

Indus civilization and historical India, but his case sometimes strains credulity — as in his reading of the ‘fig deity’ seal. Another is his attribution of the Vedic nakshatra calendar to the Indus culture, which Parpola contends was compiled when the Pleiades rose heliacally at the vernal equinox during the late third millennium BC; he suggests that an earlier version of the calendar belongs to the late fourth millennium BC when Aldebaran (Rohini) rose at the vernal equinox. Bombarded with the hail of facts that make up these arguments, the reader is sometimes reminded more of *The Golden Bough* and enthusiastic Victorian scholarship than of the stodgy late-twentieth-century academy. Parpola compares decipherment to doing a crossword puzzle, in which “the probability of correctness increases with the number of interlocking solutions”. This book has lightly pencilled in the solutions to a few lines in one corner of a very large puzzle set by Torquemada. □

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## Privileged order

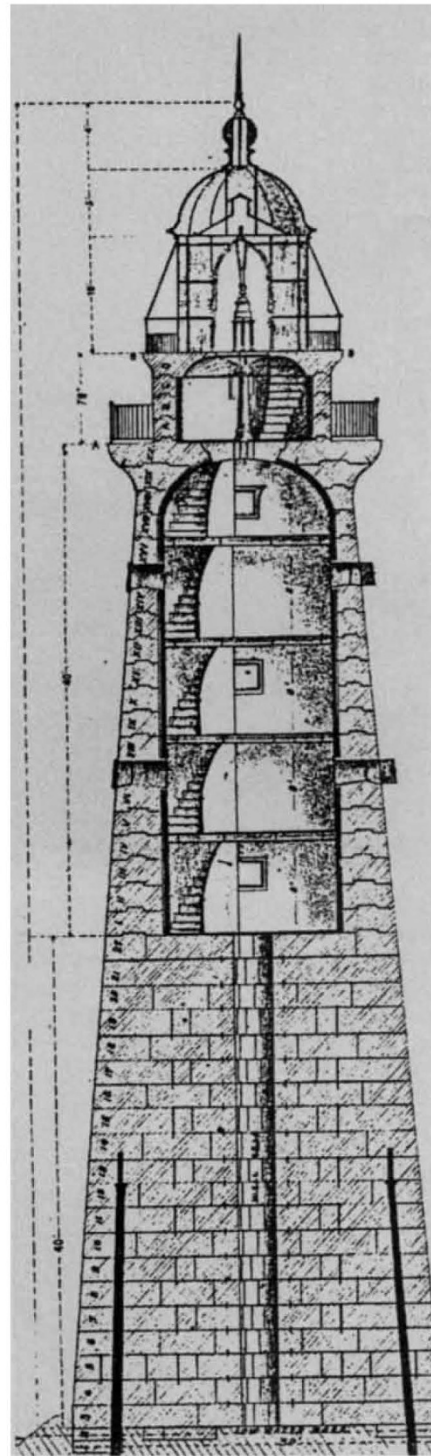
Henry Petroski

**Structures in the Stream: Water, Science, and the Rise of the US Army Corps of Engineers.** By Todd Shallat. University of Texas Press: 1994. Pp. 276. \$34.95.

UNTIL the later part of the eighteenth century, when John Smeaton declared himself to be an independent professional — a “civil engineer” — virtually all organized engineering was effectively rooted in military institutions. Indeed, earlier in the century, in 1716, the Corps des Ponts et Chaussées had been founded to take responsibility for civil engineering projects undertaken by the French government, and by the middle of the century the Ecole des Ponts et Chaussées had been created to train recruits to the corps. Formal engineering education was therefore established in France a full seven decades before it existed in Smeaton’s England, where the apprentice system prevailed well into the nineteenth century.

So two distinctly different cultures of modern engineering had been established in Britain and France by the time a young America was forming its own institutions. This background is nicely presented by Todd Shallat in his engaging history of the development of the US Army Corps of Engineers, which was strongly influenced by the scientific French rather than the experience-based British approach to engineering education and practice. For

example, in the early years of the US Military Academy, established at West Point in 1802, French textbooks predominated and so a necessary prerequisite of studying construction was the study of the French language. And the French influence went well beyond the academic, affecting even the nature of the uniforms adopted at West Point.



Faulty tower? Cross-section of the second Minots Ledge Lighthouse, near Boston, Massachusetts. The tower was completed by the US Army Corps in 1860. The first one collapsed in 1851 in high winds and seas a year after being built.

From Structures in the Stream

The Military Academy developed into a training ground for topographical engineers, who played such an important role in surveying and mapping the waterways and lands of the young country, and Shallat’s book reproduces many of the eighteenth-century portraits of the uniformed military engineers who were responsible for them. The maps tend to give the reader little more than an impressionistic flavour of the fruits of the endeavour, however, and the portraits give little insight into the personality of the engineers. (The format of the book’s illustrations tends to be small and some of the maps are so faint as to be almost unreadable.) Many a reader may wish that Shallat had used more words instead of these pictures, for his writing style is graphic and effective, and he has a considerable talent for placing what otherwise might seem to be the most mundane of engineering projects into cultural, technical and political contexts that provide much insight into the conflicts that shaped the Corps of Engineers.

Shallat’s story of the rise of the corps effectively ends with its conflict with James B. Eads, whose scheme of jetties for maintaining a shipping channel at the mouth of the Mississippi below New Orleans was bitterly opposed by the corps’ leaders, especially Andrew A. Humphreys, whose report with Henry L. Abbot on the physics and hydraulics of the Mississippi Eads had panned in a review. There was no love lost between Eads and the corps, which had also opposed his bridge across the Mississippi at St Louis, Missouri, to the point of recommending that it be torn down or that a canal be constructed around it. Such unreasonable and wrong-headed stubbornness on the part of the corps is what some critics of the institution today still find in the “privileged order of the very worst class”, in the words that Alden Partridge, a former West Point superintendent, used to characterize the corps in 1830. Shallat uses this condemning quotation as the title of his final chapter, which he concludes in the same more or less ambivalent tone with which he opens his book with regard to judging the much-judged corps.

Shallat has written a likeable and eminently readable book in which he lays out generally fairly and objectively the conflicts that he sees embedded in the origins and traditions of the Corps of Engineers and in the political structure in which it is embedded. But in the 200-odd pages of text, he (or his peer reviewers, his editor or his publisher) has not given himself enough space to tell the story in as much detail as it deserves. □

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