

## Book review

### THE REPAIR OF HISTORIC TIMBER STRUCTURES

Yeomans D. Thomas Telford Ltd, 2003. ISBN 0 727 73213 7  
£35-00, 224 pp.

The book is aimed at structural engineers, architects and carpenters, but is perhaps of most practical use to engineers. The main body of the book helps identify the figures to use in calculations for timber strengths, loads and stresses in the various elements and connections in the building.

Chapter 1 starts by considering the effect of timber supplies, moisture content, shrinkage and deterioration. It moves on to discuss ways of assessing the strength properties of existing hardwood and softwood in the structure with reference to BS 5756 and a combination of CP 112 with BS 5268. Two distinct carpentry traditions are discussed in Chapter 2: the mediaeval tradition of the oak frame used in domestic and agricultural buildings and the 'new carpentry' that was introduced around the mid-seventeenth century and used increasingly to meet the requirements of industrial and commercial buildings. Typically, these later structures had masonry walls with softwood floors and internal partitions and some had trussed roof structures. Chapter 3 looks in detail at the forces affecting joints, in particular the ubiquitous mortice and tenon joint and the lap dovetail joint, (crucial in tying together the principal rafter, tie beam, wall plate and post in the oak-frame building), and various softwood timber joints. The next two chapters analyse the behaviour of oak frames under load and the loads and stresses in elements of a typical box frame building. Chapter 6 considers similar issues for the 'new carpentry'. In Chapter 7, the author looks at the practicalities of repairs: moisture content and structural grade, fasteners, timber replacements and appropriate joints. Some key observations are saved until the last chapter and emphasise the importance of the survey or structural 'appraisal', and the desirability of the engineer being involved at this stage. Those involved in the survey should not only have an understanding of the original form of the building, but also of any modifications and how these may have altered the load paths through the building, and the effect on individual components and connections.

This is a detailed book with a wealth of information. It would have benefited from some additional labels on some of the diagrams (which face is the 'back' of a mortice joint, for example). Case studies, with photos of failed joints or other elements, would have helped to illuminate the points raised in the text. This is a useful reference book to have on the shelf.

D. LEIPER

### WORLD ENERGY RESOURCES

Brown C. E. Springer-Verlag, Berlin Heidelberg, 2002. ISBN  
3 540 42634 5, £139-50, 810 pp.

Energy is essential for any modern society, and a society without sufficient energy or fuel of its own will want to look to other countries in the world to find out what resources are available elsewhere and which countries have the fuels they wish to import. For a society undertaking such a search this book will be a useful introduction to world energy resources.

Three quarters of this book is a survey of the fuel resources in 166 countries around the world. Dr Brown is a geologist and Director of the International Geohydroscience and Energy Research (IGER) Institute and he has also included a survey of mineral reserves, railways and ports in most of the countries listed. The potential fuel explorer will learn not only what is there but also what facilities are available to export it.

Much of the information has been collected from statistics issued by the US Department of Energy, the US Energy Information Administration, the US Geological Survey and the Global Report 2000 to the US President. The history of the exploration and use of oil and gas in the US is fully described, as are the problems of supplying America's predicted demand in the future. We learn that the US has been a net importer of oil since 1948. The search for new sources of supply is ongoing and this book seems to be intended primarily for American entrepreneurs searching for new sources of fuel abroad.

Although oil and gas are the most versatile fuels there are many other potential sources of energy in the world, some from fossil fuels and some from renewable sources, which may become economic to develop in the future. For example the deposits of oil shale and tar sands, particularly in North and South America, are very substantial but are not economically competitive with oil and gas at present. Coal still remains the largest reserve of fuel in the world and it is widely distributed.

Dr Brown says the US called for an open door policy when seeking mineral concessions in countries under the influence of the former British, Dutch and French empires who, he complains, encouraged a closed door policy; but he does not say whether the US supports the same open door policy when outsiders are seeking concessions in America and in the American empire and sphere of influence.

The first part of the book includes a summary of the conventional chemical and engineering processes to convert various fuels and renewable sources into useful energy, and the potential problems of waste and pollution which may arise in these processes. It is useful to have all this information brought together in one book, and this section is likely to remain up-to-date for longer than the section on the surveys of the fuel resources in the various countries, which will inevitably date with time. However, the quality of editing could be better.

It is probably unnecessary to own this book yourself if you have access to a library which has a copy for you to consult. But do check any information you wish to use. In the survey of the United Kingdom (squeezed in between Ukraine and Uzbekistan) Network Rail will be interested to learn, on page 589, that Britain's railways use a '1-m standard-gauge system'.

R. FREER