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Robert Fox, *The Savant and the State: Science and Cultural Politics in Nineteenth-Century France*. Baltimore: The Johns Hopkins University Press, 2012. viii + 394 pp. Illustrations, appendices, notes, bibliographical note, and index. \$60.00 U.S. (cl). ISBN 978-1-4214-0522-3.

Review by Peter Jones, University of Birmingham.

The scope of this book is accurately captured by its title and readers would do well to take note. Robert Fox tells us that his study is not concerned with the discoveries and achievements of French science *per se*, but rather with the role of the scientific disciplines and those who practised them in the public arena. That said, the book contains sufficient matter of a technical nature to cater to the tastes of specialist science historians. The majority of H-France subscribers will focus on the cultural and political dimensions of the study, however, and so they should because it is in this area that the author adds most to our understanding of the forces that were shaping the republican state during the final quarter of the nineteenth century. The argument is intricate and so heavily qualified that a reader whose acquaintance with the life of Louis Pasteur does not extend beyond the application of microbiology to milk retailing might be advised to start with the conclusion. Here Fox recapitulates the lines of enquiry he has pursued throughout the book and ponders how far they help to illuminate current or recent historiographical debates.

Although the specialist debate about France's diminishing lead in the business of scientific knowledge and technology generation from around the middle of the century is not the prime focus of the study, Fox indicates that he has some sympathy for those researchers who now argue that the "declinist" thesis has been overstated. Indeed, his own findings urge caution in this area. The trajectories of different science disciplines and even the specialisms within those disciplines need to be plotted with care before venturing upon generalisations, he concludes. The energy intrinsic to French science, whether individual or institutional, was by no means confined to the capital, a fact he demonstrates repeatedly when exploring the careers of little-known savants, scientists and educational administrators under successive political regimes. If the magnetic attraction of Paris could always be felt in faraway Toulouse, Nancy or Rennes, it only became irresistible following the political consolidation of the Republic in the late 1870s.

Whilst pursuing this thread, the author is able to draw attention to conditions which may well have hindered the ability of French scientists to maintain their early lead in fields such as chemistry, physics and the life sciences. Long-term under-resourcing of laboratories and equipment took its toll, as did the stultifying bureaucracy of the "University," together with a system of examination that did not reward innovative thinking or "hands-on" talent. For those seeking professional advancement within such a system, not to mention a degree of material comfort, the acceptance of assimilation and, above all, of conformism appears to have been the only realistic option. Nevertheless, this could involve difficult choices as the Republic sought to express its increasingly secular and materialist values through the medium of scientific achievement. Fox notes that five scientists were accorded state funerals between 1878 and 1907, but only two writers and one composer received this accolade. In the case of Claude Bernard, the first occupant of the chair of physiology at the Sorbonne, it involved an exercise in studied forgetfulness (his Imperial past). In the case of Louis Pasteur who by the time of his death in 1895 had

come to be venerated as a “secular saint,” it required some acknowledgement of and accommodation to the fact that the great scientist’s religious beliefs and political outlook were scarcely in tune with the regime. Tellingly, his family refused to countenance a burial in the Pantheon.

Whereas the benchmark for scientific performance at the start of the century was Great Britain, the comparator from mid-century onward was Germany. Unification and the Franco-Prussian War of 1870-1871 created a German Empire with which the French could scarcely hope to keep up. In population terms alone, it was nearly fifty percent larger. Small wonder, therefore, if that country swiftly outpaced France (and Great Britain)—in the size of its research establishment, in the through-put of students of physics and in the volume of its science publications. The process of psychological recovery from the military defeat of 1870 onward necessarily resulted in some exaggerated claims being made for the superior quality of French science. But once the pain of the defeat had receded, the Germans were damned, as Fox puts it, with faint praise for the indiscriminate quantity of their scientific publications. The message, however, was clear. If science had come to the rescue during the siege of Paris in the form of hydrogen balloons laden with precious cargoes floating over the Prussian lines, nobody could be in any doubt as to the shape of the future. The inculcation of a scientific spirit would become both a domestic political strategy and an urgent national priority.

In such a multi-layered book, readers will naturally select the themes upon which they wish to focus. For this reviewer, the story of how scientific knowledge and those responsible for its generation were progressively drawn into the bureaucracy of an increasingly secular-minded state proved to be the most compelling. It is a contested story which Fox pursues from the Bourbon Restoration to the apotheosis of savant culture and the scientist achieved under the aegis of the Third Republic. The Bourbons had sound reasons to be distrustful of science, of course. Like Edmund Burke who had warned of the “wild gas” of chemistry in a prophetic comment on the direction in which the eighteenth-century Enlightenment was heading, they found it difficult to separate science from the philosophical pursuit of Reason and the social conflagration of the Revolution. They returned to the throne of France in 1814-1815 with a mission both to harness and to domesticate the power of science in the common cause of national recovery.

With many of the savants of the Napoleonic era too closely identified with the excesses of the Revolution, this was not an easy task to accomplish. Fox suggests, plausibly, that the emphasis switched instead to the less controversial practical sciences. It seemed safer to employ state resources for the purpose of building up the skill base of the country, detached as far as was possible from natural knowledge accumulation. However, for reasons that are not made absolutely clear, this attempt to separate the vocational from the theoretical was never properly consummated during the Restoration years. No new trade schools or agricultural institutes were founded. Instead a younger generation of savants emerged to prominence which was reluctant to envisage a style of instruction in technological practices which was not at the same time underpinned by scientific principles. These younger savants who grouped around Charles Dupin at the Conservatoire National des Arts et Métiers were also scarcely exempt from suspicion and police surveillance either. Not until after the Revolution of 1830 were the sciences and their manifold industrial applications embraced warmly by politicians and educational civil servants. Petty-fogging supervision of savants would return during the Second Empire but, as Fox explains, the context was now entirely different. Doubts were no longer being raised about the cultural value of science. Instead the issue was one of organising and efficiently regulating an expanding higher education sector.

This summary scarcely does justice to the richness of *The Savant and the State* since the book tackles the question of the role of science and scientists in the cultural politics of post-revolutionary France from an extremely wide angle. While the approach enables the author to make spatial and thematic connections that have never been made before, the undertaking also carries a number of risks. Perhaps the greatest is that the sheer volume of information extracted from archives, libraries and regional periodicals

threatens to collapse the structure of the work. The author's tendency constantly to nuance his findings only adds to the interpretive challenge. Fascinating though the material often is, the biographical details furnished, whether of individual savants, science writers or educationalists, seem to go well beyond the strict requirements of the exposition. The same may be said of the coverage of mid-century debates such as "spontaneous generation" and the inordinately thorough analysis of positivism. On the other hand, the author occasionally brings into play themes that merit more sustained analysis. Science popularisation through lectures, magazines and large-format books is a case in point. Specialist researchers uncover evidence of science popularization in most periods and one therefore wonders about the chronology of commercialised public science in France as it is depicted here. This begs the larger question facing all authors whose remit is to trace a process of integration, of course. Can we truly understand the dynamic relationship between the savant and the state in France without taking the story back to the Revolution and the ancien regime?

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