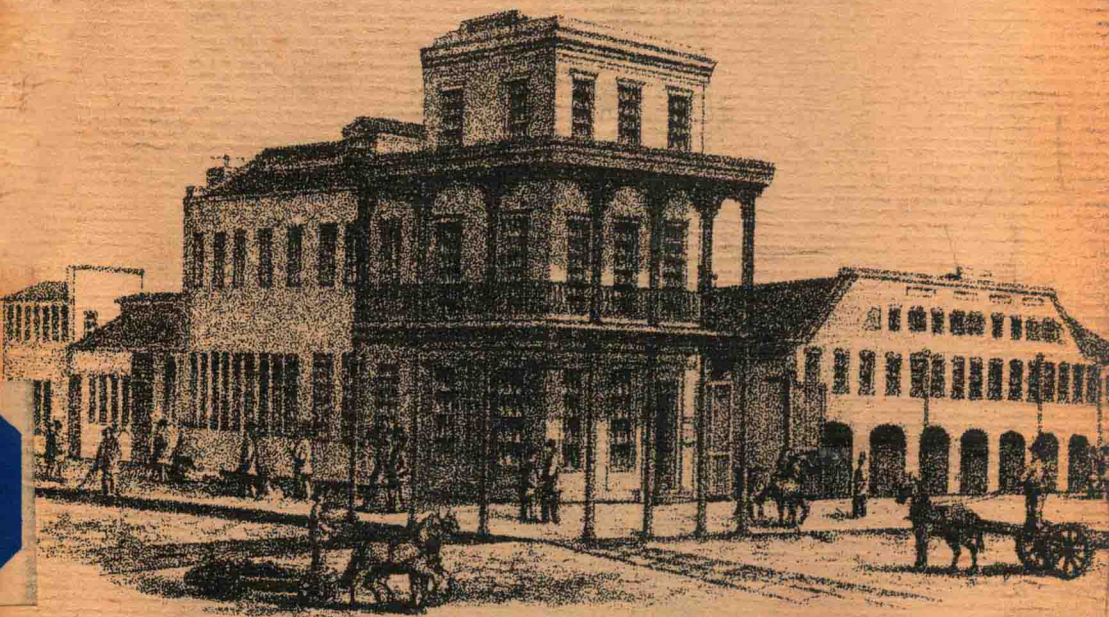
The Modernization of the Louisiana Sugar Industry 1830–1910

John Alfred Heitmann



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For Kaye

Illustrations

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Preface

Gerald D. Nash, writing in the *Journal of Southern History* more than twenty years ago, lamented the fact that scholars of his generation were excessively preoccupied with traditional themes in southern history, namely politics and race relations.[1] In his opinion, historians were ignoring the invisible yet powerful economic forces that contributed so much to shaping the development of the South. Nash called for a new approach in 1966, one focusing on the process of industrialization in the South after 1880 and the associated internal dynamics that eventually resulted in revolutionary economic and societal changes. He suggested several topics for study, including financial institutions, trade associations, the role of state and federal government in the economy, entrepreneurial activities, and above all the influence of industry in shaping modern southern culture.

While Nash's article was well received and is frequently cited, only a handful of historians have heeded his advice. With the notable exception of James C. Cobb's *Industrialization and Southern Society, 1877–1984* and a few other publications, political history continues to dominate the field.[2] Traditionally, Louisiana historians have been

1. Gerald D. Nash, "Research Opportunities in the History of the South After 1880," *Journal of Southern History*, XXXII (1966), 308–24.

2. James C. Cobb, *Industrialization and Southern Society, 1877–1984* (Lexington, Ky., 1984); Raymond Arsenault, "The End of the Long Hot Summer: The Air Con-

preoccupied with the political caldron in that state, and works such as William Ivey Hair's *Bourbonism and Agrarian Protest: Louisiana Politics, 1877–1900*, Alan P. Sindler's *Huey Long's Louisiana: State Politics, 1920–1952*, Perry H. Howard's *Political Tendencies in Louisiana*, and T. Harry Williams' *Huey Long* all reflect this tendency.[3] Undoubtedly, the political machinations taking place in Louisiana, which sometimes can be compared to the goings on in a banana republic, provide the basis for instructive and entertaining stories. However, other tales need to be told as well. Entire areas of scholarship remain neglected. For example, there exists no comparable history of the development of Louisiana's chemical industry, certainly as significant as politics in shaping the state's character. Just as Nash warned two decades ago, our historical understanding of the South, and in particular Louisiana, continues to be distorted. Old ground has been repeatedly retilled, while vast new areas remain to be explored.

This study of an industry in transition—the late-nineteenth-century Louisiana sugar industry—departs from the conventional in several ways. I shall take up Nash's challenge and extend it by examining the process of industrialization and by investigating its scientific and technological basis. My study is built upon the work of many able scholars, and in particular that of J. Carlyle Sitterson.[4] Sitterson's comprehensive *Sugar Country* taught me a great deal about the Louisiana sugar industry; however, it also prompted questions that eventually led me on a different path from that of its author. Although Sitterson touched upon science and technology and suggested that institutions were important to the modernization of the sugar industry, he did not fully characterize their significance.[5]

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ditioner and Southern Culture," *Journal of Southern History*, L (1984), 597–628; David O. Whitten, *The Emergence of Giant Enterprise, 1860–1914* (Westport, Conn., 1983).

3. For an excellent review of the historiography related to Louisiana, see Light Townsend Cummins and Glen Jeansonne (eds.), *A Guide to the History of Louisiana* (Westport, Conn., 1982).

4. J. Carlyle Sitterson, *Sugar Country: The Cane Sugar Industry in the South, 1753–1950* (Lexington, Ky., 1953).

5. See J. Carlyle Sitterson, "Expansion, Reversion, and Revolution in the Southern Sugar Industry, 1850–1910," *Bulletin of the Business Historical Society*, XXVII (1953), 137.

When these themes are carefully studied, a deeper understanding of the process of change and a new view of the Louisiana sugar bowl emerge.

In this study of science, technology, and the modernization of the Louisiana sugar industry, the key unit of analysis is the organization.[6] Institutions are created in response to specific conditions existing within a culture, and their formation is reflective of dynamic processes taking place within society. Indeed, trade organizations, experiment stations, and university programs related to the sugar industry in nineteenth-century Louisiana were a product of a complex environment; they also concurrently sustained economic, social, and political change. In general, these institutions were established for the purpose of achieving stability and control over an industry threatened by foreign competition and confronted with the problems of a new labor system.

An organizational approach to this period allows a dynamic Louisiana sugar industry to emerge within a broad context. Rather than placing developments in the Louisiana sugar bowl in a relatively isolated southern tradition, as in *Sugar Country*, events are interpreted within an international perspective. Local institutions served as transmitters and facilitators of knowledge and expertise originating in Europe, and they catalyzed the process of assimilation that contributed so much to industrial modernization in Louisiana. Prior to the Civil War, France proved to be the source of many new technical methods and scientific ideas. After 1865 the European beet-sugar industry, and particularly German processes and chemical controls, contributed to the dramatic changes in Louisiana.

While institutions serve as the gatekeepers of knowledge and are thus the focal point of this study, the story of science, technology, and the development of the Louisiana sugar industry is far from bloodless. The effectiveness of these organizations was the consequence of individual initiative. Between 1877 and 1900 prominent planters, merchants, and manufacturers worked hard to create and sustain local institutions and to promote the idea that application of scientific knowledge resulted in economic profits. In a 1982 ar-

6. Louis Galambos, "Technology, Political Economy, and Professionalization: Central Themes of the Organizational Synthesis," *Business History Review*, LVII (1983), 471–93.

ticle, Louis Ferleger focused on the tradition-bound planter in his interpretation of the innovations in sugar technology; on the contrary, the elite planters involved in manufacturing were in reality more cosmopolitan than parochial and more progressive than conservative.[7]

My interest in the Louisiana sugar industry had its origins in previous research dealing with the history of chemical engineering. As I reviewed the literature for the first American exposition concerning the discipline, I found a 1900 address by Magnus Swenson to faculty and students at the University of Wisconsin that outlined the role and value of the chemical engineer. Swenson, a former Wisconsin professor and university trustee, drew on his experiences in the Louisiana sugar industry and pointed to developments there as being crucial to the emergence of the theoretical and practical basis of this applied science. Swenson noted that chemical control of the sugarhouse was rarely practiced until rapidly falling prices during the 1880s "made it a question of life and death to the industry." Because the sugar chemists were limited in their training, large amounts of capital were wasted on inadequate machinery. Within a few years, however, large-scale yields of sugar were improved "beyond what was thought possible." Swenson attributed "*this . . . to the gradual evolution of the chemical engineer who has both the necessary chemical knowledge and the technical training.*" He credited these improvements in the sugar trade "in a very large measure to the Audubon Sugar School."[8] Swenson's statements were what I was looking for. It seemed to me that by examining the work of applied scientists developing process modifications, as well as the Audubon Sugar School curriculum and the Louisiana Sugar Experiment Station research programs, the emergence of a new profession within an industrial context could be traced.

Beginning with a search for the origins of a hybrid body of knowledge and a profession, I was thus led to a unique educational institution for its time, the Audubon Sugar School, which was established in 1891 in New Orleans. What was so intriguing to me was that

7. Louis Ferleger, "Farm Mechanization in the Southern Sugar Sector After the Civil War," *Louisiana History*, XXIII (1982), 21–34.

8. Magnus Swenson, "The Chemical Engineer," *Bulletin of the University of Wisconsin, Engineering Series*, II (1900), 199–200.

chemical engineering, a discipline closely associated with the modern chemical industry, had one wing of its development in a most unlikely setting, the Deep South, and was related to an industry normally characterized as conservative and resistant to change. What were the circumstances surrounding the establishment of the Audubon Sugar School? This and related questions were answered by studying the Louisiana Sugar Planters' Association (LSPA), the crucial organization involved in the modernization of the state's sugar industry.

Established in 1877, the LSPA's immediate goal was to secure favorable tariff legislation by acting as a lobby for the industry in Washington. Once this mission was accomplished, however, the LSPA leadership began to recognize the potential benefits of the application of chemical and engineering knowledge to sugar manufacture. They then concentrated their efforts on incorporating new technological innovations and chemical methods with the purpose of increasing production efficiency. However, by 1880 the LSPA membership realized that their lack of scientific expertise could prevent them from reaching this objective. To overcome the deficiency, the association pursued several strategies to secure university-trained scientists and engineers for the Louisiana sugar industry. In obtaining experts, the LSPA embarked upon a program of institution building and formed a network of organizational structures that in part sustained the local economy.[9] A scientific and technical institutional infrastructure emerged by 1890 that possessed an inherent flexibility to transcend from one chemical technology to another, from sugar to petroleum, as Louisiana moved from the nineteenth into the twentieth century.

Standing on the balcony of Duncan Kenner's nineteenth-century Ascension Parish plantation home, one can sense the distinctions between the past and the present. In the foreground under the shade of huge, ancient oak trees stand primitive grinding equipment and large open kettles that were once used to boil cane syrup. Yet, on the terrain beyond the plantation loom smokestacks, tanks, and frac-

9. On systems and networks and their application to historical analysis, see Thomas P. Hughes, *Networks of Power: Electrification in Western Society* (Baltimore, 1983), 5–6.

tionating columns behind the gates of a Geigy Corporation petrochemical plant. While travel guides rarely mention the presence of chemical plants, it is the modern chemical industry that dominates the region's landscape, that has paved a road of prosperity for its citizens, and that most likely will determine its future economy. And as this study will show, the efforts of scientists and engineers and prominent local businessmen, the active role of the federal government, and the interplay of local institutions are the keys to sustained economic growth in a dynamic economic system in which technological innovation is the crucial input.

This study seeks to combine approaches from several different historical subdisciplines. It is a history of science and technology, but not one that focuses on major figures like Thomas Edison, Ira Remson, Henry Rowland, the Wright brothers, or others who lived during the same period in which the Louisiana sugar industry was transformed in tems of scale and operations. Rather, it is a story of second- and third-level scientists and engineers who are generally unknown to historians but nevertheless made valuable contributions to the development of modern culture. If we are to truly understand the impact of science upon society, and vice versa, we must study this group of experts.

The story of the Louisiana sugar industry extends the traditional boundaries of southern history. While the study characterizes manufacturing in the state, it places that activity in a broader, international context. Further, this book is a contribution to the literature related to the history of sugar, an area in which numerous scholars have been working for generations.[10] Yet it is much more

10. The literature in this area is voluminous. In addition to Sitterson's study, important works include Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York, 1985); Noel Deerr, *The History of Sugar* (London, 1949–50); W. R. Aykroyd, *Sweet Malefactor* (London, 1967); Mark Schmitz, *Economic Analysis of Antebellum Sugar Plantations in Louisiana* (New York, 1977); E. Ellis, *An Introduction to the History of Sugar as a Commodity* (Philadelphia, 1905); Edward O. von Lippmann, *Geschichte des Zuckers* (2 vols.; Berlin, 1929); William Reed, *The History of Sugar and Sugar Yielding Plants* (London, 1866); Peter L. Eisenberg, *The Sugar Industry in Pernambuco: Modernization Without Change, 1840–1910* (Berkeley, 1974); Alfred S. Eichner, *The Emergence of Oligopoly: Sugar Refining as a Case Study* (Baltimore, 1969); Francisco A. Scarano, *Sugar and*

than a work in this area because the history of the sugar industry in Louisiana illustrates themes in areas as diverse as the history of the professions and the role of the elite in promoting economic change. By integrating these various ways at looking at the past, I intend to raise questions that other scholars may find useful in their own areas of interest. Above all, I shall try to demonstrate the value and power of the history of science and technology in understanding one important episode in the development of American civilization.

Slavery in Puerto Rico: The Plantation Economy of Ponce, 1800–1850 (Madison, Wis., 1984).