

# Review

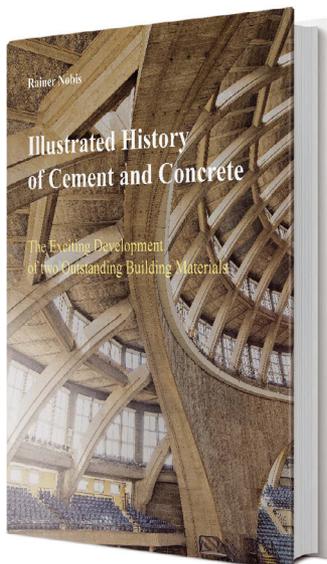
Edwin Trout is impressed by this well-illustrated and sweeping history of two important materials, which engineers will enjoy dipping into as their interests dictate.

## Illustrated history of cement and concrete: The exciting development of two outstanding building materials

**Author:** Rainer Nobis  
**Publisher:** Self-published  
**Price:** £39.50  
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IT IS NOT A DRY WORK OF ACADEMIC SCHOLARSHIP, BUT ONE OF MORE POPULAR APPEAL



**THIS IS A BOOK OF GREAT SWEEP** – not a book about engineering, but about important engineering materials. Perhaps the ‘concrete’ of its title will appeal more to the structural engineer, but the story of ‘cement’ is also of intrinsic interest and necessary to an understanding of concrete’s development. The central narrative is familiar enough, but where Nobis excels is in his range, with coverage that is chronologically long, geographically wide and thematically varied.

In treating pre-history, Nobis takes an accommodating definition of lime and clay combinations, commencing with the classic example at Lepenski Vir (5600 BC) along with evidence from the Yangshao culture of China and the fertile crescent of western Asia. Considering materials such as loam, dry stone masonry and bituminous binders, Nobis addresses the ancient world’s achievements in construction with unexpected inclusiveness.

He edges closer to cement with chapters on gypsum plaster and limestone’s many uses, then the hydraulic mortars of Phoenicia, Greece and finally Rome. The civil engineering of Egypt, China and the Andean civilisations all find a place, but it is the triumph of imperial Rome, and the European tradition that follows, which forms the core of this book. The technique of *opus caementicium* is explained and the written works of Cato, Pliny and Vitruvius introduced. And while the Pantheon and Colosseum are obvious examples of Roman engineering, they are apposite ones too.

The story of cement’s development in modern times follows the conventional arc, through Smeaton, Parker, Aspdin, Pasley and Johnson in Britain, its more systematic adoption in Germany, and turn-of-the-century expansion in America. Surprisingly, the early scientific discoveries of France are treated separately in a chapter on chemistry. What is less usual in the literature, and very welcome, is the author’s consideration of the emergence of cement industries in the peripheral European countries, overseas colonies, and in Asia and South America. Conspicuously, as befits its modern significance, China attains a chapter to itself.

Nobis addresses several underlying themes too: materials research, testing procedures, standards, production technology, alternative raw materials and the development of special cements. These sections elevate the book from a simple chronological account to something of more technical substance.

Concrete may be more relevant to the engineer, but though it has equal weight in the title, it accounts for only a quarter of the text. The

first chapter skates over the adoption of concrete blocks and mass concrete for harbours, floors, pipes and roads up to the introduction of ready-mixed concrete. The treatment of reinforced concrete is more thorough, and introduces the expected names from Lambot to Hennebique. Perhaps the author’s nationality explains the greater attention paid to Monier’s adoption in Germany and to the lesser-documented systems such as Melan’s in Austria. Prestressed concrete is given yet more emphasis, before Nobis again follows a thematic approach, with sections on concrete ships and the military use of concrete.

Major civil engineering projects are picked out, including the Panama Canal and Hoover Dam, and structures such as the Centennial Hall in Wrocław and the Sydney Opera House. While few in number, and themselves well known, these are used to illustrate aspects of concrete technology. Nobis concludes with an ‘outlook’ on future directions and a – seemingly misplaced – final ‘excursion’ into the chemistry of binders.

Indeed, there are several points at which the overarching organisation of material seems a little disjointed, though individual sections are perfectly coherent, and maybe this makes the book more one to dip into as interests dictate, rather than read cover to cover.

It is not a dry work of academic scholarship, but one of more popular appeal. It takes a broad brush to a large canvas and necessarily avoids the detail you might expect in a more focused treatise. But breadth is its strength, and with such an encyclopaedic treatment, it provides more content than comparable histories.

Its presentation is more visual too, and the profusion, variety and quality of the illustrations – far more of them in colour than usual for this subject – is certainly an attraction. The book appears instantly accessible, with 700 images breaking up the otherwise daunting three-column layout to convey immediate appeal.

Extensive, yet inexpensive, this book is well worth the purchase. Even if some is familiar, there is much that isn’t, and it summarises the subject very effectively.

### Edwin A.R. Trout

Edwin Trout is Head of Information Services at the Concrete Society, his role having transferred from the former British Cement Association. He has been responsible for a subject-specific library for 26 years, and has written extensively on historical aspects of the cement industry and concrete construction.