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BOOK REVIEWS

Manuel Silva Suárez, ed. *Técnica e Ingeniería en España. El Ochocientos: Pensamiento, Profesiones y Sociedad*, Vol. IV. Zaragoza: Institución 'Fernando el Católico', Pressas Universitarias de Zaragoza; Madrid: Real Academia de Ingeniería, 2007. Pp. 773.

_____. *Técnica e Ingeniería en España. El Ochocientos. Profesiones e Instituciones Cíviles*, Vol. V. Zaragoza: Institución 'Fernando el Católico', Pressas Universitarias de Zaragoza; Madrid: Real Academia de Ingeniería, 2007. Pp. 736.

Volume IV of Manuel Silva Suárez's encyclopaedic work *Technology and Engineering in Spain, The Nineteenth Century: Thinking, Professions and Society*, begins his coverage of the nineteenth century. As a whole, Silva Suárez's multi-volume work is a huge editorial enterprise that, in ten chronologically and thematically organised volumes, provides a synthetic perspective about historical developments of engineering in Spain. At the same time, it covers a wide range of topics from the history of technology and reveals the crucial role that engineers in Spain played in many fields, including public works, industry, cartography, urban planning, mathematics and chemistry. The editor's introductions and the chapters on global trends in engineering in different historical periods written by foreign contributors, such as Gouzévitch/Vérin in volume II on the eighteenth century and Grelon/Gouzévitch in this volume on the nineteenth century, enable the readers to place different aspects of Spanish engineering into a broader historical and geo-cultural context. The books go well beyond serving as a synthetic overview of Spanish engineering's history. Some of the analytic chapters deal with specific topics that have been addressed by the historians of engineering abroad, but these have, until now, been missing in the historiography of engineers and engineering in Spain.

This is particularly the case for volume IV, *Thought, Professions and the Society*, which strives to interpret nineteenth-century Spanish engineering within a broad socio-cultural framework. It includes innovative studies on engineers as characters of the nineteenth-century Spanish novels (by Ordóñez Rodríguez) and on the representation of the engineer's works in visual arts (by Silva Suárez and Lorente Lorente), while, at the same time, revisiting popular research topics such as exhibitions, both national and local

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(Capel Sáez). The comparative chapter on the state corps of engineers versus engineering as a liberal profession, written by the editor and by Guillermo Lusa, provides an in-depth analysis that outlines key issues regarding the structural dynamics of Spanish engineering, a topic relevant for all the volumes concerning the nineteenth century. The above-mentioned synthetic chapter by Grelon and Gouzévitch on the engineers in the nineteenth century, written from a European perspective, is thought-provoking for all those who are interested in the topic and can serve as a useful tool for teaching the history of engineering. On the other hand, the two chapters on military and naval engineering would have fit better in the next volume.

Volume V, *The Nineteenth Century: Professions and Civil Institutions*, dwells on different branches of engineering in nineteenth-century Spain, focusing on their institutional framework. The editorial guidance providing coherence is particularly evident in this volume. All the chapters follow a similar structure and address the same issues with varying degrees of success, and the editor's introduction is a valuable chapter in itself. Every chapter offers a useful summary of relevant legal documents, statistics, school curricula and other kinds of data. In addition, and on the margins of the common chapter structure—some of the chapters include particularly interesting insights into key issues of the social history of Spanish engineering. Thus, to quote some examples, Cartaña i Pinén's chapter on engineer agronomists offers a compelling glimpse into the ways in which concerns about class and status shaped the policies regarding technical education in liberal Spain, and Vicente Casals Costa sheds light on the role specific bodies of knowledge played in the conflicts over the management of Spanish forests. Several chapters on technical education compliment others on the different branches of engineering, a logical decision because of the prominent role of education in shaping the definition of engineering and its different branches in nineteenth-century Spain. Elena Ausejo's chapter on the education in exact physical and natural sciences is particularly relevant when considering that engineers felt entitled to represent and speak for modern science in the nineteenth and early-twentieth-century Spain, even as they coexisted, collaborated and clashed with other entities that claimed authority in this respect, particularly the universities. In general, this volume of the series could be situated within and is a valuable contribution to the tradition of an institutional history of engineering. As with all the volumes in this encyclopaedic work, every chapter includes a bibliography, which is particularly useful for those interested in furthering their knowledge of different aspects of engineering in Spain. The books also all include a great number of high-quality charts, figures and illustrations (including reproductions of source material and original illustrations).

Darina Martykánová, Paris, France