During the Great Depression of the 1930s, architects aligned themselves with the New Deal’s attempts to address the structural defects of modern industrial capitalism and also with the surging labor movement.1 Seeking employment and pay equity as well as social benefits, American architects and draftsmen increasingly sought the labor movement’s support. These white-collar professionals joined with blue-collar workers to lobby for better wages and labor conditions and assumed key roles in public discourse. Their involvement in labor organizing signified a little-known, but landmark, episode of solidarity and political advocacy for the profession of architecture in the confrontation of economic, social, and political challenges.

As the economic crisis in the United States deepened in the summer of 1933, the American Institute of Architects (AIA) responded to a directive of the National Industrial Recovery Act (NIRA), a law passed by Congress that year requiring industries to set up codes as a form of regulation. In August the AIA drafted a set of standards governing wages, which specified that “architectural employees having had at least two years’ office experience as draftsmen or its equivalent . . . be paid not less than 50 cents an hour.”2 This proposed minimum wage was egregiously low, and its announcement sparked a swift confrontation. One account described a scene in which “two hundred fighting-mad draftsmen appeared demanding nothing less than immediate organization for a fight!”3 This event set off a rallying cry for draftsmen to organize politically. The previous year, for every seven draftsmen who had been working in 1928, six had lost their jobs.4 In 1933 unemployment for architects and draftsmen reached 90 percent or more.5 In response, these workers joined other technical specialists equally affected by high unemployment and low wages at a meeting on 23 August to form the Federation of Architects, Engineers, Chemists and Technicians, which would publish a monthly news bulletin (Figure 1).6 The new organization promptly sent a delegation to Washington, D.C., that successfully opposed the minimum wage at code hearings.7 From then until after World War II, the FAECT served as a trade union and activist organization for its members, becoming affiliated with what became the Congress of Industrial Organizations (CIO) in 1937.8 In this article, I will focus on the FAECT as a model for political engagement and social practice as well as a site of architectural discourse, rather than concentrate on its operations as a labor organization.

Although many FAECT workers had previously held “strong prejudices against unions,” they still looked to the organization for political and social reform.9 Federation leaders, particularly those who were Marxist partisans, claimed that they had “suffered the worst kind of degradation” in the sense that their labor was viewed as a commodity demeaned by the moral consequence of low wages, which resulted in the degradation of the laborer.10 The Federation would represent these professional workers and give voice to their grievances in a way that the AIA, which technicians branded “genteel, ethics-loving, employer-controlled,” could not.11 In fact, the Federation’s constitution explicitly barred membership for “employers,” such as the leftist architect Percival Goodman, who headed his own office.12 By the time of the first FAECT convention in Chicago in December 1934, the nationwide membership stood at 6,500, with more than fifteen local chapters from Washington, D.C., to San Francisco.13 There was even a university chapter at Columbia University.14 While the
FAECT was a national organization, the principal site of its activities was New York City, where the Federation was headquartered. Its program called for new standards regulating technical men on relief work and in civil service, including retention and federal norms for wages, unemployment insurance, government-sponsored housing, and policies guiding public works. Union affiliation thus emboldened architects and draftsmen, like their counterparts in other technical professions, to be more politically engaged than before the Depression, to organize, and to shift left.

The FAECT Bulletin and Technical America

The FAECT’s Bulletin, first published in February 1934 (and renamed Technical America in November 1937), served as the principal agent for disseminating the organization’s news and positions. (From December 1938 to July 1943, the FAECT and CIO jointly published CIO News, FAECT Edition.) By soliciting the ideas and opinions of FAECT members, the Bulletin also functioned as an open forum and a platform for debate on the technical professions that engaged the politics and social practice of labor. A subscription price of fifty cents for twelve issues made the publication affordable. Political, economic, and social issues affecting architecture, more than other professions, dominated the Bulletin, which usually ran to about twenty pages in length. Photographs of architectural and engineering works, especially innovative technical and social projects, served as cover illustrations for the Bulletin and Technical America. These included a prefabricated house (Figure 1), Works Progress Administration (WPA) and NIRA projects, and such Tennessee Valley Authority works as Wheeler Dam, shown under construction (Figure 2), and the Pickwick Dam.
Although architects and draftsmen initially represented no more than 10 to 15 percent of the FAECT membership, they held leadership positions in the organization, including national secretaries Isaiah Ehrlich and Jules Korchien and presidents Lewis Alan Berne and Robert Mifflin Sentman, who were frequent contributors to the Bulletin and Technical America. Engineers invested in architecture, such as Walter Polakov, also assumed key roles in the organization and wrote for the Bulletin. Among the regular contributors to the Bulletin were modernists who had an interest in social causes and especially the advancement of technology to benefit society. Although white-collar trade unionism had become “a highly radicalized movement,” according to Martin Cooper, an engineer and FAECT vice president, Federation members were “not necessarily socialists or communists.”

In fact, some members were social democrats, some were socialists, and others, such as Ehrlich, were open members of the Communist Party. Simon Breines was an avid contributor. He claimed that as a young architect he was awarded a prize in the competition for the Palace of the Soviets in Moscow (1931), and in 1933 he traveled to Russia to work on the winning competition design by Boris Iofan. Elroy Webber, who was also an active FAECT member and writer for the Bulletin, had worked in both Le Corbusier’s atelier and Joseph Urban’s office. He had participated in the 1931 Rejected Architects exhibition, also known as the Salon des Refusés, which was so named because it featured works that had not been accepted for the Architectural League of New York’s show that spring. Production-based designers R. Buckminster Fuller, Knud Lönberg-Holm, and Theodore Larson were also contributors to the Bulletin. Percival Goodman, who called himself a “communist, parlor pink,” wrote for the FAECT journal as well. Some contributors, such as Fuller, promoted new materials and techniques to fellow technicians. Frank Lloyd Wright, who presented a talk at a meeting of the FAECT in 1937, was of interest to members by...
virtue of the pioneering reinforced concrete construction technique he used at the Johnson Wax Administration Building in Racine, Wisconsin (1936–39). Others, such as Breines and Goodman, supported more radical labor causes affecting the culture of architecture. Infusing these writers’ columns was the application of their technical training and experience to the needs of society.

Launching the first issue of the Bulletin, the architectural and social critic Lewis Mumford called upon readers to engage in the FAECT’s political struggle. In the face of “private capitalism,” he urged, the technician could no longer “take a passive role.” Rather, “he must learn to work, as a member of a collective body, for the positive good of society.” During the early years of the Federation, its members felt compromised at a time when they were principally employed in government-sponsored work. On the one hand, according to Mumford, they were “subjected to discriminatory treatment” by the provisions of the Public Works Administration (PWA) and other New Deal agencies because the federal government failed to honor its pledge to pay workers “the prevailing current rate in their communities.” On the other hand, workers were obliged to choose such federal jobs over unemployment. In 1935 FAECT members pressed their case for better working conditions and unemployment insurance under the PWA housing program to Secretary of the Interior Harold Ickes. The FAECT and the guild called for union wages.

Figure 3 Members of the Architectural Guild of America picket the office of New York City Housing Authority chairman Langdon Post, 26 September 1935 (Theodore Voyvodick, “Architectural Guild and FAECT Join for Union Wage,” FAECT Bulletin 2 [Oct. 1935], 11; Avery Architectural & Fine Arts Library, Columbia University).
subsequently adopted by the two organizations set the weekly rate for apprentice at $30, junior draftsman at $35, draftsman at $45, and senior draftsman at $65.26

By 1936 the Federation declared that it had overcome its “greatest single struggle” toward redressing the inequality of federal pay when it was able to achieve “prevailing wages on WPA projects.”27 Moreover, the organization had realized its goal of acting as a “collective bargaining agent” on behalf of workers in a number of architectural and engineering firms.28 The art historian and socialist Meyer Schapiro, among the many progressive thinkers and intellectuals of the 1930s who were drawn to the concerns of labor, attributed such modest wage increases to the “militancy” of the FAECT.29 But such gains were not always consistent. In June 1936 the FAECT held its first “sit-down strike”—purported to be the first for architects—brought about when the chief engineer of the New York City Department of Parks, then led by Robert Moses, directed the dismissal of ten WPA workers who had protested the layoffs of engineers, draftsmen, and clerks.30

Federation chapters made some of the organization’s real gains. The FAECT’s decentralization was effective in addressing a variety of local needs, whether in the public or the private sector. In addition to the New York chapter’s success in its campaign for union wages for draftsmen in civil service, the Washington, D.C., chapter convinced the Treasury Department to eliminate its practice of unpaid overtime. Moreover, the Chicago chapter prevailed in its efforts to organize within such private companies as Montgomery Ward, where it achieved improved working conditions and pay raises for architectural workers. The FAECT’s national achievements, therefore, accrued from the activities of its respective chapters, as Webber reported to Bulletin readers in 1936.31

**FAECT Public Housing Advocacy**

Aside from establishing wage standards, the FAECT directed its advocacy toward government-sponsored housing because the need was great. Modernist architect Simon Breines took up the cause. In a 1935 Bulletin article titled “New Deal Housing—Successful Failure,” Breines asserted that the goal of the PWA, established in 1933 to “take initiative in slum clearance and low-cost housing projects in the interest of unemployment, relief and recovery,” had not been met.32 He suggested that the New Deal program might well look to such modernist precedents as Le Corbusier’s worker housing at the Weissenhofiedlung in Stuttgart (1927), which was municipally sponsored.33 He noted that the PWA appropriation of $150 million was too low and that its limited dividend projects did not adequately clear slums or supply sufficient housing. The Federal Housing Administration (FHA), created by the National Housing Act of 1934, did not achieve the federal objective of providing adequate low-income public housing. Instead, in the words of one administrator, the FHA focused on its real aim, which was “to rehabilitate a large portion of the 21 billion dollar home mortgage structure.”14 Even the 1935 establishment of the WPA, with its housing appropriation of $450 million, did relatively little to remedy the nation’s immediate public housing crisis.

In 1937, the Bulletin published a talk given at a construction industry symposium by Frederick Ackerman, technical director of the New York City Housing Authority, on the need to base public housing production and urban planning on data-driven criteria.35 In his two-part Bulletin article “Our Productive Capacity,” the Russian-born engineer and Marxist socialist Walter Polakov advocated for more efficient housing production. A proponent of scientific management, Polakov applauded American mechanization. Yet industrial production of building materials for housing, which had reached excess capacity, failed to renew the nation’s existing housing stock because consumers continued to live in aging “secondhand” houses and housing.36 In another article, Breines noted that the government’s efforts had turned to home loans, but they had only succeeded in shoring up mortgage banks and lending institutions.37 In his articles and “Cornerstone” column in the Bulletin, Breines pursued his campaign for low-income public housing. He joined with public housing advocate Catherine Bauer and other supporters and organizations, including the Housing Study Guild, in defense of the Wager–Ellenbogen Bill, but the proposed legislation failed to gain congressional approval in 1936.38 That same year, architect and public housing advocate Henry Churchill, who was responsible for the inventive modern exterior of the New York City Housing Authority–sponsored Queensbridge Houses in Queens, New York (1936–40), endorsed labor leader Sidney Hill’s position that public housing “within reach of the great mass of American workers” was not possible under the capitalist system, but he still applauded the “efforts of those trying to interest and arouse the orthodox labor movements.”39 Hill considered the Carl Mackley Houses in North Philadelphia (1931–35), by Oskar Stonorov with Alfred Kastner and W. Pope Barney, an enlightened example of social housing (Figure 4). The Carl Mackley Houses were owned by a corporation governed largely by officers of the American Federation of Hosiery Workers and had been financed by a PWA loan.40

The reformers’ efforts helped pass the Wagner–Steagall Housing Bill, which became the Housing Act of 1937. This law created the permanent United States Housing Authority within the Department of the Interior. The provisions of the act included $500 million in loans for low-cost housing, along with slum clearance. Breines credited the FAECT, among other organizations and individuals, with helping to
overcome opposition to the bill, particularly from big business and conservative groups. Although the provisions of the national housing program had “serious deficiencies,” he still deemed it a “progressive measure” and an improvement over the previous, failed bill. Bauer called the 1937 Housing Act “the single important left-wing bill passed in eight long months . . . a popular measure, reminding the country that the last election was also a triumph of Left over Right.” That endorsement notwithstanding, Bauer considered the bill’s elimination of loans to alternative agencies, such as labor unions and housing cooperatives, a defeat.

**FAECT Negotiations and Social Practice**

When the FAECT became a constituent member of the CIO in 1937, the alliance with blue-collar workers spurred the Federation’s leadership to further organizing. Webber, then chairman of the Architects Section of the FAECT’s New York chapter and a member of the Bulletin’s editorial board, laid out the case for higher salaries: whether architects were captive to business and industry or worked in the public sector, they needed to organize in order to command higher pay. On this issue, the FAECT had successes. For example, in 1938 it became the “sole bargaining agent” for workers at the New York City Housing Authority–sponsored Queensbridge housing project. The Federation also bargained for and secured higher weekly wage rates, ranging from $52 for junior draftsmen to $70 for senior draftsmen (or designers). If leaders of the organization focused on negotiating better employment conditions for architects and draftsmen, they were also mindful of the place of architects in public works and of their social responsibility to the public, issues they addressed in the Bulletin and its successor, Technical America.

According to Roland Wank, lead architect of the Tennessee Valley Authority, it was the architect’s special obligation to work in the public interest. This often meant that the architect had to mediate between two sets of clients: the users of public works and the taxpayers funding them. While increasingly alert to the public interest, however, FAECT leaders made a less robust effort to ensure that the organization was fully representative of and responsive to the needs of all technical workers.

**Women, African Americans, and the FAECT**

The status of women and African Americans within the FAECT was complex. At the organization’s first convention in Chicago in 1934, the program called for a “unity of all technical men.” Although membership, according to the FAECT constitution, was open to “all men and women who are qualified by training or experience . . . in architecture, engineering, or any other scientific or technical work,” women were initially marginalized. As of the 1930 U.S. census, among white-collar workers, women accounted for less than 10 percent of “architects’, designers’, and draftsmen’s apprentices.” The underrepresentation of women is explained in part by their low employment numbers in general. Barriers to women had long cast a shadow on the profession of architecture, where women were often relegated to interior and domestic design work. The Depression further challenged gender equality in the workforce. According to cultural historian Daniel Eldridge, many unemployed men were no longer their families’ primary breadwinners, and because they felt a loss of self-respect, they discouraged their wives from replacing them. It was not until 1936 that the FAECT launched its Women’s Auxiliary for working women.
and members’ wives, which resulted in the creation of five chapters.\textsuperscript{53} The Women’s Auxiliary served the mission of the FAECT through the activism of its chapters, notably those in New York and Washington, D.C. (Figure 5), as well as the publication of its own \textit{Technical America} column titled “With Our Women.”\textsuperscript{54}

Equally fraught was the status of African Americans. As the Depression deepened, unemployed whites found themselves on the same footing as blacks.\textsuperscript{55} If whites confronted unemployment and poverty, blacks faced even greater economic challenges and barriers. From the start, the FAECT made an effort to include blacks among its ranks. At the Federation’s first convention, “a group of Negro technical men” represented four hundred of their fellow technicians in the Chicago area as “fraternal delegates.” When two of those delegates were at first denied access by hotel staff, the Chicago convention went on record to protest racial discrimination.\textsuperscript{56} Blacks were welcomed and encouraged to join the Federation, but few affirmative initiatives were tendered on their behalf until 1938, when the organization addressed housing conditions in Harlem.\textsuperscript{57}

The FAECT Debates Manufactured Housing

In addition to its engagement in public housing reform, the Federation turned to the private sector, reflected in articles in the \textit{Bulletin} and \textit{Technical America} by modernist designers promoting new industrial processes and manufactured housing. Production-based practitioners Buckminster Fuller, the Danish-born Knud Lönberg-Holm, and Theodore Larson embraced Taylorism, a system of scientific management aimed at improving economic efficiency as well as labor productivity, particularly for houses and housing.

As a contributing editor to \textit{Technical America}, Fuller promoted the efficiency of building with steel alloys, whose tensile strength and longevity, he held, far surpassed those of earlier metals; such alloys, therefore, could be used to achieve new forms.\textsuperscript{58} In their \textit{Technical America} article “Industrialization of Housing,” Lönberg-Holm and Larson promoted the interwar notion of progress as one deeply invested in productivity contingent on obsolescence. “If the aim in production is increasing productivity,” they reasoned, “then the production of any productive form is not complete until it is finally eliminated in favor of a new and better form.”\textsuperscript{59} This meant that as a technical and social project, housing was enmeshed in a cycle of decay and renewal. Emphasizing efficiency, they called for the centralized control of all phases of production, from research, design, and fabrication to distribution, use, and elimination. Industrialization in the housing field relied on ever-increasing specialization and production: new materials and machinery for fabrication and a wider range of typologies for new uses. Manufactured housing was no longer seen as mere habitat; rather, it involved “a system of services” and “production networks” that required the reskilling of older workers.\textsuperscript{60}

FAECT technicians weighed the potential effects of the large-scale manufacture of prefabricated housing. Would such manufacture benefit or harm labor? In 1936 Robert Weinberg and Percival Goodman debated this point in their respective “Tek-Talk” articles in the \textit{Bulletin}.\textsuperscript{61} Both were advocates of prefabricated housing. Weinberg had worked with Howard T. Fisher on two all-steel houses for the General Houses exhibit at the Century of Progress Exposition in Chicago (1933–34).\textsuperscript{62} For the most part, Weinberg believed that the technology was in place to make manufactured housing better and cheaper. He argued that workers who became unemployed as a result of the growth of this technology would soon be replaced by a new and larger cadre of workers with a higher skill set. Although he supported socially conscious design, he failed to appreciate fully the human costs of mechanization: the displacement of workers (both by other workers and by machines); enhanced specialization, often leading to loss of interest in or pleasure from work; and the uncertainty over wage increases.\textsuperscript{63} By contrast, Goodman was more mindful of workers’ rights, in accord with his communist sympathies. Presenting a further problem for labor in the building trades (second only to agriculture as the nation’s largest employer), he argued that mass-marketed prefabricated housing might cut costs because of labor savings, but as potential buyers, factory workers were unable to afford such housing, given the reduction in their wages. Without stable payrolls, Goodman held, the production of prefabricated housing could not create an “effective demand.”\textsuperscript{64} The dilemma posed by industrially produced goods, in contrast to handcrafted

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure5.jpg}
\caption{Members of the FAECT Women’s Auxiliary, Washington, D.C., chapter, “spring fever picnic” 1937 (FAECT Bulletin 4 [Sept. 1937], 12; Avery Architectural & Fine Arts Library, Columbia University).}
\end{figure}
ones, was not new. Since the nineteenth century it had pre-
occupied social theorists such as William Morris. Thus,
while prefabrication was “the only reasonable, logical and
modern method of providing” housing, Goodman con-
cluded, under the present economic system it would only
increase unemployment for de-skilled workers.65 He called
for union activism to create a path to economic security
through increased wages, shorter work hours, and educa-
tional opportunities, such as those provided by the FAECT
School in New York City, founded in 1936.66

Conclusion

The activities of the FAECT and the discourse on the
politics of labor, technology, and society in the Bulletin and
Technical America continued unfettered until the late 1930s,
when Technical America ceased publication. Following the
signing of the German–Soviet Nonaggression Pact in August
1939, trade unions such as the FAECT were subjected to
special scrutiny. Given its activism and the perception that
most members were socialists, the Federation met with pres-
sure from conservative factions in the U.S. Congress to shed
its communist leaders. In early 1940 Representative Martin
Dies, chairman of the House Special Committee on Un-
American Activities, submitted a report to Congress that
alleged the committee had found evidence of communist en-
trenchment in the leadership of ten organizations, including
the FAECT.67 In March 1941 Dies focused his committee’s
hearings on the Federation. Escalating his rhetoric, Dies
charged that the “union as a whole is under the complete
domination of the Communist Party.”68 Such “infiltration,”
Dies held, was significant because the FAECT represented
technical workers in U.S. defense industries vital to national
security, including navy yards, where it had pursued collective
bargaining. In his remarks, Dies claimed that twenty of the
organization’s leaders were communists, most notably Marcel
Scherer, Walter Polakow, Jules Korchien, Lewis Alan Berne,
and Simon Breines.69 While Scherer, then FAECT vice pres-
ident, denied the charges as “baseless,” Alan Mather later
maintained that he was an “agitational” communist.70

During and after World War II, the labor movement in
general, and the FAECT in particular, met with continued
pressure, not only from the government but also from the
conservative wing of the CIO, to cast off communist influence.
As Robert Heifetz points out, FAECT members—including
Robert Oppenheimer, his brother, Frank, and Julius
Rosenberg—were involved in classified atomic research.
In 1943 a memo from General Leslie Groves, head of the
Manhattan Project, to the secretary of war forced CIO presi-
dent Philip Murray to end FAECT’s organizing efforts at the
Berkeley Radiation Laboratory.71 By March 1946 the
FAECT was no longer an independent entity; it had become
Local 231 of the United Office and Professional Workers of
America (UOPWA). In 1950 it was expelled from the CIO,
which by then had turned to the right and accused the
UOPWA of communist domination. Moreover, the provi-
sions of the Taft–Hartley Act of 1947 curtailed the rights
of workers and required union officers “to file affidavits af-
firming that they were not members of the Communist Party
or of any organization supporting it.”72

During the troubled years of the 1930s, the actions of the
Federation of Architects, Engineers, Chemists and Techni-
cians and the advocacy of its Bulletin and Technical America in
the areas of wages and employment benefits, labor rights, af-
fordable housing, and the efficiency of manufactured housing
(notwithstanding its contested effects on labor) answered
Mumford’s call for technicians to engage in political struggle
and work cooperatively toward a social purpose. On the one
hand, the FAECT’s agenda responded to a specific set of con-
ditions. On the other hand, the organization’s advocacy pro-
vided a historical model of solidarity and activism for future
practitioners committed to valorizing the labor of architec-
tural workers, to a renewed emphasis on social practice and
nonprofit partnerships, to more proactive engagement in po-
itical decisions in the face of regulatory controls governing
public work, and to advocacy in times of economic, social,
and political challenges and uncertainty.

Mardges Bacon is Matthews Distinguished University Profes-
sor Emerita. Her publications include Le Corbusier in America: Trave-
ses in the Land of the Timid (MIT Press, 2001) and Ernest Flagg: Beaux-

Notes

1. I wish to thank Nancy Stieber, Lucy Maulby, Ranla Benaissa, and Mirka
Benes for reading a draft of this article and for their astute comments. Patricia
Morton provided expert editorial assistance, for which I remain very grateful.

Alan Brinkley, The End of Reform: New Deal Liberalism in Recession and War
(New York: Alfred A. Knopf, 1995), 5. In preparing this article I have relied
on Tony Schuman’s “Professionalization and the Social Goals of Architects:
A History of the Federation of Architects, Engineers, Chemists and Techni-
cians,” in The Design Profession and the Built Environment, ed. Paul L. Knox
(New York: Nichols, 1988), 12–41; and also Robert Heifetz, “The Role of
Professional and Technical Workers in Progressive Social Transformation,”
Monthly Review 52 (Dec. 2000), 26–39. Subsequent to writing this article, I
attended the European Architectural History Network meeting in Dublin,
June 2016, at which Peggy Deamer gave an account of the FAECT in her

4. Tallbot Faulkner Hanolin, “The Architect and the Depression,” The Nation,
9 Aug. 1933, 152.
5. “FAECT Four Years Old!,” 10. A Columbia University survey reported an
unemployment figure of 98 percent for architects and 85 percent for


7. “FAECT Four Years Old!,” 10.

8. Schuman suggests that the FAECT was not a “genuine labor union” but “an economic organization, functioning in much the same manner as a labor union.” Schuman, “Professionalization and the Social Goals of Architects,” 21. However, Simon Breines and other leaders referred to the organization as a “trade union.” Simon Breines, “Designers of Shelter in America,” FAECT Bulletin 3 (Nov. 1936), 5.


16. Ibid., 21.

17. Ibid., 31n6.


23. Ibid.


27. “FAECT Four Years Old!,” 10.

28. Ibid.


33. Ibid., 6. Breines’s article featured the same photograph that Catherine Bauer published in her book Modern Housing (Boston: Houghton Mifflin, 1934), plate 27B, which was reviewed in the FAECT Bulletin 2 (Summer 1935), 12.


48. “Call to the Convention,” 3.
50. The 1930 census found that there were 2,656 architects’, designers’, and draftsmen's apprentices across the United States. Of these, 2,436 were men and 220 were women. Fifteenth Census of the United States, 1930, Population, vol. 5, chap. 1, table 1, cited in Alba M. Edwards, “The ‘White-Collar Workers,’” *Monthly Labor Review* 38 (Mar. 1934), 502.
60. Ibid., 10.
63. Among the many critical analyses of scientific management and its toward effects on labor, see Horace Bookwalter Drury, *Scientific Management: A History and Criticism* (1915; repr., New York: AMS Press, 1968); Braverman, *Labor and Monopoly Capital*.
65. Ibid. The concept of workers trained in a craft tradition or at a low level of machine production being displaced by workers with a higher degree of skill was first addressed by Charles Babbage in 1832, but the term de-skilled was not used until a century later. Charles Babbage, *On the Economy of Machinery and Manufactures* (London: C. Knight, 1832).
69. Ibid., A1301–3.
70. “Charges Union Is Communist,” *Indianapolis Star*, 22 Mar. 1941, 4; Mather, “My Life.”