LOCAL 5 OF the International Brotherhood of Electrical Workers, the oldest and only craft-based of the three electrical unions important in Pittsburgh's labor history, recently celebrated its 100th anniversary. Local 5 took hold in 1897 among skilled workers who had an understanding of electrical power, as well as the means and methods of its control, transmission, and installation.

Formed by skilled workers, the union in its early years was unsuccessful at organizing those who manufactured electrical generators, motors, and machines, or who operated large electrical equipment in the surrounding mills. The efforts foundered due to ethnic exclusions that culturally reinforced distinctions between the skilled and unskilled, a sometimes narrow craft focus, and the implacable hostility to unionism from the owners and managers of industry. The successes and failures of these formative experiences shaped the organization that would provide for delivery of much of the electrical power to Pittsburgh during the coming century.

IBEW Local 5 was started in Pittsburgh in 1897 during a period of rapid economic and technological change. Founded by workers in an infant industry, the men who began the local union were attempting to bring organization and standards to a challenging and dangerous craft. Unlike carpenters, plumbers, or masons, electricians were not descended through the centuries from an ancient craft or medieval guild. They were faced with
the problem of the safe and efficient handling of a new force that was revolutionizing human society — the magical and almost living power of electrical current. The story of Local 5's early years provides a way to understand Pittsburgh in the late 19th century as the crucible of both new industries and new worker organizations. It also sheds light on factors that made worker organization problematic even in a city where unions were strong and deeply rooted.

In 1897, Pittsburgh was in the middle of a dynamic period of growth. The city’s male workforce rose from 25,772 in 1870 to 107,902 in 1900 as waves of Eastern and Southern European immigrants came to find jobs in the “workshop of the world.” A center of technological innovation and sophisticated industrial organization, the region also possessed rich coal seams to feed the hungry furnaces of its iron, steel, and glass industries. While Homestead rolled armor plate...
for the powerful new American Navy and shaped the structural beams that announced the age of the skyscrapers. Braddock produced steel rails that girded the continent.

But Pittsburgh was more than a smoky city of furnaces, forges, and mills; it was also one of the creators of the “age of electricity.” The early period of electrical manufacturing was dominated by two giants, Thomas Edison and George Westinghouse — and Westinghouse called Pittsburgh his home. He began his career manufacturing railway safety controls. Beginning with the invention of the airbrake in 1869, his search for an improved railway safety mechanism led to increased experimentation with electricity. From early experiments at his Union Switch and Signal plant sprouted the gigantic Westinghouse Electric Co., which took over the old Union Switch plant on Garrison Alley in downtown Pittsburgh, when the Switch moved to the Pittsburgh suburb of Swissvale in 1886. In 1893, Westinghouse Electric outgrew the old downtown plant and moved to a mammoth manufacturing complex in East Pittsburgh in the Turtle Creek Valley.

The work of Westinghouse was a major factor in shaping the world within which the skilled electrician would labor and that Local 5 would organize. Westinghouse’s greatest contribution to the electrification of our modern world was his practical solution to the problem of electrical transmission by means of alternating current. Edison’s work with generators, motors, and the light bulb had all been done with direct current which was difficult and expensive to transmit over long distances. Westinghouse took the theories on alternating current of the brilliant Slav inventor Nikola Tesla and gave them practical application. In 1895, Westinghouse’s alternating current generators were harnessed to the great falls at Niagara and electricity came to America’s cities.

While rapid and revolutionary technological change was opening dramatic new opportunities for business growth, workers’ organizations were having a difficult time adapting to workplaces that were constantly growing and changing. The 1890s were difficult years for organized labor. The previous decade had seen the explosive growth of the Knights of Labor, followed by that organization’s even more precipitous decline. The Knights favored broad-based legislative reform over strikes and contract bargaining. Meanwhile, the American Federation of Labor, founded in 1881 in Pittsburgh as an alliance of skilled trades organizations, saw its most powerful member organization, the Amalgamated Association of Iron and Steel Workers, defeated in 1892 at the famous Homestead struggle on the outskirts of Pittsburgh. After the Homestead battle, unionism was driven from the local mills as American industry adopted a resolutely open shop, anti-union policy.

While the “gay ’90s” were difficult for labor organizations, especially in large-scale manufacturing industries, Pittsburgh was the scene of a growing union movement, especially among the skilled craft organizations. By 1897, such organizations were active in Pittsburgh, including those representing carpenters, boilermakers, bricklayers, ironworkers, sheet metal workers, plasterers, plumbers, painters, and steamfitters. Electrification was becoming standard on new construction, but organization of the new electrical craft was not easy in an evolving and decentralized field.

A national organization of electrical workers was discussed a few years earlier by experienced linemen and wiremen gathered together to work on the St. Louis Exposition. (Embryonic local organizations were forming in a dozen other cities, including Pittsburgh.) On November 21, 1891, 10 delegates representing about 300 workers in eight cities met in St. Louis to form the National Brotherhood of Electrical Workers (NBEW). Their goal was to form an organization that would “supply the industry with competent, well trained electricians able to command the highest wage rates and unwilling to work for anything else.”

### The Founding of Local 5

A few months after the St. Louis convention, Henry Miller, the organization’s first president, made a tour of the Midwest, stopping in Pittsburgh, where union electricians were already active. It was perhaps during that trip that the 19th local (chartered March 28, 1892) was recognized by the national organization. Its life was short, though, lasting less than two years (declared defunct Jan. 11, 1894).

The early organizational collapse did not signal the end of electrical unionism in Pittsburgh, however. On February 17, 1897, the founding meeting of Local 5 of the National Brotherhood of Electrical Workers of America was held at K of L (Knights of Labor) hall, 66 Third Ave. for the purpose of forming an organization amongst Electrical Workers of this vicinity. Thirty-three electrical workers responded to the call.

After the reading of a circular and some sections from the constitution by special organizer L.R. Thomas of the A.F.L. (American Federation of Labor) and an appeal to the persons present why they should organize, it was decided to open a list and all who wished could sign. Brother Thomas requested the General Organizer of the Painters to take charge of the list. Then 27 of those present signed the role [sic] and nine paid Initiation fee of one dollar each to be forwarded to Grand Secretary J.L. Kelly, St. Louis for a charter.

The meeting chose Charles Kirk as temporary president and Horace McGregor as recording secretary, with other officers to be selected at the next meeting a week later. There, new members were admonished to “bring one or more members of the craft with him and those who signed the roll to pay their initiation fee.”

The organization’s modest founding received brief mention in the Pittsburgh Post in a report on a meeting of the United Labor League. P.W. Gallagher, of the painters’ and decorators’ union, reported that “a union of the electrical workers had been formed, and that the local of the brass workers had been materially strengthened.”

Strong initial ties with the painters’ union were illustrated when its national president, addressing the third meeting of the local, called on members to “keep petty squabbles out of the organization” and also admonished them that “the only solution for the wage worker was organization to protect him from the greed and avarice of the capitalist” and to “do our best
The building trades unions occupy a special place in the history of American unionism. They maintained their craft base long after such types of unions were curtailed in industrial settings. steady growth and staked out an active presence on work sites and in the local labor movement. In April 1897, the new local submitted its first report to the trade publication, The Electrical Worker, claiming that "the three largest jobs in this city are being done exclusively by the N.B.E.W. men."

As a new organization representing a new trade, the newly organized electricians had to struggle with employers and established unions to gain recognition. Minutes of early meetings tell of committees chosen to visit work sites to negotiate with a contractor. One committee selected to deal with the construction of the new Horne's department store in Pittsburgh "called on Mr. Horne and he stated he was powerless to do anything for us since the building was being erected by Mr. Holmes. Mr. Holmes on being seen by the committee was asked to use his influence towards having the Pinkham Electric Co. employ none but union men on the building. This he refused to do... The Building Trades Council... decided it would not be advisable to call a strike on account of not being sure of the cooperation of the carpenters and the bricklayers working on the building."9

Affiliation with the Building Trades Council brought the adoption of a union card to be exchanged between trades at the work site. The trades council also served in the role of a mediator when disputes broke out among or within locals. One example involved lathers who appealed to the electricians to refuse to work with plasterers who were "doing lathering for $1.50 per M [an] instead of $2.00 as the price set by them. Electrical Workers and the plumbers should stand by them and stop any where Electric[ical] men... found plaster[er's] doing lathering for less than $2.00 per M."10

Political activism in the local arena helped the young organization establish itself. In June of that first year, the union triumphantly reported that Pittsburgh City Council had passed an ordinance that allowed only union men to work on new city buildings. "Everybody in Pittsburgh believes in Unions for working people... Without a Union, the working class is like fishing without a hook. You have to wait a long time before you can get a bite."11 Intense involvement in local politics became a consistent element of AFL craft union strategy that endures to this day.

A Craft Union

The building trades unions occupy a special place in the history of American unionism. They maintained their craft base long after such types of unions were curtailed in industrial settings. They comprise a large "sympathetic group" of unions based on a recognized community of interests.12 Regional politics and local alliances are extremely important in the construction trades because the commodity produced by the building trades craftsman cannot be transported. The threat to the union worker in construction does not come from low-wage competition in another town or another country, but from low-wage, non-union contractors in his own locality. This factor makes a uniform national scale or work rules unnecessary, while at the same time it makes local alliances vital.

The complexity of local union work rules is rooted in the extreme diversity of working conditions. The rules reflect an effort, historically, to maintain a standard or minimum rate of wages, the restriction of overtime by the imposition of premium pay over eight hours, and prohibitions against "lumping" or piecework where the worker is paid by the job rather than by the hour. A major demand of all the trades was to restrict the ratio of helpers and apprentices to journeymen, since the employers were often pushing to increase the ratio of lower-paid, less-experienced workmen, thereby threatening the jobs of experienced men.

The union building trades also developed a characteristic organizational structure. The key figure was the business agent, or walking delegate. As the union's agent in the field, his primary job was the enforcement of the work rules as well as coordination of activities with business agents from the other unions. The "BA" generally had free access to any building site and at times exercised enormous power that could be subject to corruption or abuse. "He is the paid officer of the union who comes into closest touch with the journeymen and has the greatest practical knowledge of local working conditions."13

The steward represented the journeymen and the business agent on the job. Often elected — though sometimes selected by the business agent, and sometimes the first union man hired on the job — the steward was often charged with keeping track of the worker's hours on a job and of overseeing conditions. In many localities, including Pittsburgh, the foreman, while selected by the contractor, was required to be a union man unless his job was purely directive and unless he did not work at the trade.

The Union Contractor

The aspiration of Local 5 to set a standard of quality, to make its work "a certificate of character," was clearly expressed in the local's 1903 by-laws:

Our endeavors shall be... to defend our rights and advance our interests as electrical workers, thereby creating an authority whose seal shall constitute a certificate of character, intelligence and skill, and thus maintain an organization where all
worthy members of our trade can freely participate in the discussion of those practical problems upon the solution of which depends their welfare and prosperity as workers. We aim to foster fellowship and brotherhood, and to shield from aggression the isolated defenseless toiler who may be destitute and unfortunate, and also to provide for the decent burial of deceased members....14

The union goal was to assure a monopoly over skilled workers in the trade. Once the allegiance of the skilled labor market was assured, contractors were forced to come to the union to compete in the market. Once a standard wage rate was established, contractors had to compete on the basis of their abilities to organize and bid the job, and not on their ability to undercut wages.

Union power, derived from its control of skilled labor, was balanced by the union's reliance on contractors to bid on and secure jobs. This fundamental interdependence led to a close working relationship between construction unions and union contractors. What made unionism attractive or at least palatable to contractors was the immediate availability of an adequate supply of qualified workers for exactly the amount of time that it took to complete a job. This freed contractors from having personnel departments and required of them only a skeleton staff of permanent employees. The union's ability to supply a pool of skilled manpower on demand well-served an industry that fluctuated wildly with the vagaries of the construction market and the weather.

In June 1898, the union made a giant step forward when it made an agreement with the Pittsburgh Electrical Contractors Protective Association that was "a reasonable one and makes the two hearts beat as one for the success of both." The agreement was "not a compulsory measure but was made to appear so by outsiders and the press; there was no trouble nor was there an intention of a strike. It was simply a business proposition offered by Local Union No. 5 at a time when it meant so much to the employer; to refuse would mean all kinds of trouble and a smash up, to accept the proffered help was to join in the mutual operations pertaining to the trade we look to for support."15

The Memorandum of Agreement, published in its entirety in the national union publication, included a minimum rate of $2.50 a day with time-and-a-half after nine hours. Provisions were made for car fare, for specialized tools to be provided by the employer, and for no more than one helper or apprentice for each journeyman. Contractors were given one of three seats on the committee that screened applicants for membership in the local, with the union retaining control over admission.

The close relationship that developed between the union and certain contractors shaped its character and contributed to its survivability. No company had more of an impact on Local 5's evolution than Sargent Electric of Pittsburgh. In an interview, Ed Sargent, Sr. recounted that his father was only 11 years old when he went to work in Jones & Laughlin Co. steel mills in 1895. While working there, he had his little finger severed; he was handed the finger and told to walk the nine blocks to the hospital, where it might be reattached. His finger, in fact, was not saved, but Sargent came to an assessment of labor relations that would affect the way the company he founded treated its employees. His father, Sargent recalls, "always said that he saw the other side of the thing and that capitalism was worse than unions ever could be — the way that they beat people."16

After being beaten for eating lunch with a group of men talking about reviving the union at J&L, Sargent was fired. "So he had to work under an assumed name for five years because they black-balled him as an agitator," explains his son. "He really wasn't. He just happened to know a couple of guys who were agitating...."

The electrical contracting company Sargent started pursued close and congenial relations with its union. "He always believed that unions were a much better thing for people than non-union, so he fought for unions all his life."17

This strategic alliance of craft unions and union contractors forged in the early years of the 20th century gave Local 5 a "business unionism" character markedly distinct from the industrial electrical unions like the United Electrical Workers (UE) that emerged in the late 1930s. The symbiotic relationship made the craft construction unions particularly resistant to the class struggle model of industrial unionism espoused by the UE.

An International Convention in Pittsburgh

Ties with the National Brotherhood of Electrical Workers were strengthened by the sending of a delegate to the 1898 national convention in response to the NBEW general secretary's observation that it had been a "long time since Pittsburgh was represented at a convention of Electrical Workers."18 Perhaps the delegate from Pittsburgh to the convention made a great impression or perhaps the St. Louis leadership was keenly aware of the importance of anchoring itself more securely in the country's great manufacturing and union center; whatever the reasons, the convention decided to hold its next national gathering in Pittsburgh.

On October 16, 1899, the convention, held in the Knights of Labor Hall at 432 Wood St. in downtown Pittsburgh, was called to order with nearly 100 delegates from 23 states plus the District of Columbia. Pittsburgh's mayor delivered the official greeting. "Welcoming everyone to the 'home of electricity,' the mayor expressed the hope that delegates would be so delighted with their visit "that you may be tempted to come again at no distant day." He heralded an electrical industry "destined to become one of the largest and with its growth I sincerely hope your organization may keep pace until you shall number thousands of members where you now have hundreds." Morris Mead, superintendent of the city's Bureau of Electricity, invited the delegates to visit the new electrical plant at the Western Penitentiary. He advocated the adoption of standard rules to ensure safety and urged good organization for bettering the trade.19

The major event of the five-day gathering was the announcement that applications for membership had been received from...
Organizing Industrial Electrical Workers

The great challenge that stymied the skilled electrical workers in Pittsburgh was the organization of the large numbers of semi-skilled workers who toiled in the great electrical industries of the region. Three failed early attempts to organize industrial electrical workers demonstrate that ethnic composition, male domination, and organizational inflexibility were factors that held back the local’s expansion into the industrial arena.

The earliest recorded excursion into the field of industrial organizing by union electricians in Pittsburgh occurred at the Pressed Steel Car Co. in McKees Rocks. This factory, given the title of “slaughterhouse” for its terrible safety record, would be the scene of a dramatic and historic uprising by unskilled foreign-born workers in 1909. The 1909 strike, however, would be led by members of the militant Industrial Workers of the World (IWW), not the IBEW.

IBEW Local 51 was chartered in July of 1899 shortly after the Pressed Steel Car plant’s opening, and successfully organized its crane men. In March 1900, the company removed the crane operators from the jurisdiction of a single electrical department foreman and placed them under the jurisdiction of various departmental production foremen. The union protested, for its members “would be called down and discharged without a satisfactory cause and the next thing a ‘Dago’ or ‘Spaniard’ would be put up in the cage to operate the crane.” The contemptuous attitude of skilled cranemen toward foreign workers highlighted the problem that many English-speaking workers with a strong craft consciousness had towards organizing unskilled laborers such as Slavs and Italians. In the summer of 1900, when foreign-born riveters walked off the job, the company brought in American-born workers to break the strike. In 1909, when the radical IWW assumed leadership of the shop’s immigrant workers, they experienced resistance from the skilled “American” or English-speaking workers.

The family and neighborhood-based recruiting methods adopted by the skilled craft construction unions tended to make them ethnically homogenous. Their composition made it difficult for them to recruit or even accept outsiders who were not part of the white, northern European ethnic majority. Electrical workers, primarily English-speaking second- or third-generation men of Irish and German ethnicity, felt that they should be the natural leaders of an Eastern and Southern European industrial workforce that was culturally distinct.

A second effort undertaken with the help of Local 5 was the
organization of Local 241 for the "Inside Telephone men... a nice crowd of young fellows, already enthusiastic in the cause." This effort collapsed within the year and future organization of the telephone operators would be complicated by the transition of that job from virtually an all-male to an all-female domain. Although female workers were accepted into the "brotherhood" as early as 1897, the organization of women in the local proved difficult for those with a "macho, construction worker mentality."22

Perhaps the most fundamental problem that the IBEW could not overcome was an organizational focus rooted in a strong craft consciousness. The natural affinity that a common skill-base gave the organization in construction posed a near insurmountable problem for industrial organizing. Looming in the background of all the efforts to organize the electrical industry was the situation at the mammoth Westinghouse Electric plant in East Pittsburgh. As one of the prime creators of the "age of electricity," "The Electric," as the plant was called, employed more than 11,000 workers by 1914 and posed a complex problem for craft-based unionism.

The union's difficulties derived from the immense power and sophistication of the Westinghouse organization. George Westinghouse was a pioneer in the area of "corporate welfare" programs which included well-built company housing, high wages for skilled workers, and half-day Saturday holidays. The IBEW established Local 107 in 1903 in East Pittsburgh, but it was declared defunct two years later. This early organizing attempt prompted an exchange of letters between Samuel Gompers, President of the AFL, and George Westinghouse.

Gompers appealed to Westinghouse in a spirit of conciliation: "Enlightened employers of labor and those having the largest industrial interests under their care... pursue a course of conciliatory policy and mutual interest in dealing with the organizations of labor." Westinghouse, however, was not convinced: "I believe it can be said without fear of contradiction that organized labor has not accomplished anything in the advance of wages or the improvement of working conditions which have not previously been voluntarily granted to the employees of the Westinghouse organization."23

The bewildering complexity of the Westinghouse operations and the ethnic diversity of its workforce also posed obstacles for traditional craft-based unions:

As the visitor, even today, walks through the Westinghouse works, he sees a variety of operations: metal is being molded, forged, welded, bored, turned, pressed, spun, ground, polished; wire is being wound in an infinity of ways; and sheets and plates of conducting metal are being made using complicated patterns. The range is gigantic to microscopic, for in one plant big cranes handle parts for enormous turbo-generators, and in another the bearings of watt meters are fitted with tiny jewels. There is constant talk of armatures, commutators, condensers, resistances, alternators, rectifiers, single-phase, polyphase — a perfect "Babel" of technical terms.24

In its efforts to organize The Electric, the IBEW formed a "mental trades council" in conjunction with other AFL unions such as the Machinists, Molders, and Coremakers, modeled on the building trades councils that had proven successful in the construction industry. The complexity of the East Pittsburgh plant, where established crafts like machining and molding were mixed with skilled and semi-skilled occupations like coil-winding, calibration, and testing, as well as a mind-boggling array of unskilled material handling and labor jobs, made the organization of the worksite along craft lines nearly impossible.

When the Westinghouse workers successfully organized a strike in 1914, the dominant union organization was a radically different kind. A home-grown, all-inclusive industrial union called the Allegheny Congenial Industrial Union (ACIU) led a dramatic six-week strike of some 14,000 workers at The Electric and the Union Switch and Signal plants. The union attacked the AFL as "labor fakirs": "We are fully prepared to meet the tricks of all our enemies... secure in the confidence we shall triumph over all attempts to divide or disrupt us because of the wonderful solidarity and spirit manifest among our fellow workers without regard to race, nationality, religious creed, or craft" [emphasis added]. The strike, which featured the leadership of Bridget Kenny, a young Irish women, received a grudging compliment from the correspondent of Local 5 to the national IBEW journal: "Well, I was disappointed in not seeing nothing [sic] in The Worker from the Ladies of the I.B.E.W. as the most successful strike that was ever pulled off in the Pittsburgh district was led by a woman."25

Despite its success in uniting an industrial worksite so difficult to organize, and including women and foreign workers in the leadership of the strike, the embryonic industrial union failed to win a contract with Westinghouse or to sustain its organization. After the strike collapsed, a second industrial union organizing effort in 1916 ended in a bloody confrontation at the gates of the Edgar Thomson plant in Braddock, as the electrical workers attempted to spread their strike from Westinghouse to the neighboring steel mills. After two failed efforts, Westinghouse successfully resisted unionization until the late 1930s, when the United Electrical Workers successfully organized the plant for the Congress of Industrial Organizations.26

The Consolidation of a Craft Union

Following its failure to organize the electrical manufacturing industries in the early years of the century, the IBEW in Pittsburgh settled into the niche it has maintained until the present day. It has been able to control the manpower and set the standards of operation for electrical aspects of commercial and industrial construction in much of Western Pennsylvania. It has done this by training new generations of skilled workers through its apprenticeship programs and by developing close working relationships with large unionized electrical contracting firms in the region.

The very characteristics of its formative period — such as its local focus — and its family-based recruiting, craft pride, and cooperative relationships with contractors, while making it a poor organizer of large-scale industrial sites, perhaps helped it survive the radical restructuring of the Pittsburgh regional economy in
the 1980s. The opening of the union to minorities and women in the 1960s and '70s demonstrating that the local could adapt to changing conditions.

This 100-year-old organization, shaped and formed in the historical forge that was industrial Pittsburgh, faces a new century where electricity will be perhaps more important than ever. How that power will be delivered and connected to customers, and who will supply the necessary training and labor to distribute it safely and efficiently remains to be seen, but venerable Local 5 retains a position of dominance. The challenge for IBEW Local 5 lies in adapting and growing to meet the demands of future generations.

Notes
1 The others are the industrially organized United Electrical, Radio and Machine Workers of America (UE) which gained a contract with Westinghouse Electric in 1940 as a part of the Congress and Industrial Organizations (CIO), and the International Union of Electrical Workers (UE) which was formed by an anti-communist movement inside the unions led by Pittsburgh's CIO President Philip Murray and Father Charles Owen Rice that split the UE in 1949. See the author's Fighter with a Heart: The Writings of Charles Owen Rice, Pittsburgh Labor Priest (Pittsburgh: 1996), especially chapter three, "Reds and Workers."
4 Pittsburgh is listed as the location of an existing organization at the time of the founding convention, but no delegate was sent to the convention. While the first meeting was held on Feb. 18, 1897, the local was chartered at the second meeting on Feb. 25. See Palladino, 9, 14. Also see IBEW, History of All Local Unions Chartered Since the Organization of the International Brotherhood of Electrical Workers," Officer's Report to the 33rd Convention of the International Brotherhood of Electrical Workers, (Washington, DC: Sept. 15-19, 1986), Appendix, 175-6.
5 Minutes, National Brotherhood of Electrical Workers, Local 5, Feb. 17, 1897, v. 1, 1.
6 Pittsburgh Post (Feb. 22, 1897).
7 Minutes, Feb. 24 and Mar. 17, 1897, v. 1, 2, 4
8 Al E. Elderidge, The Electrical Worker (April, 1897), 8.
10 Minutes, Aug. 26, 1897, May 20, 1898.
11 Martin P. Fox, The Electrical Worker, June, 1897, 7. A month later in the same journal, Fox reported that "unionism in Pittsburgh is quite an epidemic."
13 Preamble to By-Laws, Local Union No. 5, Pittsburgh (1902), ibid., 298.
14 This discussion on the early nature of the building trades unions owes much to the article, "Trade Union Rules in the Building Trades," in Jacob H. Hollander and George E. Barnett, eds., Studies in American Trade Unionism (New York: 1912), 295-3
15 J.H. Stouffer, The Electrical Worker (June 1899), 10-12.
17 Ibid.
19 Pittsburgh Post (Oct. 17, 1899); The Pittsburgh Leader (Oct. 16, 1899). See also The Electrical Worker (Sept. 1899), 9.
20 Pittsburgh Post (Oct. 19-20, 1899); The Pittsburgh Leader (Oct. 16 and 20, 1899).
22 Charles H. Camp, The Electrical Worker (April 1902), 106; Palladino, op.cit., 35.
23 Palladino, op.cit., 52; see also: Justice (Feb. 7, 1914). The first female "journeyperson" would only graduate in the early 1980s.