

Philadelphia's Philosopher Mechanics: A History of the Franklin Institute, 1824-1865. By Bruce Sinclair. (Baltimore: The Johns Hopkins University Press, 1974. Pp. xi, 353. Notes, illustrations, bibliography, index. \$15.00.)

The Franklin Institute was one of the most successful of several mechanics' institutes founded in urban and manufacturing centers in the United States in the early part of the nineteenth century. Among the valuable contributions of the book are the first two chapters which deal with the significance of mechanics' institutes and similar voluntary organizations both in the United States and in England. Such information is scattered and slight in most published sources.

The Franklin Institute, founded in 1824, had as one of its purposes the improvement of educational opportunities for workingmen so that they would not only become leaders in a democratic society but would also be in positions to advance better, more efficient fabrications of products from the abundant natural resources of the United States. The institute was never a self help institution; rather, it was led and financed by employers with the cooperation of scientists and teachers. In a day when colleges and schools still maintained basically classical curricula, the institute provided technical and scientific educational opportunities by setting up schools of mathematics and drawing and by offering lecture series on such subjects as chemistry, geology, and mechanics. Associated with this educational endeavor were annual exhibitions of machinery, industrial processes, and products so that manufacturers and their workers could see what the competition was doing. In this connection the institute also reviewed new patents to discover their usefulness. Finally a permanent museum and library was established. These projects and programs were publicized by the *Franklin Journal and American Mechanic's Magazine* (published under variant titles). The journal included notices of domestic and foreign scientific and technological developments, the evaluations of patents, and much other practical information.

The leaders thought that the institute should also be a research agency dealing with national problems of industry and commerce. The most important investigations were of water as a power source, the causes of steamboat boiler ex-

plosions, and the causes and effects of the weather, all of great significance in the early nineteenth century. The experience of the Franklin Institute in its research was instrumental in eventually bringing science within the scope of government through the National Academy of Science.

In addition to dealing with larger themes of more than local significance, Sinclair is concerned with the internal history of the institute and its financial and programmatic problems. He also discusses the men in the institute, their businesses, their interests, and their associations with the other scientific and intellectual organizations of Philadelphia, principally the American Philosophical Society and the Academy of Natural Sciences. Much important biographical information about a number of technological and scientific leaders of the United States is here presented.

Sinclair has written an important book in its field. It adds another chapter to an understanding of the American past in science and technology, both of which have been the subjects of scholarly research in the last quarter century. The book deals with the history of the Franklin Institute for only the period 1824-1865. It was originally a doctoral dissertation and so had to be cut to a manageable length. The period chosen is a viable unit, but this reviewer is left with a feeling of dissatisfaction because he does not know what has happened to the institute in the last 110 years. Maybe Sinclair will fill in this gap by writing a second volume.

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The Federal Machine: Beginnings of Bureaucracy in Jacksonian America. By Matthew A. Crenson. (Baltimore: The Johns Hopkins University Press, 1975. Pp. xii, 186. Notes, tables, figures, bibliography, index. \$10.00.)

Matthew Crenson is a political scientist writing history, and as such he brings both the weakness and strength of that interdisciplinary situation to this study. The author grasps better than most historians writing in the period the significance inherent in the dynamic expansion of the United States federal civil establishment as it grew to meet the equally dynamic expansion of the nation. But Crenson's