the first full account of the Shropshire mines. This area was visited by the East Midlands Geological Society in 1969 (see *Mercian Geologist* vol.3, p.291); and many members will recall the immediacy of some of the mining remains, like the kibble at Snailbeach still full of crushed lead ore and the tipper trucks left by the tracks to rust into oblivion.

Accounts are presented of the history of each mine; and the overall history and productivity of the ores are briefly surveyed, plans and illustrations supplementing the text. The geology of the area is only discussed cursorily, however, and nothing is said about the mineralogy of the mines, interesting though this is. It serves as a good handbook to the area, therefore, but the geological visitor will require other texts to understand fully what he is seeing.

William A. S. Sarjeant.

REVIEW

Dictionary of Geology

Challinor J., 1967, 3rd edition, 298 pages, boards, University of Wales Press, Cardiff. Price (September 1975) £2.50.

Whitten D. G. A. and Brooks J. R. V. 1972 (Reprinted 1974) 500 pages approx., appendix bibliography, illustrated, paperback, Penguin Books, Harmondsworth, Middlesex, Price (1975) £0.75p.

For many years, Challinor's *Dictionary of Geology* has been a standard reference work for the meaning and spelling of geological terms. It has now been joined by a Penguin *Dictionary of Geology*, very attractive for students of geology if only that the price is about $\frac{1}{3}$rd that of the former. The Penguin dictionary is a paper-back, size 180×110 mm, is printed on thin paper, using small print but contains a number of illustrations. Challinor's dictionary is larger (220×145 mm), is printed on better quality paper, and is not illustrated. The print size is about the same as the Penguin dictionary and it is bound in boards.

As to the contents, at first glance the larger number of pages in the Penguin dictionary may give the impression that there are more words listed in this book than in Challinor's. However, the appearance may be deceptive for a straw poll through the "F" section reveals a count of 100 words in Challinor and 102 in the Penguin. From this one might draw the conclusion that the subject coverage of the two books would be the same and indeed there is a considerable amount of overlap but with some interesting differences.

The compilers of the Penguin have "concentrated on terms which seem to them to be in the widest use; special and local terms have been excluded"; such as East Midlands stratigraphical terms *e.g.* Matlock Limestone Group, Tupton Coal. Challinor makes the same point rather differently. In the preface to the first (1960) edition, he states: "There appears to be room among works on geology for one that will probe the subject by examining the meaning and usage of names and terms that stand for the more significant things, facts and concepts of the science". Still no obvious reason for differences in content that are readily discernible.

Delving a little more deeply into the "F" section there are about 40% of the entries common to the two books. Throughout, it would seem that the Penguin gives more mineralogical and palaeontological terms. Many terms are explained by the use of line diagrams and there is a handy (though not complete) cross-reference system. In Challinor's dictionary, the unique terms seem to concentrate on geomorphology and the more important British stratigraphical terms, *e.g.* Forest Marble. Another reason for the differences of content is the date of compilation. Although revised in 1963 and 1966, Challinor's book still reflects the terminology of the 1950's (fractional crystallisation), whilst the Penguin includes newer terminology up to the 1970's. It is no good looking for 'plate tectonics' in Challinor and curiously enough, whilst 'polar wandering' might be an expected absentee from this book, it is also absent from the Penguin.

It is interesting to compare entries common to both books. Whilst many have identical definitions, others show curious differences no doubt reflecting the 20 year gap in the original dates of publication of the books, and the authors' opinions.

Felsite (Challinor) "A very fine-grained igneous rock composed predominately of quartz and felspar or if porphoritic with a ground mass so composed..."

(Penguin) "A fine, evenly-grained acid or intermediate igneous rock forming dykes and veins both in the country rocks and in the parent plutonic mass...."

Is a felsite fine-grained or very fine-grained, porphoritic or non-porphoritic. ? There is no mention of colour or the fact that some people would not use the term anyway!

For odd words consult the Penguin dictionary for the meaning of 'frilling' 'flos feri' 'oedion' 'pedion' 'yardang' and Challinor for 'paulopost' 'floetz' 'formenreiche' - there is scope here for the Scrabble enthusiast.

It follows that although there are similarities in many entries, the two dictionaries are often complementary and together will form a coverage of geological terms in use during the greater part of this century.

Mention should be made of Challinor's inclusion of the source of the terms and the first time of use. On the other hand, one wonders who is likely to use the 'classified list' to be found at the end of this book. There is a useful appendix of mineral names and properties in the Penguin, but why no reference to Challinor in the bibliography. ?

All readers of the Mercian Geologist are encouraged to purchase one or both of these books so that the editor need no longer ask his contributors to explain terms included therein.

F. M. Taylor

REVIEW

WOODWARD, G. H. and WOODWARD, G. S., 1973 : *The Secret of Sherwood Forest. Oil Production in England during World War II.* Norman, Oklahoma; University of Oklahoma Press, xviii, 266 pp., 33 illus. £4.00 (approx.)

The quietly pumping "nodding jennies" over the oil wells of Nottinghamshire, and Lincolnshire once a familiar though somewhat unexpected feature of the East Midlands landscape, are now restricted to the north of the region, particularly around Gainsborough. Many, may now know much about their history, for the drilling of the wells commenced covertly during the years of the Second World War at a time when questions were not welcomed. A popular account of the East Midlands Oilfields was published by BP (1962), but no reference was made to the American contribution to the early exploitation of the Eakring and Dukes Wood field, which is the subject of the new book.

For indeed it was to the southwestern United States that the British Government had to turn when exploitation of the Nottinghamshire Oilfields became urgently necessary at the height of the war with Germany. At that time, Britain had neither the equipment nor the experienced man-power for such a project and as this book relates, it was difficult enough to persuade any U.S. oil firms to commit men and resources to Britain at a time when their own men and resources were in urgent demand to develop U.S. resources for the war against Japan.

The possibility of oil occuring in Nottinghamshire was the accumulation of a number of observations gained over the years including hydrocarbons at the top of the Carboniferous Limestone at Windy Knoll, Castleton; seepages of oil in Coal Mines near Alfreton; and one successful boring for oil, among a number of unsuccessful ones, at Hardstoft, also in Derbyshire. A major anticlinal structure around Eakring had been suspected by local collieries working eastwards towards it; and a coal borehole at Kelham had proved traces of oil. The structure had been pinpointed by a seismic exploration survey by the D'Arcy Exploration Company (later BP Exploration) and the petroleum prospects appeared excellent.

There is little of this part of the story in the book, for it effectively commences with the flight of Sir Philip Southwell to Washington and hence to Oklahoma to obtain U.S. governmental support and to persuade two Oklahoma drilling companies to provide men and equipment. The story of the unravelling of wartime 'red-tape' will evoke wry memories for many readers; and the mutual amused incredulity of the Americans and the villagers and monks (for the drillers were lodged at Kelham!) is readily perceived from these pages. The core of the book, though, is the account of the day-to-day experience of drilling the wells for Britain's first oilfield, initially at Eakring and Duke's Wood and later at nearby Nocton. One hundred and six wells were drilled by the American crews within one year, 94 producing oil; although the quantities were relatively small, this made a very worthwhile contribution to Britain's war effort.

This is primarily a historical account and attempts no description of the bedrock geology. It would seem also that the authors know little British geology or geography, for the title of the book is misleading; the true "Secret of Sherwood Forest", from the geological point of view, is water. The oilfields were drilled under the cover of Waterstones and Keuper Marl, which have never had a respectable cover of oak trees and are east of the main area of Sherwood Forest. The book highlights the American achievement and attempts to maintain a sense of continuous excitement which, to the reviewers, becomes a little wearing at times; a more relaxed style would have ultimately been more effective. The book should be read in conjunction with the BP (1962) publication to get a full picture of the history of this first British oilfield.

Reference

BP 1962. *The Oilfields of Britain* London; British Petroleum Co. Ltd., 32 pp. illustrated.

William A. S. Sarjeant.

REVIEWS

SARJEANT, W.A.S., 1974 *Fossil and Living Dinoflagellates.* Academic Press Inc., (London) Ltd., viii + 182 pp., Frontispiece + 15 pls., 45 figs. Price £5.00.

Dinoflagellates are microscopic unicellular plants that form an important constituent of the marine plankton. At times of adverse environmental conditions these organisms retreat into an organic-walled cyst, from which they re-emerge when the environment improves. Fossil dinoflagellates comparable with the encystment stage of extant forms are known from strata of late Triassic age and younger, but the true stratigraphical range of the group almost certainly extends into much older systems. The small size, abundance, rapid evolution and wide geographical distribution of fossil dinoflagellates render them of immense value in the correlation of the strata in which they are preserved and the group is widely used in applied biostratigraphy. The rate at which research is currently progressing makes it difficult for the non-specialist to keep abreast of developments, and the publication of a book summarising the information accumulated in recent years is to be welcomed.

Dr. Sarjeant, as well as being a former editor of the *Mercian Geologist*, is an international authority on fossil dinoflagellates and his book will be most consistently used by other specialists or aspiring specialists. There is much included that will be of value to the general micropalaeontologist, but the book probably lies well outside the interests of most EMGS members. Nevertheless, it is fitting to provide this review of a book written by a member of the Society. (See also Sarjeant 1967).

The main text comprises nine chapters covering the following topics: ecology, morphology, reproduction and encystment of living dinoflagellates; the cyst morphology and classification of fossil and living forms; a history of study of fossil dinoflagellates, their stratigraphical history and an evaluation of their use. The general reader will probably find the first and last chapters of most interest. The first outlines the wide range of ecological niches occupied by dinoflagellates and discusses the spectacular population explosions (blooms) that occasionally occur in some species. Pigmentation imparted to the water during blooms causes 'red tides', an effect that gave the Red Sea its name and accounts for the biblical legend in which Moses and Aaron turned the waters of the Nile into blood (Exodus, 7, 17-21). The final chapter provides an interesting evaluation of the use of dinoflagellates in stratigraphy and palaeoecology.

The remaining chapters include a great deal of factual material, and the uninitiated reader will encounter much new terminology. Understanding of these terms would have been substantially aided by the inclusion of explanatory figures directly related to the text, an unfortunate omission in a book that is otherwise so profusely illustrated. The outline of stratigraphical history is very difficult to follow without the provision of range charts, but the palaeontologically important sections on encystment and cyst morphology are well-presented and very useful. The main text is supplemented by five appendices covering preparation techniques, classification and references.

The volumes of the Treatise on Invertebrate Palaeontology have for several years provided an invaluable reference for workers using invertebrate fossils. Dr. Sarjeant's book goes some way towards filling the need for a similar reference for dinoflagellates and is an essential purchase for any micropalaeontological library.

R.J. Aldridge

Reference

SARJEANT, W.A.S. 1967. *The Xanthidia. Mercian Geologist*, vol.2, No.3, pp. 245-266.