

Book Reviews

EVOLUTION OF AN INDUSTRY

A History of Coal Mining in Great Britain

By Robert L. Galloway. Introduction, Bibliography and Index by Baron F. Duckham. Pp. xi+273. (David and Charles: Newton Abbot, April 1969. First published in 1882.) 63s.

THIS book is a reprint of Galloway's original text, first published in 1882, to which has been added an introduction, bibliography and index by Baron F. Duckham. It is difficult to imagine Galloway's historical synopsis of the British coal mining industry being superseded, for he and his family were contemporary to so much of what is now one of the most fascinating periods in the evolution of the industry. Written by a mining engineer as well as scholar and coalfield tourist, Galloway's book invites, and indeed enjoys among those who know it, approval as an accurate and well-balanced account of technical and scientific development of coal mining art and practice. He locates, as accurately as we are ever likely to define, an industrial embryo and traces its emergence from obscure beginnings, through periods of quiescence and vigorous growth, to a gigantic industrial activity gathering in economic momentum as it approaches the twentieth century. The story is simply told and is easy to read. It makes compelling reading not only for those associated with the industry but for anybody remotely interested in Britain as an industrial power either ancient or modern.

Baron F. Duckham has provided a historical supplement to the main text extending from 1880 to 1914. His treatment of the period is necessarily brief and claims to be no more. Fortunately, he resists what must have been a compelling temptation for an economic historian to comment on the social and political activity associated with the industry at that time. In this respect, Duckham keeps faith with his "co-author", thereby presenting a readable, stylish and accurate contiguity albeit chronologically misplaced. Rather than précis the events of 1880 to 1914 in his introduction, it might have been more meaningful to the reader to find the updating as an epilogue to Galloway's text.

Although undeniably accurate in his unfolding of events, Duckham fails to impress the importance of certain inventions and ideas to the development of the industry. For example, the invention of the face conveyor and the concept of conveyor transport has had a greater impact on technical progress in coal mining than any other single factor. Its introduction at the turn of the century completely changed the development of working methods. Indeed, the highly sophisticated mining systems of today are direct descendants of this invention. It is a pity that he was unable to find the time to tell more of the weird and wonderful inventions of the day in the field of mining machinery. These were mostly abortive but none the less fascinating. "Burnett's Patent Roller Wedge and Nicking Machine", for example, would excite the imagination of any engineer.

The publication of this book is opportune, coming at a time when today's coal mining industry is suffering the pains of rejuvenation. The reader is made aware that such tribulations are not new to this industry and our perspective of modern coal mining may be improved on learning that a mere 90 years ago, 4,231 collieries were needed to produce a gross output similar to that of today. Logically,

one is at liberty to conclude that we have been averaging a net annual closure rate of forty mines for almost a century.

The book will provide interesting and informative weekend reading for anybody. But more particularly, the many college students who choose, as a study project, the history of coal mining in their region will find it an invaluable aid. There is an excellent bibliography which provides selected references appropriate to all the major coalfields. Engineers, be they mining or mechanical, civil or electrical, would do well to give the book more than a glance. For there is no industry in Britain that has not been either spawned or significantly influenced by the coal mining industry.

Duckham concludes his introduction with the comment ". . . The history of modernization since 1918, and particularly since nationalization, is a stirring one. It deserves another Galloway to do it justice". Indeed it is and indeed it does. Perhaps Duckham should look no further than the nib of his own pen.

F. F. ROXBOROUGH

SUNDIAL CONSTRUCTION

Sundials

A Simplified Approach by Means of the Equatorial Dial. By Frank W. Cousins. Illustrations by Malcolm Chandler. Pp. 247. (Baker: London, December 1969.) 126s.

MR COUSINS'S book is the first major work on sundials in the English language to be published in the past 20 years (although one must not entirely overlook another recent work in a slightly lighter vein). It therefore deserves serious consideration, and it must be said at once that it fills a gap in the scientific literature and is to be welcomed.

The introduction is a little discursive, but the chief part of the work is mathematical and technical in content. Cousins sets out to describe the astronomical and mathematical foundations of the theory and practice of the construction and use of sundials, and shows in considerable detail how dials of many types, with their hour-lines inscribed on surfaces of a great variety of shapes and aspects, may be constructed by an intelligent layman. For each chief type of dial he illustrates three constructional methods for laying out the dial lines: one involving three dimensions and using the equatorial dial as described in the title to the work; a second involving two-dimensional drawing; and a third using simple trigonometry with the aid of tables. About one fifth of the book consists of a series of illustrations showing a large variety of existing sundials, both fixed and portable, with very brief descriptions; then comes the principal part of the book, consisting of about half of the total, in which the author gives full details for the construction of most of the chief types as described above. The work is rounded off with sections devoted to the layout of zodiacal lines, the use of dialling scales, a useful bibliography, and appendices including comprehensive tables of atmospheric refraction, the Sun's declination and the equation of time.

The author has been well served by his collaborators: Dr J. G. Porter, to whom is due much of the mathematical and astronomical detail; and Mr Malcolm Chandler, who has struggled manfully with the difficult task of representing in two dimensions diagrams involving three-dimensional geometry, and has been in most instances highly successful, although his upper illustration of a cone dial on page 31 could be misleading.

Cousins's own technical descriptions are well conceived but in some instances a little too brief for maximum clarity. There are a few errors here and there and some rather surprising omissions. The author touches only lightly on the large subject of portable and pocket sundials. He makes no mention of the important fact that there are