

# System and Sales in the Heartland: A Manufacturing and Marketing History of the Hart-Parr Company, 1901–1929

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IN THE SUMMER OF 1993 a tractor plant in Charles City, Iowa, closed its doors. Four hundred twenty employees of the White–New Idea Farm Equipment Company lost their jobs, a small fraction of the nearly three thousand who had worked there in the early 1970s. Since that time, Charles City's tractor plant had suffered through various energy and farm crises, mounting indebtedness, multiple corporate buyouts, two bankruptcies, and years of downsizing, all the while trying to produce farm equipment for a shrinking domestic market. Extensive efforts to find another buyer proved unsuccessful. Finally, in October 1993, the plant's remaining viable machines and other assets were sold off at a week-long auction. For months thereafter, successful bidders hauled off their spoils, many of them destined for the booming economy of the People's Republic of China.<sup>1</sup> One former foundry employee recalled that

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1. *Des Moines Register*, 18 and 22 November 1992 and 31 October 1993; "Knee-Deep in Debt," *Fortune* (18 September 1989), 88.

This project was supported by a research grant funded by the State Historical Society of Iowa, and had its origins in papers prepared for the 1994 National Endowment for the Humanities Summer Institute directed by Alan I Marcus, and for Iowa Heritage EXPO '97. I also would like to thank Michael Price, Maria Sajwan, Doug Strawser, Bob Bennett, Mary Ann Townsend, and the *Annals of Iowa's* reviewers for their advice, help, and support. The paper is dedicated to Charles Applegate.

THE ANNALS OF IOWA 57 (Fall 1998). ©The State Historical Society of Iowa, 1998.

watching five flatbeds carry the sand silos out of town was like watching "a funeral march."<sup>2</sup> Today, the site is nothing but two dozen acres of barren land.

Early in this century, however, Charles City was an important manufacturing center. Residents still boast that their town was the "birthplace of the farm tractor." There, in 1901, the Hart-Parr Company produced the first commercially successful gasoline tractor, and the company dominated the North American tractor market for several years thereafter. By 1907, about one-third of all the tractors in the world were manufactured in Charles City. Hart-Parr tractors were powerful, long-lasting, fuel efficient, and technically innovative, and they sold well in both national and international markets.<sup>3</sup> By the early 1910s, the Hart-Parr Company was receiving considerable national attention for its innovative manufacturing processes, its management style, and the efficient and systematic engineering it employed in its plant and its products. On the surface, Hart-Parr's vision of the plant, work force, and marketplace seemed to exemplify the ideals that shaped American technology and business history in the early twentieth century.

The company's fortunes shifted drastically in the decade after 1913. After flawed business decisions during World War I devastated the firm's markets and reputation, stockholders brought in a new management team that rejected the earlier ethos of efficiency and engineering, embracing instead new strategies of

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2. Jack Sobolik, interview with author, Charles City, Iowa, 3 July 1994.

3. For solid discussions of the tractors themselves (not an emphasis of this article), see C. H. Wendel, *Oliver Hart-Parr* (Osceola, WI, 1993); C. H. Wendel, *Encyclopedia of American Farm Tractors* (Sarasota, FL, 1979); and R. Douglas Hurt, *Agricultural Technology in the Twentieth Century* (Manhattan, KS, 1991). Hart-Parr tractors boasted a number of technical advantages and innovations. Designed mainly to compete with teams of horses and steam engines that helped plow virgin lands and wheat fields, these machines were extremely heavy and powerful. One Hart-Parr model weighed twenty-six tons, with the horsepower to pull fourteen plows at once. Before World War I, the principal market was in the northern Great Plains of the United States and Canada. Hart-Parr also had success in agriculturally similar regions overseas, including parts of Austria-Hungary, Russia, the Balkans, Argentina, and Australia. After the First World War, the sales territory within the United States broadened to include forty states, and there were enough foreign markets to warrant the motto, "The Sun Never Sets on Hart-Parr."

production, marketing, and labor relations. Finally, in 1929, Hart-Parr joined the industrywide trend of mergers between tractor and implement manufacturers.

Mass production and scientific management are major themes in the history of early twentieth-century manufacturing. Standard versions of American economic history emphasize the triumphant and inevitable emergence of centralized and efficient forms of production, management, and labor control. Fordism, as one component of the model was known, became identified with several innovations, including the manufacture of large volumes of standardized products, the use of special-purpose machine tools to fashion interchangeable parts, and the development of dynamic assembly processes. Following Alfred Chandler's lead, a generation of historians of American business has highlighted the organizational and managerial revolution that taught the business elite to govern large factories and vast corporations through a new class of middle managers willing and able to instill a corporate culture. In a parallel vein, labor historians have focused on managers' and manufacturers' expanding abilities to control the shop floor work force through time management studies and innovations in training and compensation that fostered a "deskilling" of the labor force. In brief, the traditional view assumes that management and engineering merged around the turn of the century to form and solidify American industrial capitalism.<sup>4</sup>

Recently, historians have begun to reevaluate the centrality of mass production in the history of manufacturing.<sup>5</sup> Many

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4. Daniel Nelson, *Managers and Workers: Origins of the New Factory System in the United States, 1880-1920* (Madison, WI, 1975); David A. Hounshell, *From the American System to Mass Production, 1800-1932: The Development of Manufacturing Technology in the United States* (Baltimore, 1984); Samuel Haber, *Efficiency and Uplift: Scientific Management in the Progressive Era, 1890-1920* (Chicago, 1964); David F. Noble, *America by Design: Science, Technology, and the Rise of Corporate Capitalism* (New York, 1979); and Alfred D. Chandler Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA, 1977).

5. Charles Sabel and Jonathan Zeitlin, "Historical Alternatives to Mass Production: Politics, Markets, and Technology in Nineteenth-Century Industrialization," *Past & Present* 108 (1985), 133-76; Philip Scranton, "Manufacturing Diversity: Production Systems, Markets, and an American Consumer Society, 1870-1930," *Technology and Culture* 35 (1994), 476-505; John K. Brown, *The Baldwin Locomotive Works, 1830-1915: A Study in American Industrial Practice*

manufacturers found the methods of mass production ill suited to their industries and markets, for mass production required substantial investments in equipment and engendered tense struggles to increase productivity, market share, and labor efficiency. Batch production, whereby goods were made in small lots, offered manufacturers an alternative strategy that emphasized marketing, the ability to respond to market changes, and the negotiation of flexible working relationships with employees, subcontractors, and customers. The net result was that models of batch production and flexible production remained viable long after the heyday of Fordism. As this study shows, though Charles Hart himself claimed that he was "a great admirer of a certain automobile manufacturer," mass production was not, in the long term, well suited to tractor manufacturing in a small Iowa town.<sup>6</sup>

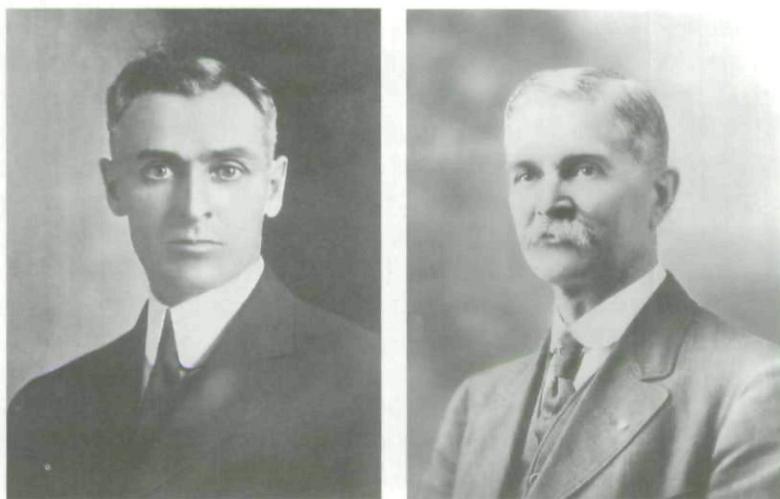
The history of "the Hart-Parr," as it was known in the local parlance, also helps us understand the emerging boundaries of corporate responsibility in the early twentieth-century United States. Recent studies of welfare capitalism have shown that such practices were rooted neither in generosity and altruism, as company histories imply, nor in the blatant forms of anti-unionism and corporate hegemony that critics allege.<sup>7</sup> As the head of the dominant industry in a small Iowa town, Charles Hart was in a position to shape relations with his workers and the community at large in several ways. Influenced by the Social Gospel, Hart surely had a sincere belief that he could play an important role in uplifting the working class. At the same time, however, he was in a position to directly benefit from the firm's welfare programs.

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(Baltimore, 1994); Stephen Meyer, "Technology and the Workplace: Skilled and Production Workers at Allis-Chalmers, 1900-1941," *Technology and Culture* 29 (1988), 839-64; Philip Scranton, *Endless Novelty: Specialty Production and American Industrialization, 1865-1925* (Princeton, NJ, 1997).

6. Hart quoted in Edward Mott Wooley, "Secrets of Business Success, III: C. W. Hart," *The World's Work* (January 1914), 350.

7. Andrea Tone, *The Business of Benevolence: Industrial Paternalism in Progressive America* (Ithaca, NY, 1997); Stuart D. Brandes, *American Welfare Capitalism, 1880-1940* (Chicago, 1976); H. M. Gitelman, "Welfare Capitalism Reconsidered," *Labor History* 33 (1992), 5-31; and Wilson J. Warren, "Evangelical Paternalism and Divided Workers: The Nonunion Era at John Morrell and Company in Ottumwa, 1877-1917," *Annals of Iowa* 56 (1997), 321-48.



Charles W. Hart, 1872–1937 (l.) and Charles H. Parr, 1868–1941 (r.).  
Photos courtesy Floyd County Historical Society (hereafter FCHS).

BOTH CHARLES HART AND CHARLES PARR grew up in the rural Midwest, and both recognized from their teenage years that small engines, easy and economical to operate, had a great potential market among rural Americans.<sup>8</sup> Patents on the first successful internal combustion engine, invented by Nikolaus Otto in 1876, had expired by the early 1890s, creating

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8. Available biographical materials include Jack Gilluly, "He Realized a Dream: The Story of C. W. Hart," unpublished manuscript, 1981, State Historical Society of Iowa, Iowa City, chaps. 2–6. The manuscript is paginated separately within each chapter, but individual chapters are not numbered. For ease of citation, I have created chapter numbers. Also, see C. H. Parr, "History of the Hart-Parr Company," in "Life of Charles Walter Hart," manuscript in vertical files, n.d., Floyd County Historical Society (hereafter FCHS), Charles City, Iowa; "Life of Charles Walter Hart" [ca. 1917], copied from *Iowa and Its Foremost Citizens*, in vertical files, FCHS; and "Iowa's Great Tractor Factory," *Iowa Factories* 1 (May 1912), 10–17. An early trade catalog indicates that Hart and Parr predicted an extensive market for power machinery: The "day is not far distant when every blacksmith shop, elevator, restaurant, creamery, country residence, feed mill, isolated electric lighting plant, bakery, laundry, butcher shop or shop of any kind will be provided with an internal combustion engine for power." The Hart-Parr Company, "Gasolene [sic] Engines" (Madison, WI, [ca. 1900]), in vertical files, FCHS.

a flurry of interest in the machine.<sup>9</sup> Charles Hart first studied engineering at Iowa State College before transferring to the University of Wisconsin, where he met Wisconsin-born Charles Parr at the registration tables. As part of their senior honors thesis in mechanical engineering, the two men produced five working internal combustion engines. By the time they graduated in 1896, they had formed the Hart and Parr Company of Madison.<sup>10</sup> Although his degree was in engineering, Hart later declared that his tenure at the Elliott Business College in Burlington, Iowa, had a greater impact on his career. There, the curriculum stressed student role-playing in virtually all of the office tasks useful for the emerging class of white-collar managers.<sup>11</sup> In 1901 the company accepted an offer of bank loans, land grants, and tax breaks to move operations to a three-hundred-square-foot building in Charles City, near the Floyd County farm where Hart had grown up.<sup>12</sup> Soon after this relocation, the sales success of Hart-Parr tractors persuaded the company to drop its line of stationary engines and to expand tractor manufacturing operations. By that time, Charles Hart had gained control of the firm's management; Charles Parr was no longer a central participant in company operations.<sup>13</sup>

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9. C. H. Wendel, *American Gasoline Engines since 1872* (Sarasota, FL, 1983).

10. C. W. Hart and C. H. Parr, "Internal Combustion Engines," *Wisconsin Engineer* 1 (1896-97), 192-203, 338-44, 452-57, 599-604, and *ibid.* 2 (1897), 43-50. Their thesis contains a survey of the history of internal combustion engines.

11. Information on the curriculum from *Twenty-Seventh Annual Catalogue: Elliott's Business College and Elliott's School of Shorthand* (Burlington, IA, 1905). I would like to thank Joanne Guest of the Burlington Public Library for supplying the photocopies. Hart's comment on the value of his Burlington education is from Gilluly, "He Realized a Dream," chap. 39, p. 3.

12. C. H. Parr, "History of the Hart-Parr Company."

13. Charles Parr's history of the firm does not reveal the reason for his relatively minor role in company management, and betrays no bitterness over the situation. A 1908 article described him as the "night watchman." When he and Hart were ousted from the board in the 1917 management change, Parr remained on the staff as head of the Engineering Department. Parr also served on the school board for several terms beginning in 1913. *Charles City Daily Intelligencer* (hereafter CCDI), 15 October 1908, 6 and 11 March 1913, and 7 June 1917; *Charles City Daily Press* (hereafter CDDP), 1 June 1917. Charles Parr left the firm in 1923, though he later returned to the payroll as a consultant. See "C. H. Parr Goes to New Position," *Twice a Week News* (hereafter TAWN), 23 November 1923.

# C.H. PARR SECRETARY

HE TOO WAS A MAN OF VISIONS AND WHEN HE MET C.W.HART AT WISCONSIN UNIVERSITY THE FIRM OF HART-PARR WAS BROUGHT ABOUT.



HE IS AN ACTIVE WORKER FOR THE WELFARE OF THE CITY AND IS PARTICULARLY INTERESTED IN SCHOOL WORK.



WITH C.W.HART HE FOUGHT STRENUOUS BATTLES AGAINST ADVERSITY AND CRUEL COMPETITION AND THE FIGHT WAS WON.

*Hart*

DE-LIGHTED GENTLEMEN, DE-E-E-LIGHTED!



BOTH MR. PARR AND MR. HART BELIEVE IN THE WELL-KNOWN ROOSEVELTAN THEORY AND ARE BLESSED WITH FINE LARGE FAMILIES.

*Contrast the text accompanying this caricature of Charles Parr with that on the one of Charles Hart (see cover). The contrast clearly suggests Parr's lesser role in the firm's development. From Hart-Parr's company magazine, Field and Factory 2 (20 January 1917).*

As employment grew from 15 in 1901 to about 1,800 in 1917, the firm reshaped the physical and social character of Charles City.<sup>14</sup> The huge plant dominated the northern edge of the city, overtaking twenty-four acres of farmland and stockyards to create a noisy and smoky landscape of factory buildings, fuel tanks, company-owned railroad tracks, and vast piles of sand, coal, ash, and iron dust.<sup>15</sup> Beyond the factory complex, commuter rail lines, tenement housing, working-class cafes, and the neighborhoods of a new managerial class extended into lands that the company purchased from retiring farmers. Hart-Parr's influence reached still farther beyond Charles City's boundaries: it connected farmers on the midwestern and Great Plains prairies with the urban industrial economy; it brought the machinery and capital of eastern industrialists and financiers to the rural Midwest; it established ties with agents who promoted the company from outposts in Canada, Europe, South America, and Africa; and it attracted to Charles City hundreds and then thousands of skilled and unskilled workers from rural Iowa, the Midwest, eastern Europe, and elsewhere seeking employment with the company.<sup>16</sup>

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14. Employment data from Cameron W. Hanson and Heather M. Hull, eds., *Past Harvests: A Floyd County History to 1996* (Charles City, 1996), 103; Iowa Bureau of Labor Statistics, *Twelfth Biennial Report, 1905* (Des Moines, 1907), 230–31; idem, *Thirteenth Biennial Report, 1906–1907* (Des Moines, 1908), 300–301; idem, *Fourteenth Biennial Report, 1908–1909* (Des Moines, 1910), 388–89; and *Charles City Press and Evening Intelligencer* (hereafter CCPEI), 9 August 1916 and 20 August 1919. The newspaper was at times labeled *Charles City Daily Press and Evening Intelligencer*, but CCPEI will be used for either.

15. Sanborn Map Company, Fire Insurance Map, Charles City, 1924, maps 9 and 10, FCHS.

16. For recent studies of the industrial history of Iowa and the Midwest, see Ralph Scharnau, "The Labor Movement in Iowa, 1900–1910," *Journal of the West* 35 (April 1996), 19–28; Keach Johnson, "Iowa's Industrial Roots: Some Social and Political Problems," *Annals of Iowa* 44 (1979), 247–77; Shelton Stromquist, *Solidarity and Survival: An Oral History of Iowa Labor in the Twentieth Century* (Iowa City, 1993), 1–11; and Daniel Nelson, *Farm and Factory: Workers in the Midwest, 1880–1990* (Bloomington, IN, 1995). Historical geographers provide useful analyses of the spatial relationships of an emerging agro-industrial complex; see David R. Meyer, "Emergence of the Manufacturing Belt: An Interpretation," *Journal of Historical Geography* 9 (1983), 145–74; and Brian Page, "Across the Great Divide: Agriculture and Industrial Geography," *Economic Geography* 72 (1996), 376–97. Between 1900 and 1909, Iowa's rural population dropped 7 percent, while few of the state's new set-



This 1908 photograph shows the expanding Hart-Parr plant's encroachment on its environs. Photo courtesy FCHS.

In 1907 the firm began a tremendous expansion of its industrial space. Hart envisioned the factory as an organic machine, and seized the opportunity to implement his strategies of industrial engineering and factory management through the plant's architecture, infrastructure, layout of the grounds, and selection and arrangement of the machinery. With the permission of the city council, the firm relocated railroad tracks, blocked off city streets, and appropriated the formerly public land as company property. Beneath the streets lay the plant's circulatory system, a 1,200-foot network of concrete tunnels that carried wires for electricity and telephone, and pipes for water and sewage.<sup>17</sup> The buildings incorporated innovations in design and in their use of materials, particularly through Hart's enthusiastic support for reinforced concrete as a building material. Concrete buildings were not only appropriate for bearing the weight of hundreds of machine tools and tons of raw materials; they also served a

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tlers were able to obtain farmland. To a large degree, those seeking jobs in that era had to turn to the state's urban areas and factory towns. Grace M. Zorbaugh, "Farm Background of Country Migrants to Iowa Industries," *Iowa Journal of History and Politics* 34 (1936), 312-18.

17. "Iowa's Great Tractor Factory," 11; CCDI, 26 July 1906, 11 May and 2 September 1907; Minutes, Charles City City Council, Book E, 19 November 1906, and Book F, 7 October 1907, 15 June 1908, and 7 June 1909, City Hall, Charles City. For more on the ideology of industrial plant design, see Lindy Biggs, *The Rational Factory: Architecture, Technology, and Work in America's Age of Mass Production* (Baltimore, 1996).

managerial function. By offering more open spaces, they provided better sight lines for managerial supervision, better lighting, and greater stability for workers operating heavy machines. Hart also examined the ventilation system, recognizing that modifications in the work environment affected workers' productivity. Reports make clear that efficiency, rather than worker comfort, was the principal goal.<sup>18</sup>

Charles Hart aggressively tried to bring an industrial and engineering mentality to Charles City. Not surprisingly, the local media were willing allies. Hart wrote a weekly column for the *Charles City Daily Intelligencer*, using his space to publicize positive developments at "the Hart-Parr." The newspaper's editor participated by urging all citizens to thank Hart-Parr for its contributions to the city and for its leniency with employees during hard times. During the plant's expansion phase, the newspaper promised that it was "worth a fifty-mile journey" simply to see the crane that hovered over the site, and encouraged readers to purchase a ticket on the platform to observe the construction.<sup>19</sup> Local newspapers also opposed labor activism, pollution controls, and anything else that might threaten corporate interests; one openly admitted that it had no intention of publishing news about layoffs or sales slumps.<sup>20</sup> The local media's most consistent theme was to encourage local real estate agents and landlords to create ever more housing for the Hart-Parr work force. The persistence of such calls, however, suggests that many understood that as Hart-Parr's labor force fluctuated, any investment in housing for rural Iowa's industrial workers carried some risk.

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18. Before 1907, parts of the buildings were exposed to Iowa's extreme winters, prompting the local newspaper to report that workers were "quite jubilant over the anticipation of a more tropical climate." To ameliorate conditions in the summer months, Hart designed a system for spraying a mist of water through giant fans. CCPEI, 1 July 1916; and unidentified newspaper clipping, 31 October 1907, Hart-Parr vertical files, FCHS.

19. CCDI, 20 June and 2 July 1907. Editors also promised that it was "worth a day's travel" simply to see a toggle press punch steel. CCDI, 2 March 1909.

20. According to the CCDI, 23 February 1914, "the less said about such matters the better." The newspaper expressed lukewarm support for a proposed smoke abatement ordinance that lingered in city council debates for more than a year before being rejected in 1911. CCDI, 21 September 1910 and 4 October 1911.

Hart took a personal interest in sales and believed that his customers should embrace his enthusiasm for engineering and expertise. He considered it a duty to teach farmers to think of the gasoline tractor as "the true secret of power efficiency in agriculture," and stressed that time savings, rather than profits, offered the tractor's main advantage over the horse. As one manager wrote in an article titled "Educating the Consumer to Use Tractors," the farmer who used a tractor anything less than one hundred days per year "detracts from [its] efficiency." In its print advertising, featuring themes of power, efficiency, and quality, the firm aimed to convince farmers to embrace "power farming." Some advertisements devoted as many column inches to describing and illustrating the factory as the tractor. In effect, the firm hoped to convince farmers that simply owning a Hart-Parr tractor would impart important values of engineering and efficiency by linking them with the perfection of Charles City's manufacturing process.<sup>21</sup>

The company also brought its message directly onto the farm. By 1908, for every eight tractors it sold, Hart-Parr employed one so-called "expert" to advise customers on how to make repairs and maximize productivity. In 1911 the firm introduced another innovation, the Hart-Parr School of Traction Farming and Traction Engineering, a series of lessons available via correspondence for potential customers and farmers who had purchased a Hart-Parr machine. Students were instructed to "study systematically and carefully. . . . do it with system. . . . do not let pleasure or other work interfere with your study hours if you can possibly avoid it." Each of the fifteen lessons included a quiz that students sent in to Charles City to be graded by staff members. Those who scored below 70 percent on any quiz were expected to try again. Whatever success this program may have had, farmers still had a difficult mechanical task in front of them: the 1912 Hart-Parr model, for instance,

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21. CCDI, 20 April 1907; C. H. Hart, "The Gas Traction Engine in Agriculture," *Gas Review* 1 (January 1908), 8-11. C. V. Hull, "Educating the Consumer to Use Tractors," *Farm Implement News* 34 (26 June 1913); Hart-Parr advertisement, *American Thresherman* 14 (January 1913), 2.

included nineteen instructions just to start the engine and twelve to stop it.<sup>22</sup>

Hart-Parr's manufacturing ethos also extended to its network of dealers and white-collar employees. Dealer conventions typically began with day-long tours of the plant and thorough lessons on the engineering ideas that lay behind specific machining operations. Meals featured dishes inspired by the factory tour, with menu items such as "Ball Bearings with Cup Grease" as the vegetable and "Graham Bread Baked by Gasoline Heat." Festivities also included role-playing; at a time when the firm was trying to drum up enthusiasm for a new line of small tractors known as the Little Devil, dealers took on roles as members of the Little Devil Order under the authority of a Hart-Parr manager posing as "His High and Satanic Majesty."<sup>23</sup> In 1916 Hart laid off several branch managers and turned to more "outside experts" to make sales calls. In the interest of streamlining this effort, the firm purchased a block of homes in Charles City to house the typists and stenographers who sent a programmatic series of six letters to prospective customers. The whole system, far more impersonal than other firms' sales strategies, was not successful.<sup>24</sup>

HART-PARR'S OPERATIONS had important ramifications for the demography and social history of Charles City. The company's continual demand for industrial workers fostered

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22. [Hart-Parr Company], *Traction Farming and Traction Engineering: A Course of Study Given by Correspondence for the Benefit of All Those Interested in the Application of Mechanical Power to Various Tasks of the Farm* (Charles City, [ca. 1912-13]); [Hart-Parr Company], *Instructions for the Operation and Care of Hart-Parr 40 B. H. P. Tractor* (Charles City, 1912); [Hart-Parr Company], *Instructions for the Operation and Care of Hart-Parr 45 and 60 B. H. P. Tractors* (Charles City, 1912).

23. CCDI, 7 January 1907; CCPEI, 20 December 1915; *Charles City Daily News* (hereafter CCDN), 19 March 1921. Such festivities clearly seem designed to solidify the agents' connections with the Charles City corporate culture. For a social history of the shaping of corporate culture in middle management, see Olivier Zunz, *Making America Corporate, 1870-1920* (Chicago, 1990).

24. A. E. Mills, "History of Hart-Parr Co., Founders of the Tractor Industry" (1959), 18, unpublished manuscript, folder 81, box 83, F. Hal Higgins Collection, Department of Special Collections, Shields Library, University of California, Davis.

the spread of the manufacturing mentality in northern Iowa. A company booklet titled "Men Wanted" boasted that the firm's commitment to system and efficiency in the manufacturing process meant that it did not need to take advantage of its employees because it could be particular in selecting its work force. According to the booklet, the company wanted "only such employees as will be interested in increasing to the highest plane, the health, beauty, temperance, morality, and general good of the place." In particular, labor recruiters sought "young married men who show by work and reputation that they are industrious, saving, temperate, and of high moral character."<sup>25</sup> They also welcomed "good, bright, farmer boys," ministers seeking supplemental income, and Iowa State College engineering students interning during the summer.<sup>26</sup> These purported goals notwithstanding, the company also hired a large number of immigrants, including natives of Austria-Hungary, Bulgaria, Russia, Italy, Mexico, and one worker from India. The most significant addition to Charles City's demography was a contingent of nearly one hundred Serbians, most of whom were natives of a small corner of Herzegovina in the Habsburg Empire.<sup>27</sup>

At Hart-Parr, housing the work force became an important element in a strategy of corporate hegemony. Insisting that "the class of men desired should not be satisfied to live in rented

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25. Hart-Parr Company, "Men Wanted," [1909], FCHS; CCDI, 23 July 1909.

26. CCDI, 3 August 1907; CCPEI, 13 June 1916 and 23 April 1919.

27. Immigration data based on a database of 1,129 employees, obtained through a study of the Records of the Selective Service System, 1917-1918, RG 163, National Archives, Southeast Branch; United States Bureau of the Census, *Census of 1920*; and newspaper sources. Hart-Parr employed a total of about 130 foreign-born workers in 1917 and 1920. Most of those from Germany and Scandinavia had arrived in Floyd County before Hart-Parr opened, whereas most of those from southern and eastern Europe arrived after 1905, and may have come to Charles City specifically to work at the plant. In the early twentieth century, nearly all Serb immigrants to the United States came from the Austro-Hungarian Empire, not from Serbia. As a result, census and Selective Service enumerators often labeled them as Austrians; at times, my analysis reflects a guess of who was Serbian, based on last name, housing patterns, and/or town of origin. Serbs from the Herzegovina region often emigrated due to declining soil fertility in their region, as well as political pressures within the Habsburg Empire. See Branko Mita Colakovic, *Yugoslav Migrations to America* (San Francisco, 1973), 21-62.

homes," the company opened its own real estate office as part of the plant expansion in 1907. Hart-Parr also initiated its own home-building program. By 1913, the company controlled nearly four hundred home lots and offered to finance employees' homes at 6 percent interest over a six-year mortgage, payable through payroll deductions.<sup>28</sup> The company's rhetoric and policies with regard to housing may have appealed to the native-born homeowners who formed the core of the Hart-Parr work force, but many workers still found their housing in the YMCA, tenement apartments, or the all-concrete apartment complex known as "The DeWop Hotel" that the firm constructed across the tracks from the plant.<sup>29</sup>

Early twentieth-century business leaders recognized that controlling workers' time was a more prudent strategy than negotiating with them on wages and benefits. Control of workers' leisure time enhanced a company's influence over its employees while simultaneously reinforcing workers' notions of masculinity and domestic hegemony.<sup>30</sup> Insisting that the city needed "amusements . . . get-at-able [*sic*] reading material . . . [a]nd plenty of sane and healthy recreation" to attract quality workers, Hart led local drives to support the Chautauqua circuit, summer recreation programs, and the YMCA.<sup>31</sup> The city's so-called "Manhood Factory," the YMCA, opened in January 1912. Its eight hundred members in 1914 reportedly made the Charles

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28. Many of these houses remain in Charles City's north-side neighborhoods. CCDI, 12 June 1907, 27 May 1909, and 5, 12, 19, and 25 April 1913. For an excellent analysis of such strategies on the national level, see Tone, *The Business of Benevolence*, 68–80.

29. The name was intended to disparagingly describe its predominantly Serbian residents. Hart's enthusiasm for concrete backfired in this case, since ice routinely crusted on the interior walls during the Iowa winters. Little remains of a second neighborhood of concrete houses that the firm constructed. From unidentified clipping, no date or source, "Aided in Hotel 'DeWop' Construction," vertical files, "Hart-Parr Co.," FCHS. See also Mills, "History of Hart-Parr Co."

30. See, for example, Tone, *The Business of Benevolence*, 72; Wayne E. Lewchuk, "Men and Monotony: Fraternalism as a Managerial Strategy at the Ford Motor Company," *Journal of Economic History* 53 (1993), 824–56; and Lisa Fine, "'Our Big Factory Family': Masculinity and Paternalism at the REO Motor Company of Lansing, Michigan," *Labor History* 34 (1993), 274–91.

31. CCDI, 1 June 1907; Otis, *Our Ellises*, 52–53.

City "Y" the largest in the nation for a town its size. With programs and sixty-eight rooms clearly designed for company employees, the facility gained a reputation as a "Hart-Parr club." The YMCA candidly revealed its efforts at social engineering in classes that focused on physical training and business and leadership skills. "Working boys" received special attention; instructors boasted that "every boy in the class has been taught the value of discipline and made to respect authority" and that "smoking, swearing, smut, etc. are fast disappearing." For its part, the company pressured its employees to contribute to the YMCA fund and permitted ministers from the YMCA to offer lunchtime sermons for workers in the factory, particularly during times of potential labor unrest.<sup>32</sup>

The "Tractor Inn" in downtown Charles City represented another component of the company's paternalistic program for its employees. A club open to Hart-Parr employees, provided they were of "good character," this three-story facility featured dormitory rooms for transient employees, billiard tables, a cafeteria, and an auditorium for speakers, debates, dances, and mock trials. The Tractor Inn also provided gym equipment and hosted weekly wrestling and boxing matches between Hart-Parr employees and itinerant challengers, permitting workers to vent their aggressiveness against punching bags and out-of-towners rather than management. The complex offered programs for employees' children, too; ceremonies were held to initiate the so-called Unfinished Iron Castings into the mysteries of the "Little Devil Order."<sup>33</sup>

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32. CDDP, 29 June 1916; CCPEI, 9 January 1915, 8 December 1917, 19 March 1919, 6 January 1920. Five hundred sixty-six Hart-Parr workers, or about 30 percent of the work force, contributed to the YMCA fund in 1917. CCPEI, 19 November 1917. See also Clyde Griffen, "Preface: Towards a Future History of the YMCA," in *Men and Women Adrift: The YMCA and the YWCA in the City*, ed. Nina Mjagkij and Margaret Spratt (New York, 1997); and Warren, "Evangelical Paternalism and Divided Workers," 331-33. The national YMCA apparently had no record of the existence of the Charles City "Y." It must have been locally organized with no formal affiliation with the national organization. Kautz Family YMCA Archives, University of Minnesota, St. Paul.

33. "'Tractor Inn': A Big, New Club House for Hart-Parr Folks," *Hart-Parr Field and Factory* 1 (December 1916), 5; CCPEI, 18 November and 16 December 1916, 3 January 1917.

Hart-Parr was not above using intimidation to achieve its goals. Discipline on the factory floor was enforced by Hart himself. When he walked down the line, even a worker who was related to Hart knew not to say hello. The same employee recalled that after the plant converted to wartime production, a husky man armed with a pistol strolled the line to ensure discipline and deter espionage.<sup>34</sup>

Most of the company's policies, however, were couched in language designed to persuade workers to embrace its corporate culture. Consider the company's holiday and vacation policies, for example. Employees were encouraged to take one to two weeks of unpaid vacation each year, but only four holidays—also unpaid—were approved because the company believed "that nation is most degenerate which has the most holidays." Periodically, the company announced sudden "vacations"—unexpected reductions in the hourly workers' schedule, justified in terms of allowing workers to get extra sleep, to spend more time with their families, or to "get closer to nature."<sup>35</sup>

Like other industrial concerns interested in maximizing productivity, Hart-Parr used benefit programs to secure employees' loyalty. The Hart-Parr Relief Organization, for instance, offered long-term employee benefits in the case of accident or sickness. Funded through payroll deductions, with the company contributing only the administrative costs, the plan, like similar programs elsewhere in the country, promised specified benefits—three times one's weekly salary for the loss of a finger, fifty times one's salary for the loss of one foot and one hand, and so on—provided that the injuries were not attributed to "improper or immoral conduct, or . . . the use of intoxicating liquors." The program also limited the company's liability in the case of serious accident.<sup>36</sup>

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34. Gilluly, "He Realized a Dream," chap. 56, pp. 2-5.

35. Hart-Parr Company, "Men Wanted"; CCIDI, 18 May 1907; CCPEI, 19 June 1916 and 10 April 1919.

36. "Constitution of the Hart-Parr Relief Association" (n.d.); "Employees'—miscellaneous," vertical files, FCHS. Although it generated considerable publicity, it is unlikely that many workers joined the plan, and the company eventually dropped this benefit, perhaps during World War I. In 1919, 285 Hart-Parr employees (41 percent) were members of fraternal organizations, which used accident and life insurance as one of their main selling points.

Many Hart-Parr workers learned to embrace the ethos of industrialism even as they endured a loud, dirty, and noxious work environment. Workers purportedly accepted these dangers as the price of their job, and were likely to boast of chewing tobacco dipped in cylinder oil or working with greasy hands as a "badge of honor."<sup>37</sup> Nonetheless, about twenty workers suffered injuries each day. Although most accidents resulted in minor cuts, scrapes, or bits of emery or steel in the eyes, newspaper notices were full of cases of serious workplace injuries: Jesse Smith's skull was crushed when a pin on a hydraulic press broke; John Yancey's skin came off his body "in shreds" after a naphtha explosion; Joe Miller had a leg amputated after it was crushed by a falling steel beam; and F. B. Tubbs was badly burned when a coworker tossed a match into the pail of gasoline in which Tubbs was washing his hands. Yet workplace safety did not emerge as a serious issue during the Hart-Parr era, and the firm was able to defuse public concerns by initiating safety campaigns and establishing its own clinic with a nurse employed full-time at the plant site after 1919.<sup>38</sup>

Perhaps one Charles City family symbolizes the hardships and opportunities that Hart-Parr, like other American industrial concerns, offered in the early twentieth century. Luka ("Louis") Micich, a native of "Austrian" Herzegovina, came to the United States in about 1903; his wife, whom he met for the first time on the docks of New York City through an arranged marriage, arrived a few years later. After a stint in the wire-making industry

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Based on an untitled list of Hart-Parr employees by fraternal affiliation, c. 1919, in vertical files, FCHS. See also C. H. Parr, "History of the Hart-Parr Company"; Louis Boettiger, *Employee Welfare Work: A Critical and Historical Study* (New York, 1923); and, for a related case in Iowa's industrial history, Wilson J. Warren, "The Welfare Capitalism of John Morrell and Company, 1922-1937," *Annals of Iowa* 47 (1984), 497-517.

37. CCDI, 25 October, 27 July, 3 August, and 18 May 1907; CCPEI, 9 September 1919.

38. Notable accidents are described in *Floyd County Advocate*, 27 August 1907; CCDI, 1 April, 24 June, and 20 July 1909, 22 September 1910, and 11 October 1917; *Charles City Evening Intelligencer* (hereafter CCEI), 23 February, 8 and 11 June, 9 July, and 23 November 1915; CCPEI, 1 March, 2 September, 10 and 20 October, and 18 December 1916, 9 January 1918, and 10 July 1919. The Hart-Parr clinic and its nurse received attention in CCPEI, 24 February, 8 April, and 23 August 1919.

in DeKalb, Illinois, the Micich family came to Charles City as operations expanded during World War I. Micich worked intermittently for twenty-two years under the harsh conditions of the Hart-Parr (and, later, Oliver) foundry and shop floor, before succumbing to silicosis and dying in 1941. Circumstances improved for the next generation, however. Born in one of Hart-Parr's tiny cement homes at the hands of a Serbian midwife, the family's children stayed in Charles City through the rise and fall of the plant; local union support enabled one son, Mike Micich, to be elected mayor of Charles City in 1952.<sup>39</sup>

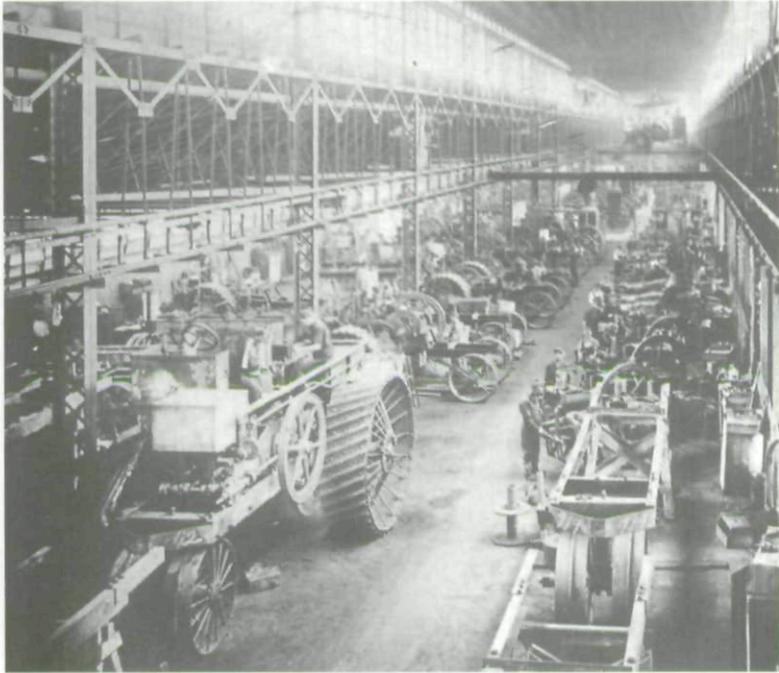
CHARLES HART'S SYSTEM of rewards and punishments was designed to mold a work force committed to the company's goals. Health benefits to long-term workers fostered a gendered attitude of employees' responsibility to remain the family breadwinner. The promotion of housing facilities for both long-term and transient employees prepared the company for fluctuations in labor demands. The encouragement of athletics and other entertainment circumscribed workers' choices in the only hours of the day left to their own discretion. And the attention that Hart-Parr's welfare programs generated played a significant role in establishing a positive image for the firm and for the community. But other aspects of Hart-Parr's manufacturing processes also attracted attention from the nation's industrial and management press in the years before World War I.

The comments of one business journalist typified the general admiration of the firm's efficiency, lauding the firm's "smooth machinelike action" and its "neat and harmonious plant," and describing Hart-Parr's "greatest efficiency [as its] true knowledge of costs and business upon the surest and safest lines."<sup>40</sup> The company's claim that "the matter of interchange-

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39. Information on the Micich family comes from Lozo Micich, interview with author, Charles City, Iowa, 5 July 1998, and Helen Webster, interview with author, Charles City, Iowa, 4 July 1998; Records of the Selective Service System, 1918; CCDP, 17 November 1918; *Charles City Press* (hereafter CCP), 23 September 1941; and Delbert Volkes, interview, 15 June 1982, Iowa Labor History Oral Project, State Historical Society of Iowa. I would like to thank Mark Smith and Mary Bennett for permission to use the Volkes interview.

40. "Iowa's Great Tractor Factory," 11.



*The factory assembly area in the Charles City Hart-Parr plant, c. 1915.  
Photo courtesy FCHS.*

ability is a very live question" also attracted attention, as the company boasted that virtually all tractor parts were fashioned at the Hart-Parr plant. Like Ford, Hart designed several of his own "ingenious" special machine tools, most driven by individual electric motors, permitting the flexible and rational arrangement of men and machines.<sup>41</sup> Hart-Parr's admirers also commented on the efficient telephone and communication systems. Since many of the employees who hauled materials throughout the plant were "illiterate" immigrants, the company designed a numerical code to deliver instructions. Reportedly, "even the dullest" truckers could do their jobs with few mistakes. The large planning board that governed the use of ma-

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41. Hart-Parr Company, *Gasoline Engines: Traction, Portable, Stationary* (Charles City, 1906), folder 84, box 83, Higgins Collection.

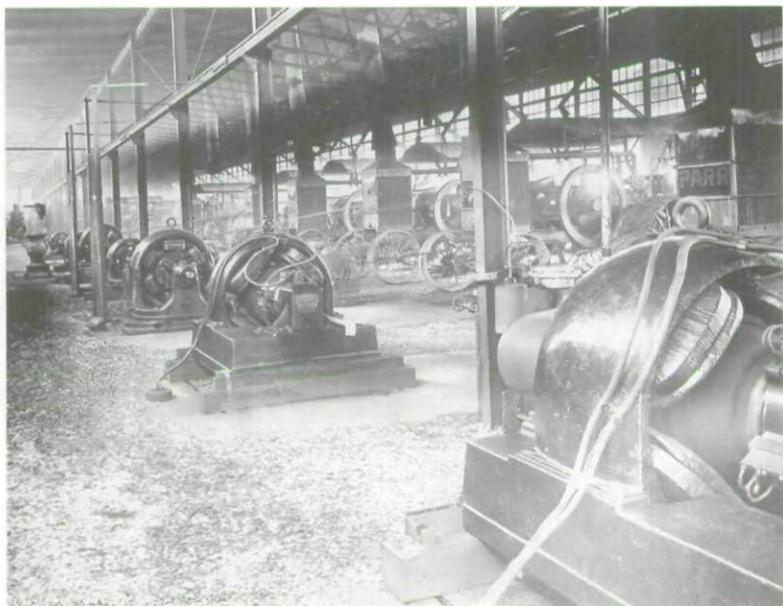
chine tools also impressed observers. Using a complicated system of colored wooden blocks, each color designating a specific machine tool and the length of each block designating the length of time that the job required, planners could schedule well in advance the optimal use of each machine tool.<sup>42</sup> A similar technique using colored tacks permitted managers to observe the status and supply of each part needed for final assembly on the erecting floor without the "difficult and tiresome" method of "turning the pages of old-fashioned records."<sup>43</sup> Business writers also respected Hart's shrewdness in founding the Charles City Western Railway, an interurban line that both linked the plant with additional competitors for its freight business and served as an important commuter line for Hart-Parr employees.<sup>44</sup>

The plant's electricity generating system was perhaps the most impressive and ominous indication of Hart's enthusiasm for mechanization. As part of its advertised promise that Hart-Parr tested each tractor engine before it left the plant, workers attached each engine for twenty to forty hours to one of ten direct-current electric generators that provided the plant's needed power. These continuously filled the work space inside the plant with the smell, noise, and smoke of ten operating internal combustion engines, prompting one writer to comment that the "majestic roar of Niagara is low music" in comparison.

42. "Efficiency Management in a Gas Tractor Plant," *Iron Trade Review* 52 (1913), 49-60; Wooley, "Secrets of Business Success," 350. Hart-Parr used similar systems of blocks and boards to keep inventory and schedule operations in the foundry.

43. W. E. Dodge, "Talking with Tacks," *Factory* 13 (May 1919), 931-33.

44. Like Andrew Carnegie, John Rockefeller, and others, Hart understood that expanding the factory's transportation links would serve his aims of labor and market control. Although two rail lines, the Illinois Central and the Chicago, Milwaukee & St. Paul, already served the plant site, Hart determined that a link with the Chicago, Rock Island and Pacific Railroad, which passed nearby, would create a third competitor to bid for his business. "A Freight and Passenger Railway Using Gasoline Motor Cars," *Engineering Record* 62 (1910), 291-92; Norman Carlson, ed., *Iowa Trolleys* (Bulletin 114 of the Central Railfans Association, [n.d.]), 251. Hart's plan to use gasoline-powered locomotives proved to be unprofitable, and the railway converted to electric power in 1915. As in other cases, Hart's insistence on innovative engineering solutions often backfired. "Electrification of Charles City Western Ry.," *Electric Traction* 11 (December 1915), 743-48.



*The tractor testing line at the Hart-Parr plant, c. 1915. Photo courtesy FCHS.*

Supposedly, Hart himself examined each test result before approving the painting, final assembly, and shipment.<sup>45</sup>

Outside observers also praised Hart's strategies of shop floor management. Reflecting a commitment to efficient production strategies taught in engineering school, as well as lessons in systematic management taught at the Burlington business school, Hart-Parr had procedures and paperwork that monitored virtually every step of shop practice. The payment system, for example, differed from the piece-rate system common at other plants, since tasks were rated according to the total cost budgeted rather than total time. Foremen recorded each machinist's work on a form and compared the productivity with that of the company norm. Under this "modified day work

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45. Wooley, "Secrets of Business Success," 347; "Efficiency Management in a Gas Tractor Plant," 49-60; Porter, "Players in the Great Game: Charles W. Hart," 408-10; "Iowa's Great Tractor Factory," 16.

system," workers who regularly beat the rated cost received increased pay. This provided incentive and immediate rewards, "without the petty tyranny of foremen that sometimes dominates shop floors." Such principles taught foremen to measure employees' productivity against rigid standards of efficiency rather than ones that permitted flexibility or negotiation. In this era, Hart-Parr was admired for a system in which "the personal question does not enter into the question of the man's advancement; he is judged entirely by his actual record."<sup>46</sup>

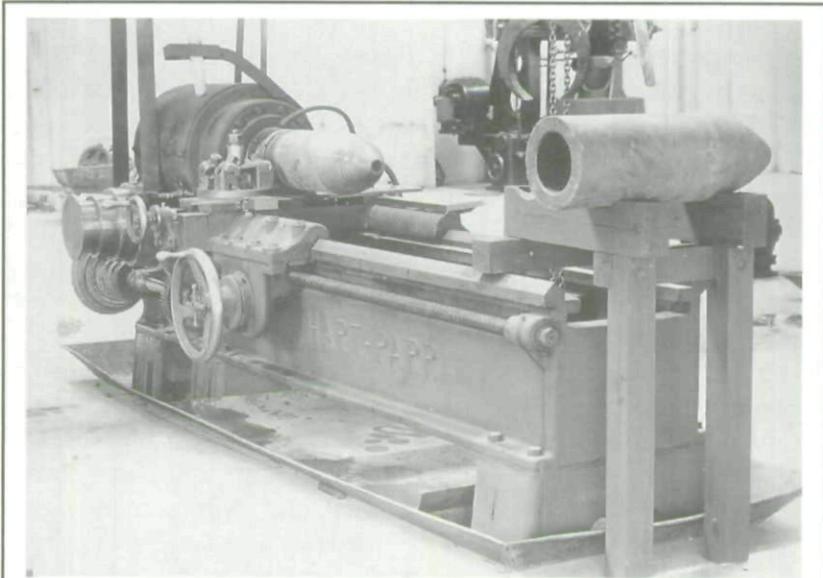
HART-PARR'S IMPRESSIVE STATURE both locally and nationally declined considerably after 1914 due to a series of poor decisions and unfortunate breaks. First, World War I hostilities devastated the company's foreign markets.<sup>47</sup> In response to declining tractor sales, the company looked to munitions contracts as an alternative. Hart spent several months in the eastern United States and Canada studying other shops and munitions projects before presenting J. P. Morgan and Company with a \$1.5 million bid to manufacture 9.2-inch artillery shells for the British government. Morgan's agents were reportedly impressed with Hart's "large knowledge of manufacturing methods, shop management and efficiency," and Hart-Parr beat out one hundred firms to receive a contract in October 1915.<sup>48</sup>

Yet this triumph of Hart-Parr's reputation in manufacturing and engineering did not ensure future success. To fulfill the contract, the company converted the tractor plant into an arms factory. Convinced that the machinery necessary for the shell project did not exist on the market, Hart designed a unique 1,200-ton-capacity forge press and dozens of precision special-purpose lathes. The project also required new drill presses, a new steel foundry, and a new ventilation system, and demanded that the factory become one of the largest copper casting fa-

46. "Efficiency Management in a Gas Tractor Plant," 51.

47. Hart-Parr's agent in Russia hurried home to avoid German advances. With \$100,000 left in unpaid orders, however, the company continued to accept risky orders from Russia well into 1916. *CCPEI*, 7 July 1916.

48. *Charles City Semi-Weekly News-Intelligencer*, 1 October 1915; W. E. Dodge, "An Iowa Factory's Response to Its Country's Call" (Charles City, n.d. [ca. 1919]), pamphlet in the R. C. Roling Collection, FCHS.



*One of the automatic lathes specially designed in Charles City for the manufacture of World War One artillery shells. Photo courtesy FCHS.*

cilities in the country. These short-term changes cost the firm more than a half-million dollars. Wartime circumstances also increased pressure on the local labor supply, and workers had some difficulty meeting the precision standards that the British government demanded.<sup>49</sup>

In another response to declining markets and competition in the marketplace, Hart-Parr reversed its traditional emphasis on heavy, powerful machinery built for the large farms of the Great Plains by reluctantly entering the small tractor market in 1915. By that time, many American tractor manufacturers, most notably Henry Ford, had recognized that wartime pressures on food and labor markets had created a large demand for tractors suitable for smaller farms in the East and Midwest. The "Little Devil" was Hart-Parr's entry in the field. According to a com-

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49. J. E. Cade, "How Hart-Parr Forgings Are Made in Their New 1200-Ton Press," *Hart-Parr Field and Factory* 2 (January 1917), 3; L. M. Hansen, "How Hart-Parr Makes Tractor Steel," *Hart-Parr Field and Factory* 2 (January 1917), 2; *CCPEI*, 24 and 25 November 1915, 23 June 1916. According to the author of the Ellis family history, Hart's arrogance caused British officials to be extra demanding during their inspections of shell quality. Otis, *Our Ellises*, 73.

pany historian, the Little Devil's design "was simplicity itself," but it was brought to the market without adequate testing. Due to its sensitivity to variations in temperature and humidity, the machine did not operate reliably. Its poor balance was especially problematic, and at times the front wheels lifted entirely off the ground while the back wheels buried themselves deeper into the soil. The company's initial solution was to add two hundred pounds of cement to weigh down the front wheels, but that compromised steering. Moreover, its marketing strategy failed. Hart-Parr used a "mystery advertising" approach, printing up thousands of postcards with nothing on them but "THE LITTLE DEVIL IS COMING" in red type. The mailing had no return address, and the postmark did not reveal the city. The strategy successfully generated attention, but it sometimes was misinterpreted. For instance, one Manitoba customer, separated from his wife, saw the cards as a veiled threat of revenge from his wife's family and returned to his wife. Hart himself did not seem to believe in the product. Even as the firm was promoting its "Little Devil," Hart publicly challenged the whole concept of small tractors. He predicted that the future belonged to the one-hundred-horsepower models, and urged farmers to delay buying a tractor until they could purchase a machine able to "apply the greatest power to each acre." By 1917, Hart-Parr had dropped the whole line. Although the company paid out liberal allowances to buy models back from owners, the episode dramatically damaged the company's reputation.<sup>50</sup>

Matters came to a head during the winter of 1916-17. By that time, Charles Hart's relationship with many prominent citizens in Charles City had decayed. Some of his actions created anxiety and mounting pressure for change. In a speech celebrating the opening of the Tractor Inn, for instance, Hart charged that the city council was "entirely incapable" of wise and enterprising government. "Our company, as usual," he said, "has had to do directly that which the town enterprise had neither the foresight or [*sic*] the courage to undertake."<sup>51</sup>

50. Mills, "History of Hart-Parr Co.,"; C. W. Hart, "Is the Little Tractor a Failure?" *Farm Implement News* 37 (13 April 1916), 20-21, 25.

51. CCPEI, 29 November 1916.

In those tense times, Charles City banker A. E. Ellis, growing increasingly frustrated with the firm's demand for capital, visited the plant almost daily. Holding \$1.5 million in promissory notes, and with the threat of a depositors' run on the bank in the air, Hart-Parr's financial backers met behind closed curtains in the Ellis home to seek a solution. Even more ominous, the British government canceled its order in March 1917, just as production reached full capacity. With 90 percent of the plant devoted to wartime production, the cancellation prompted the firm's financiers to manipulate proxy voting, allowing a group of stockholders from Chicago and Philadelphia to seize control of the company. Following a May 1917 board meeting, the firm announced Charles Hart's resignation. Walter Dray, a 28-year-old MIT-trained manager, took over daily operations. That day, the Tractor Inn closed its doors, with residents evicted the next morning. Within weeks, virtually all of the old management at Hart-Parr had announced their resignations.<sup>52</sup>

The local newspaper welcomed the changing of the guard, suggesting that Hart desperately needed "a rest," and hoping that the new management would make the plant "more than a thing of iron and steel."<sup>53</sup> Yet the newly configured Hart-Parr Company faced a difficult transition period. Upon the congres-

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52. Otis, *Our Ellises*, 69-73; C. H. Parr, "History of the Hart-Parr Company"; CCPEI, 28 April and 2 and 4 May 1917; CC DI, 3 May 1917; Mills, "History of Hart-Parr Co., Founders of the Tractor Industry." The British government feared that suppliers would soon be concentrating on the impending United States war effort. Sir L. Worthington-Evans to Foreign Office, n.d. [ca. 8 February 1917], "Memos on the Importance of American Supplies of Various Munitions," DMRS, Mun 4-3204, folder 453, Public Record Office, London. Many thanks to Grace Fleming for securing these documents. In view of steel shortages and other wartime issues, the U.S. government was not concerned with Hart-Parr's predicament. When the British canceled the contracts, Hart-Parr's production was second-smallest among the eight American plants producing 9.2-inch shells. Edward Reilly Stettinius to Brig. Gen. William Crozier, 7 April 1917, War Department folder, box 82, Papers of Edward Reilly Stettinius Sr., Acc. #2723, Special Collections Department, University of Virginia Library, Charlottesville.

53. CC DI, 10 May 1917. Soon after his resignation, Hart left for an eastern vacation in his seven-passenger Willys-Knight sedan, before moving to a ranch in Montana, where he entered the oil business. CC DP, 4 May 1917; CCP, 29 April 1919 and 15 March 1937, Gilluly, "He Realized a Dream," chaps. 39-40; Mills, "History of Hart-Parr Co.," 19.

sional declaration of war in 1917, Hart-Parr gained several munitions contracts with the United States government. The company produced a number of "anti-kaiser devices," including steering and hoisting engines, steel wheels for military trucks, and navy gun mounts.<sup>54</sup> Still, there were additional hurdles. Unfortunately, the American military requested 9.5-inch shells; the lathes built for Britain's 9.2-inch shells could not be converted without tremendous cost.<sup>55</sup> Curiously, fifty of those lathes were destroyed in a two-hundred-thousand-dollar fire just weeks after the American government rejected the firm's efforts to secure a contract to produce 9.5-inch shells. Hart-Parr was insured.<sup>56</sup>

THE TWO YEARS following the armistice were among the most significant in the firm's early history. Sales soared during the brief postwar agricultural boom, requiring a rapid expansion of the work force. Hart-Parr did not escape the widespread labor militancy in postwar America, however. In February and March 1919, thirty-five machinists and helpers presented the company with demands for increased wages and attempted to form a union associated with the International Association of Machinists. Managers promptly fired all thirty-five, replaced them with returning veterans, and refused to reinstate them even when pressured to do so by representatives from the Department of Labor.<sup>57</sup>

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54. Dodge, "An Iowa Factory's Response to Its Country's Call"; *CCPEI*, 1 and 27 August 1917; Edward Mott Wooley, "Winning the War with Motor Vehicles," *Collier's* (4 January 1919), 15, 30, 63-65; and "Making Quad Wheels in a Tractor Factory," *The Foundry* 47 (1 April 1919), 157-61.

55. Herbert Dillon to War Department, 13 April 1917; Adelbert E. Ellis to Hon. Gilbert N. Haugen, 17 April 1917; Munitions Standards Board to Donald E. Davis, 19 May 1917, all in Record Group 61, War Industries Board, Chairman's Office—General Correspondence, National Archives, Washington, DC.

56. The newspaper hinted at German espionage in this case. I have not determined the true cause of the blaze. *CCPEI*, 10 October 1917; *CCDI*, 11 October 1917; "Fire at Hart-Parr Plant," *Farm Implement News* 38 (11 October 1917).

57. The federal mediator's report plainly concludes, "Undoubtedly, in my judgement, the men were layed [*sic*] off because they were starting a union. However, there wasn't anything I could do in the matter." In contrast, under the headline "Settlement of the Labor Question," the local newspaper reported that the mediator found "nothing to conciliate" and insisted that the matter was dropped. File 170-198, box 11, E11, RG 280, Records of the Fed-

The episode provoked Hart-Parr to respond with a number of changes. On the very day that the labor issue hit the newspaper, the company initiated a series of informal, after-hours "smokers" with employees, meetings that may have had no real purpose other than to permit workers to vent their grievances and to hear management's views. New corporate welfare programs also began, including a renewed emphasis on safety issues, new home-building projects, the opening of the Hart-Parr dispensary, and the end of the Saturday afternoon shift, offering workers the benefit of free bus service to the Wildwood golf course.<sup>58</sup>

A second stockholders' revolt occurred in December 1919, when local investors purchased the controlling stock. A new management team led by Charles City banker C. D. Ellis—Hart's original financier—and his son Melvin W. Ellis took control of the firm; Walter Dray suddenly resigned as general manager. The new board quickly brought another round of changes to Hart-Parr operations. They purchased Charles Hart's remaining shares in both Hart-Parr and the Charles City Western Railway, declared the firm's first dividends since 1914, and created a new profit-sharing plan for salaried employees who had been with the firm for at least two years. The eligibility requirement in effect redefined what made a worker a successful breadwinner: longevity gained precedence over mechanical skill. Inside the plant, engineers replaced the loud and smoky tractor testing method with a new system that shifted inspection duties to foremen working the day shift. The new managers also announced that field "experts" would no longer perform routine service calls for customers; instead, the company began to emphasize its arrangements with tractor schools that would replace correspondence courses and train farmers to conduct their own repairs. The title of the company's in-house magazine also reflected the new approach: the new magazine, *Hart-Parrtners*, replaced the journal *Field and Factory*

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eral Mediation and Conciliation Service, National Archives II, College Park, MD; CCPEI, 6 March 1919. Labor issues are also discussed in CCPEI, 24 and 28 February, 1, 3, 5, and 18 March, and 28 April 1919.

58. CCPEI, 8 and 10 April and 3 May 1919.

produced under Hart's tenure.<sup>59</sup> A new column in the local newspaper that featured brief biographies of employees—mainly managers and foremen—further seemed to signal a departure from the previous emphasis on labor management and control. Similarly, a new commitment to family-oriented company picnics replaced the masculinity and individualism of the company entertainment that had prevailed during Hart's tenure.<sup>60</sup> In general, these initiatives suggest that the new management team replaced the ethos of efficiency and engineering with a new emphasis on building relationships with white-collar employees, dealers, and customers.

Despite the impressive boom in sales in 1919 and into the next year, tractor sales began to plummet nationwide by mid-1920. The economic crisis of 1920–21, one of the most intense upheavals in American economic history, lingered in the Midwest for several additional years. The agricultural depression devastated the tractor industry. Dozens of tractor firms failed altogether in the early 1920s, and for several years, only the small and inexpensive Fordson tractor increased its sales.<sup>61</sup> Unfortu-

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59. CCPEI, 1, 2, and 18 December 1919, 3 and 31 January, 12 April, and 14 May 1920; "New Hart-Parr Manager," *Farm Implement News* 40 (11 December 1919), 23.

60. Allen B. Howes, hired as the new employment manager in 1919, boasted of Hart-Parr's selective hiring strategies. Howes claimed that company "employees consist of 'white men,' not a class of men who are going to be a source of trouble." CCPEI, 19 August 1919. In any case, the declining labor force and changes in immigration patterns meant that few new immigrants came to work at Hart-Parr. The column of biographies, "We Have with Us Today," appeared in CCPEI in numerous issues, August–November 1919.

61. Fordson had 25 percent of the market by 1919, and nearly 75 percent of the market by the mid-1920s. Ford R. Bryan, *Beyond the Model T: The Other Ventures of Henry Ford* (Detroit, 1990), 15–23; Reynold M. Wik, *Henry Ford and Grass-Roots America* (Ann Arbor, MI, 1972); Hurt, *Agricultural Technology in the Twentieth Century*, 16–17; and G. B. Gunlogson, "What's Ahead for the Tractor Companies," unpublished report, April 1930, R. C. Roling Papers, FCHS. After World War I, journalists transferred their admiration for Hart-Parr's tractor manufacturing methods to the Fordson plant. See J. Edward Schipper, "Ford Tractor Production Plan Unchanged in Growth," *Automotive Industries* 38 (1918), 621–24, 662; J. Edward Schipper, "Fordson Tractor Assembly Wholly a Progressive Plan," *ibid.* 40 (1919), 895–901, 930, and 960–66; and John H. Van Deventer, "Ford Principles and Practice at River Rouge," part 11, "Machining Tractor Parts and Assembling Ford Tractors," *Industrial Management* 56 (July 1923), 19–27.

nately for Hart-Parr, its tractors no longer served the typical tractor customer; its heavy and powerful machine, suitable for virgin soils in the wheat belt, was inappropriate for the row crops of smaller farmers in the Midwest. The cumulative problems meant that Hart-Parr sales fell 90 percent between 1920 and 1924.<sup>62</sup>

Declining sales demanded new marketing strategies and a more flexible approach to manufacturing. In rather desperate attempts to compete with Fordson's low prices, Hart-Parr slashed tractor prices, guaranteed customers a refund in case of price reductions, and promised to underwrite loans that local banks made to Hart-Parr customers.<sup>63</sup> After weeks of satirizing rumors of an impending plant shutdown, the factory did indeed close in October for an "inventory" that, for many employees, lasted forever. In the midst of these crises, the company sponsored a "hard-timers" party on Halloween—with no white-collar workers permitted—a somewhat duplicitous response to workers' frustrations.<sup>64</sup> Production records reveal that the company deliberately depleted inventories and abandoned any remnant of the old strategy of high-volume production. Instead, the firm shifted to batch production, manufacturing goods in small lots in response to specific customer orders. In the two fiscal years spanning November 1921 to November 1923, there were forty-four weeks in which the company manufactured no thirty-horsepower tractors—Hart-Parr's best-selling model.<sup>65</sup> The factory began to accept orders on a custom basis. Then, in the late 1920s, the company embarked on another variation in manufacturing by alternating three weeks of producing its most popular models with one

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62. The decline in sales is reported in an unpublished Hart-Parr sales manual [ca. 1928], folder 83, box 85, Higgins Collection. As sales collapsed during the agricultural depression of the early 1920s, the company slashed prices 38 to 43 percent on the main models. "Reduces Tractor Prices," *Farm Implement News* 43 (8 June 1922), 9.

63. CCP, 29 September and 2 October 1920; TAWN, 6 June 1922.

64. CCP, 18 and 28 October and 5 November 1920, 30 December 1921.

65. The twenty-horsepower tractor fared even worse; in 38 weeks of the fiscal year 1921–22 and 25 weeks of fiscal year 1922–23, the plant produced not one H-P 20. 1921–22 and 1922–23 Production Records, R. C. Roling Collection, FCHS. Another plant shutdown is mentioned in CCDN, 5 November 1920.

week of manufacturing its less popular model.<sup>66</sup> The firm's new emphasis on outsourcing work for the tractor's component parts points to another sharp contrast with the past. Whereas promoters in the 1910s stressed the quality of Hart-Parr engineering, boasting that virtually all component parts were manufactured in Charles City, advertisements of the 1920s often stressed the quality and name-brand reputation of its suppliers.<sup>67</sup> Unable to compete successfully with Ford and Fordism, Hart-Parr recast its approach to manufacturing and marketing.

The firm's renewed commitment to advertising and sales also suggests that Hart-Parr was looking for a niche as a batch rather than a mass producer. Dave Darrah, manager of sales promotion, complained that previous tractor sales campaigns put excessive emphasis on horsepower, engineering, and the particular qualities of specific machines and brands. Darrah's approach was to introduce dealers to the Hart-Parr "system of sales."<sup>68</sup> Recognizing that many farmers remained convinced that horse teams offered advantages in terms of cost and manure production, Darrah's strategy was to sell the tractor idea in general. In the new marketing scheme, old definitions of expertise were turned on their head: for example, one advertisement depicted a farmer instructing a Hart-Parr engineer how to design a tractor. Marketers continued to mention the power of Hart-Parr tractors, but placed a new emphasis on their lighter weight, ease of operation, and the sheet metal that completely enclosed the motor and hid it from view.<sup>69</sup> Hart-Parr also emphasized its tractors' compatibility with implements produced by other firms, and Darrah urged a cooperative approach to farm machinery advertising through industry associations such

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66. 1928-29 Production Records, R. C. Roling Collection, FCHS.

67. "Equipment Used on Hart-Parr Tractors," *Farm Implement News* 46 (12 February 1925), 26-38; "Iowa's Great Tractor Factory," 14.

68. "Hart-Parr Conventions," *Farm Implement News* 42 (20 January 1921), 15.

69. "Hart-Parr 1923 Models," *Farm Implement News* 44 (1 February 1923), 22; "Detailed Changes Made in Hart-Parr Tractors," *Automotive Industries* 48 (15 February 1923), 318; Hart-Parr advertisement, *Southern Ruralist* 29 (15 March 1923), 666. In contrast, Hart-Parr tractors designed before World War I left many gears, belts, and parts uncovered.



# I Chose the Tractor Built by the Farmers

Hart-Parr Company knows that a tractor that works all right on the factory floor may act differently when it is hitched to three plows, cutting their way through mother earth. They know that conditions vary in different sections, and they have built the Hart-Parr 30 to meet the actual conditions. They have done this by getting the farmers' viewpoints.

The Hart-Parr chief engineer and assistants travel throughout the farming communities of all America, making notes, incorporating new ideas, asking advice, watching the Hart-Parr 30 perform in the field under all conditions. RESULT: the Hart-Parr 30 is a **TRACTOR BUILT BY THE FARMERS**, through the constructive brain of one of the nation's foremost tractor engineers.

The most important thing that the farmers want is **POWER**, and the Engineers work into the construction of the Hart-Parr 30 every practical engineering device to accomplish this end.

Accessibility to various parts of the Hart-Parr 30 is another feature much appreciated by tractor users; the convenience of the belt pulley—the fact that the Hart-Parr 30 burns kerosene as successfully as the other tractors burn gasoline—abundant power for three plows—the solid cast steel frame—are all details incorporated because the farmer insisted upon them—

When you hear a Hart-Parr owner say, "I chose a tractor built by farmers"—you know it's true.

The Hart-Parr 30 is a tractor built for the farmer, by the farmer.



Many of the old Hart-Parr's built proved the value of the belt pulley, still in use today. The great popularity of all tractors was a Hart-Parr built in 1911.

**Greatest Tractor Test of All Time**  
Held by Ohio State University, July-Aug. 1919

TRACTOR	Horse Power			Fuel Consumption (Gals. Per Hour)			Time (Hours)		
	1	2	3	1	2	3	1	2	3
HART-PARR	12.5	17.5	22.5	1.2	1.5	1.8	12	10	8
John Deere	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
Caterpillar	12.5	17.5	22.5	1.8	2.2	2.6	8	6	4
International	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
McCormick	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
Case	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
Oliver	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
Ford	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
Hoover	12.5	17.5	22.5	1.5	1.8	2.2	10	8	6
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Oliver	12.5	17.5	22.5	1.5	1.8	2.2	10		

as the National Institute of Power Farming.<sup>70</sup> As one Hart-Parr consultant frankly put it, tractor manufacturers needed to recognize that "salability," rather than the quality of the product, was the key to overcoming farmers' reluctance.<sup>71</sup>

The company's relationship with its sales force also changed significantly in the 1920s. Shifting from a system of agents who contacted the company with news of prospects, the new system relied on dealers committed to the Hart-Parr brand. Salesmen were taught that the firm's founders were "two farmer boys"—overlooking their engineering talents and training—and that Hart-Parr tractors "are built for the man who is going to use them—not for the 'book learned' engineer."<sup>72</sup>

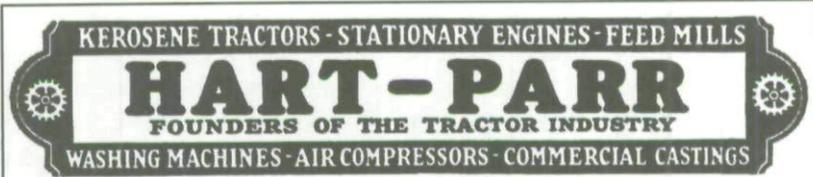
The evolution of the company logo further illustrates Hart-Parr's metamorphosis. In 1916 the company relied on the simple slogan, "Oil Tractor Specialists." A 1920 logo demonstrated the firm's commitment to its traditional niche as a manufacturer of large and powerful tractors; the logo's copy proudly boasted "Abundant Power for Three Plows. Weighs 5158 Lbs." Similarly, in a 1922 advertisement boasting that the firm had "no side lines," the logo's slogan declared, "powerful sturdy kerosene tractors; founders of the tractor industry." The new corporate identity of 1924 revealed Hart-Parr's sudden and

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70. Dave E. Darrah, "Selling the Power Farming Idea," *Farm Implement News* 44 (15 February 1923), 14–16; Dave E. Darrah, "The Merits of Tractor Power on the Farm," published text of a radio address (Charles City, 1925), pamphlet in collections of the State Historical Society of Iowa, Iowa City.

71. Gunlogson, "What's Ahead for Tractor Companies?" 20–21. Hart-Parr's shift from marketing its product on the basis of mechanical qualities to pulling sales from customers by creating a perceived need reflected a common trend in the decade after World War I. See Arthur J. Kuhn, *GM Passes Ford, 1918–1938: Designing the General Motors Performance-Control System* (University Park, PA, 1968); Roland Marchand, *Advertising the American Dream: Making Way for Modernity, 1920–1940* (Berkeley, CA, 1985); and Scranton, *Endless Novelty*.

72. Mills, "History of Hart-Parr Co.," 19–23; Hart-Parr advertisement, *Farm Implement News* 45 (6 March 1924), 36; 1928 Sales Manual, section 6. The shift to a more cordial relationship with dealers parallels similar developments in the auto industry, where Ford's model of treating dealers as mere company employees was in trouble by the mid-1920s. See Thomas A. Dicke, *Franchising in America: The Development of a Business Method, 1840–1980* (Chapel Hill, NC, 1992).



Compare this 1924 logo with the one from 1920 at the bottom of the advertisement reprinted on page 367. From *Farm Implement News*, 25 December 1924.

enthusiastic embrace of a new strategy of diversification.<sup>73</sup> Listing the firm's complete line of "kerosene tractors, stationary engines, feed mills, washing machines, air compressors, and commercial castings," the slogan correlated with President Melvin Ellis's admission that wartime munitions work had led to indebtedness, and that the company's experiment with the Little Devil tractor had been "a horrible failure."<sup>74</sup> While the efforts to make Charles City "the grey iron and semi-steel casting center of Iowa" benefited the company over the long term, the strategy to reintroduce stationary engines and add lines of air compressors, feed grinders, and washing machines did not succeed in markets that were just as competitive as the tractor sector.<sup>75</sup>

These maneuvers notwithstanding, the company rebounded only when the agricultural economy recovered modestly in the mid-1920s. In 1925, the company recorded dramatic sales increases that impressed agricultural implement dealers around the Midwest. After years of "sales resistance," Hart-Parr dealers in Illinois sold 150 tractors in the dead of winter 1924-25.<sup>76</sup> A

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73. *Thresherman's Review and Power Farming* 24 (May 1915), 4; CCPEI, 20 February 1920; *Farm Implement News* 43 (7 December 1922), 27; *ibid.* 45 (25 December 1924), 31.

74. Melvin W. Ellis to the security holders of Hart-Parr Company, 23 May 1925, folder 78, box 83, Higgins Collection.

75. CCPEI, 20 March 1919; TAWN, 2 and 16 January and 13 February 1925, 27 April 1926, 18 November 1927. See also Wendel, *Oliver Hart-Parr*, 82-84.

76. Three hundred thirty Charles City residents celebrated at a breakfast by singing "I'd Rather Belong to the Hart-Parr Gang than Anything Else I Know." "Charles Cityans [*sic*] Entertain Men from Illinois at Huge Banquet and Speech-Fest," unidentified newspaper clipping [TAWN?], 10 February 1925, in vertical files, FCHS. See also TAWN, 3 February 1925.

"Prosperity Special" train loaded with \$250,000 in cargo sparked parades, dinners, and other festivities across Iowa and Illinois. Notably, the acclaim focused on the salesmen—the "hustlers"—who secured the orders, not the engineers who designed the tractors nor the workers who built them. Indeed, articles attributed the campaign's success to dealers' abilities to sell a tractor for the farmer's farm, "rather than for the glorification of the engineers."<sup>77</sup> In contrast, one sales campaign initiated during Hart's tenure had explicitly chastised tractor firms that relied on "fine salesmanship" rather than the product.<sup>78</sup>

As the market for farm machinery improved further in the later 1920s and "Prosperity Specials" continued to roll out of Charles City, Hart-Parr's sales grew steadily from 1925 to 1928.<sup>79</sup> Yet the firm could not ignore trends in the farm tractor and farm machinery business. Soon after 1922, when the International Harvester Farmall tractor introduced its efficient power take-off system, it became almost imperative for tractor firms to merge with companies that manufactured compatible plows, harrows, and other farm implements. Consequently, on April 1, 1929, Hart-Parr joined three other firms to form the Oliver Farm Equipment Company of Chicago.<sup>80</sup> Thus ended the independent life of tractor manufacturing in Charles City. The plant continued to produce tractors, tractor parts, and castings into the 1990s, but it never again played a dominant role in the industry.

THE HISTORY OF "THE HART-PARR" reflects several trends in the history of American manufacturing and management. As an aspiring mass producer of farm tractors, Charles Hart em-

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77. "Selling Trainloads of Tractors to Farmers in the Middle of the Winter," *Farm Implement News* 46 (12 March 1925), 26–38.

78. "The Plant Behind Your Hart-Parr Tractor," *Hart-Parr Field and Factory* 2 (January 1917), 8–9.

79. TAWN, 28 February and 9 October 1928, 22 January and 1 August 1929; CCDP, 23 February 1929. The 9 October 1928 article reports that 1926 tractor sales were up 38 percent over 1925; 1927 sales were up 35 percent over 1926; and sales during the first ten months of 1928 were 32 percent above the same period in 1927.

80. The other firms were the Oliver Chilled Plow Co. of South Bend, Indiana; the Nichols and Shepard Threshing Machine Co. of Battle Creek, Michigan; and the American Seeding Machine Co. of Springfield, Ohio.

ployed principles used in other industries—engineering, systemization, rationalization, efficiency, and labor control—to help build Hart-Parr into one of the largest industrial firms in Iowa and one of the dominant players in the American tractor industry. Hart adopted the ideals of factory design, mass production, and scientific management that provided the basis for several successful American industries. Those ideals also had a profound impact on the economy and society of Charles City, as Hart and his colleagues tried to persuade the town's residents to accept those broader national trends.

Yet Hart's principles could not be sustained. Tractor producers lacked sufficient market presence to employ strategies of bulk and mass production, and tractors were simply too large and too heavy to be readily accommodated within a dynamic system of assembly line production. Even at peak production, Hart-Parr never fully achieved the Fordist model. Hundreds of skilled employees performed the 2,250 machining operations that went into each finished product, while dozens of haulers and laborers performed unskilled tasks by hand. Thus, while Hart-Parr could produce about one hundred tractors per week in 1919, Fordson was producing about twenty-five hundred per week that same year.<sup>81</sup> Further, the specialized nature of the farm market and the expense of making the transition from horses made farmers reluctant to embrace the tractor and kept sales volume relatively small.<sup>82</sup> Tractor sales could not support the mass production techniques pioneered in the automobile industry.

By 1917, wartime circumstances and a misplaced emphasis on large and powerful tractors left the company in dire straits. Although a period of prosperity returned in 1919 and 1920, the agricultural depression, growing labor agitation, and the inherent limitations of the mass production model convinced the company to redirect its efforts fundamentally. Under a new

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81. CCPEI, 20 August and 29 March 1919; B. Caldwell, "Building 30-H.p. Tractor," *American Machinist* (1 May 1919), 853-55; Bryan, *Beyond the Model T*, 22.

82. Sally Clarke, "New Deal Regulation and the Revolution in American Farm Productivity: A Case Study of the Diffusion of the Tractor in the Corn Belt, 1920-1940," *Journal of Economic History* 51 (1991), 101-24; Robert E. Ankli, "Horses vs. Tractors in the Corn Belt," *Agricultural History* 54 (1980), 134-48.

management team, the company found batch production, aggressive marketing, diversification of the product line, and cooperation with related farm machinery businesses to be the only hope for survival. The same company that had focused on productivity during the prewar era of systemization shifted its focus to distribution in an effort to adapt to the changing markets and emerging consumer culture of the 1920s. In brief, this study confirms recent efforts to revise the standard view of American industrialization, with its emphasis on assembly line production, mass marketing, and rigorous control and deskilling of industrial labor.

Since 1930, Charles City's manufacturing history has reflected further trends in the transformation of American industry. The merger with Oliver proved profitable for the company, and it maintained a strong market share through the 1930s while smaller and less integrated firms fell by the wayside. Like other American industries, the Charles City plant reached its peak of productivity in the two decades following World War II, and a major plant expansion in 1958 signaled Oliver's commitment to the Charles City site. The work force also fared relatively well, particularly as wages rose and working conditions improved following the formation of a local of the United Farm Equipment & Metal Workers of America in 1943.<sup>83</sup>

After 1960, when the White Motor Company acquired Oliver Farm Equipment and its tractor factory, the Charles City plant became a pawn in several Wall Street maneuvers. The company's sales and profitability continued to grow into the mid-1970s, but began to decline steadily thereafter as just a few firms dominated the American tractor market. The plant changed hands several times since 1980, when the White Motor Corporation filed for Chapter 11 bankruptcy. As the factory's subsequent owners sought to consolidate manufacturing operations within their ever larger corporate structures, a commensurate decline in the Charles City work force ensued. In the mid-1980s, the plant's managers garnered national attention once again, this time for its efforts to terminate health benefits for retirees.

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83. "Agreement between Oliver Local 115, U.F.E. & M.W.A., C.I.O., and Management, Charles City, Iowa Works, Oliver Farm Equipment Company," [1943], property of Leland Blanchard.

The last tractor rolled off the line in Charles City in 1988, and the plant closed its doors forever in 1993.<sup>84</sup>

The rise and fall of tractor manufacturing in Charles City illustrates the complexity, variety, and indeterminacy of the American industrial past. Many histories of business and technology focus on stories of inspired innovation and successful management, implying that firms that mastered shop floor efficiency, marketing creativity, and effective labor control were bound to succeed over less enterprising rivals. But the history of Hart-Parr and its successor corporations demonstrates that triumph was not inevitable for such firms. Despite Hart-Parr's notoriety and profitability early in the century, the approach based on maximizing labor and manufacturing efficiency failed in the midst of World War One. In the 1920s the new management adopted alternate strategies, such as diversifying product lines, intensifying advertising, and moderating the production process. Such maneuvers sustained the company through hard economic times, leaving the firm well positioned to benefit from the consolidation trends that swept the industry in the late 1920s. Subsequent manufacturing and marketing decisions kept the company afloat for another six decades, making it one of the last survivors of the long retrenchment in the farm equipment sector. In the end, however, fiscal concerns of corporate capitalism overwhelmed the plant and its ability to compete in a post-industrial society. As a consequence, Charles City, Iowa, birthplace of the farm tractor, will produce tractors no more.

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84. For a survey of the decline of the Charles City plant, see Hanson and Hull, eds., *Past Harvest*, and various issues of the *Hart-Parr Oliver Collector*, especially Larry Gay's regular column titled "Historical Highlights." On the health benefits issue, see Judy Greenwald, "Firms Can Cut Retirees Health Benefits: Court," *Business Insurance* 20 (12 May 1986), 1, 35.

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