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Statische Beurteilung historischer Tragwerke. Band 2: Holzkonstruktionen [Statical Assessment of Historical Structures. Volume 2: Timber construction]

Stefan Holzer, Ernst und Sohn, Berlin, Germany, 2015,
ISBN 978-3-433-03058-5, €55·00, 293 pp.

This is the second of two volumes by Stefan Holzer on the assessment of historical structures; the first, on masonry construction, was reviewed in *Engineering History and Heritage* Volume 168, Issue 3, August 2015. This volume deals with timber structures – mainly traditional timber roof structures found in central Europe, constructed up to the end of the nineteenth century.

The book is aimed at those engaged in extending the life of existing roof structures and gives equal emphasis to the way the roofs were constructed, the assessment of their structural behaviour and an evaluation of their current stability and load capacity, all of which help to inform the choice of appropriate ways of stabilising or enhancing their structural performance if necessary.

The first two chapters give a historical overview of traditional timber construction, including the tools and how the timber was prepared for use in construction. Chapter three deals with the investigation techniques that can be used to assess the current condition of a timber structure, including recording the structure and dating both the whole structure and individual pieces of timber.

The next three chapters deal with each of the main types of traditional German timber roof. The *Pfettendach* or flat, inclined purlin-roof has simple triangular frames that support purlins to which the flat-plank roof surface is fixed. The *Sarrendach* or rafter roof consists of a series of closely-spaced triangular frames that directly support the flat-plank roof. Finally, the large roofs of the late middle ages have a *liegender Stuhl*, which is a massive longitudinal inclined frame which carries the main loads, allowing the rafters to be of much lighter construction. The difference between these types of roof and the king and queen-post trusses used in English buildings is striking. Most notable is the huge size of many of the German roofs, which can cover a building some 30 m wide and rise a similar height above their springings. In the final chapter, Holzer reviews the nineteenth-century variations on the traditional roofs, including their simplification and even the introduction of laminated timber arches.

The diagrams and photographs in the book are excellent in conveying how each of these main types of timber roof and their many variants work. Clearly these roofs are statically indeterminate, and Holzer shows how, nevertheless, relatively simple statics can be used to answer the most important questions about the stability and load capacity of the roofs, without needing to determine forces and stresses in every member (which would be impossible anyway).

Although written in German, this book will be of interest to anyone engaged in the construction, assessment and refurbishment of timber roofs. The photographs and drawings are excellent and it should not be too difficult to find a native German speaker to help interpret the written content, although the vocabulary, as in British timber roof construction, is not every-day language. This book, like the previous one in the series on masonry construction, is especially notable in being very succinct and very effective in communicating its content.

Bill Addis