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ARTIFICIAL LIMBS AND INDUSTRIAL WORKERS' BODIES IN TURN-OF-THE-CENTURY PITTSBURGH

By Edward Slavishak

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in her 1910 expose *Work-Accidents and the Law*, Crystal Eastman presented readers with this brief tale of work and loss in Pittsburgh:

Andrew Antonik worked in the Homestead Steel Works at a "skull-cracker," a heavy iron weight which is allowed to drop from a height to break up pieces of scrap. When it falls big chunks of scrap fly in every direction, and one must be quick to dodge them. On the night of April 29, 1907, "Andy" failed to dodge in time ... His leg was crushed and had to be taken off below the knee. A year later "Andy" was found sitting in the back yard of the house where he boarded. He had called at the company's office the October before with an interpreter and received \$150, and the promise of an artificial leg and light work as soon as he should be able to get around. Fifty dollars he sent to his wife in Europe, for she has five children to take care of, the oldest a deaf and dumb girl of thirteen. The rest he had used to pay his board and lodging ... Now there was nothing left.¹

Several years later, another Pittsburgh worker, David Bishop, narrated a different sort of tale in a letter to an artificial limb manufacturer:

I have used one of your limbs one year today. The rubber foot I am well pleased with, and I am satisfied with the fitting. My leg is off three inches below the knee. I am a coal-digger, and am working every day. I can walk one mile in twenty minutes. Your spring mattress rubber foot is the best out.²

Both Antonik and Bishop were industrial workers in Pittsburgh at a time when being a Pittsburgh industrial worker was a dangerous way to earn a living. Both men lost legs and were thrown into a precarious position in which their ability to work was uncertain at best. Yet one boasted of his physical ability and productivity during the previous year, while the other sat hopeless, out of a job and with no prospects of finding one. The difference between the two, and the key to success or failure after traumatic amputation, was the artificial limb. As all manufacturers of prostheses in the 1910s would have hastened to confirm, their products performed amazing acts of transformation, creating whole bodies where none had previously existed.

The promised transformation by artificial limbs in Pittsburgh was not simply a matter of bodily reconstruction. Bishop's success had wider implications for those who were deeply concerned with the fate of the industrial worker in the Steel City. Both workers' tales, though highly personal and focused on a single year in the lives of two individuals, can also be read as statements about the city of Pittsburgh. In the early years of the twentieth century. In the first decade of the century, Pittsburgh's civic image suffered a terrible blow when Eastman and a team of social researchers investigated working-class life in the city and published their findings as the Pittsburgh Survey. Eastman's sketch of Antonik's downward spiral epitomized the Survey's critique of Pittsburgh as a

model of the inequities and ruins of industrial society. Moreover, the Survey writers joined a host of critics throughout the United States who attacked turn-of-the-century industry for its division and routinization of work tasks, its control of workers in company-owned towns, and its carelessness with human life.³ Workers' bodies became central to the debate, a convenient barometer of the rewards and punishments of new types of work created in American cities. Local civic leaders had launched Pittsburgh into the national spotlight several decades earlier with the appealing imagery of advanced mechanization and Herculean workers. With the publication of the Pittsburgh Survey and its powerful images of armless and legless men posed on empty city streets, the city's business leaders and councilmen searched for counter-images to rehabilitate the damaged worker. Artificial limbs, then, represented a series of potential solutions for the industrial worker and the city as a whole. Just as a prosthesis might restore the working body to work, so, too, might it restore the image of Pittsburgh as a vibrant and working city.⁴

Industrial Hazards

As a national seat of swift and heavy industrial production, Pittsburgh was an exceptionally dangerous place in which to work at the turn of the century. Historian S. J. Kleinberg has shown that in 1900, Pittsburgh had the third highest mortality rate in the nation for men aged fifteen to fifty-four. The number of accidents reported through official channels increased when business was booming in the Steel City and decreased during economic recessions and work stoppages; hence Kleinberg suggests that accident figures functioned as Pittsburgh's "macabre indication of prosperity."⁵ Few companies kept regular records of accidents in their mills, factories, and mines before the 1910s, making it difficult to assess accurately the extent of injury in the city's industries. Pennsylvania factory inspectors' reports, though incomplete and inconsistent, offer the best view of industrial injury in Pittsburgh during this period. Inspectors provided yearly tallies of accidents that were reported to them by employers, although these figures necessarily omitted many accidents that inspectors feared were not reported due to careless or deceitful industrial record-keeping.

Statistics compiled by M. N. Baker, factory inspector for Allegheny County, shed some light on the dangers of industrial work in Pittsburgh. Between the years 1895 and 1903, when Pittsburgh claimed roughly 15 percent of the state's total number of reported accidents, the city's industries accounted for more than 26 percent of the state's reported fatal accidents. Compared to other inspection districts throughout the state, accidents in Allegheny County's mechanized mills and factories killed workers disproportionately. Baker's reports revealed the source of most accidents: between the same years of 1895 and 1903, Pittsburgh's steel industry was responsible for 65 percent of the accidents reported in the Pittsburgh region. Of thirty-six fatal accidents reported in Pittsburgh in 1895, for example, thirty-two occurred in steel mills.⁶ Baker's records during these years were far from complete, however; in 1901, when the factory inspector reported only six fatal accidents citywide (and all official inspectors in Pennsylvania tallied only 103 statewide), the Allegheny County coroner held inquests in the accidental deaths of 112 mill workers. Between 1899 and 1915 alone,

the Allegheny County coroner logged 2,313 accidental deaths in steel mills and **1,507 in bituminous coal mines, an average of 136 and eighty-nine per year, respectively.**ⁱ

Statistical summaries tell only a fraction of the tale of industrial accidents.

More descriptive analyses of the ways in which accidents occurred and workers were injured reveal some of the disturbingly mundane features of industrial trauma." The most prevalent type of accident in steel mills occurred when a worker was struck by falling materials, whether the materials in question were stray streams of molten steel, crumbling piles of scrap metal, or broken parts of overhead cranes and piping. The vertical expansion of steel mills—seen in the steady increase in the size of blast furnaces, Bessemer converters, and conveyor equipment—produced cathedral-like workplaces in which falling objects were common and especially dangerous. Over one out of every five accidents that occurred in one area steel mill in the 1910s involved production or structural materials hitting workers from above. Incidents in which workers crushed their arms, usually between moving cars, between other pieces of machinery, or between billets of steel, were the second-most common type of injury. Mechanized production on the grand scale achieved in Pittsburgh by the turn of the century made it very difficult for workers to keep clear of heavy, moving devices as they worked.^f Next in frequency came burns from hot metal; although machinery took over much of the metals-moving portion of steelmaking by the 1910s, workers still came into contact with hot metal at various stages of production. A relatively minor risk for workers (about 5 percent of all accidents) was getting caught in machinery. Unlike machinery used in textile mills) steelmaking machinery had few spinning belts that could pull workers into drive shafts. Instead, the sheer bulk of hoisting and carrying machinery made being crushed underneath them more of a concern than getting caught in pulleys. However, the rolling machinery that turned slabs of steel into plates and ingots was the main source of accidents in which men were caught in machinery. In all areas of the Pittsburgh steel mill, when machinery broke down or the production process otherwise ground to a halt, workers sent in to fix the problem were often in the most danger of being burned, crushed, or electrocuted. The closer that laborers worked to hulking machinery, the more opportunities there were for serious mishaps.

Consider the reported accidents that took place in Pittsburgh's steel mills during the month of January 1893. On January 2 of that year, Patrick McGee, a forty-year-old worker for the Carnegie Steel Company, fractured his collarbone when he fell into a machinery pit. Two days later, a worker at the Homestead Steel Works burned the skin off his hands and face when a crane that carried molten steel splashed him from above. On January 6, a forty-three-year-old worker was run over by a scrap buggy, breaking a leg. The first fatal accident of the month occurred on January 9) when William Leadbetter was crushed between two bulky slabs of steel at the Homestead Steel Works. On January 17, Louis Schmidt lost two fingers at the Homestead Steel Works when a coupling pin on a hoisting crane slipped, and John Bowntski was scalded at the Oliver Iron and Steel Company when a crane exploded and sent a spray of steam and shards of metal across the work floor. The following day, Adolph Deitrich lost an arm when he slipped while climbing down from an overhead crane, and Joseph

Remski was burned on his face and hands from a cinder explosion in the stock yard of the Oliver [Iron and Steel Company. In the final week of the month, one worker died after fracturing his skull between two scrap cars] another man lost a leg after falling under an engine, and two workers received severe cuts and burns from oil explosions. Although anecdotal descriptions of one month's reported accidents in Pittsburgh steel mills do not provide a comprehensive picture of the dangers to workers' bodies, they do give a better sense of the variety and recurrence of the perils that working men faced while on the job. Injury was a daily affair in the steel industry, with a large and varied set of causes.¹¹

If steel production posed multiple hazards to the body, so, too, did work in the region's bituminous coal industry. A Bureau of Mines bulletin from 1916 revealed the extent of accidents in southwestern Pennsylvania coal mines during the previous four decades. Between 1880 and 1914, almost ten thousand workers died from accidents in local bituminous mines, an average of over 280 workers each year. Serious disasters and idle operations made yearly totals fluctuate greatly; particularly catastrophic years such as 1904 and 1907! both years of massive mine explosions, witnessed many more deaths than the average (533 and 799 deaths, respectively). The statistical average suggests that a worker died somewhere in a Pittsburgh-area coal mine almost every day. The actual distribution of fatal accidents was never so even, but the threat to miners' lives was no less grave.¹²

More than half of those killed in the mines of southwestern Pennsylvania were crushed or asphyxiated when the ceilings of their working chambers collapsed. Work in coal mines was potentially deadly for a variety of reasons, but no single cause of death rivaled the roof-fall. What one writer called "the steady, unheralded, picking-off of workers in slate falls" occurred on an unpredictable schedule and to varying degrees of severity. ¹² Minor falls could break workers' limbs and trap them for minutes or hours while fellow workers dug them out, whereas more serious collapses crushed groups of workers! killing them quickly and without warning. Roof-falls claimed more lives in the region! in the state, and in the nation as a whole than any other cause of mining accidents. Of twenty-eight deaths recorded in area mines in 1880, twenty were caused by roof-falls. ¹³ Between 1906 and 1910, one out of every two men killed or injured in a southwestern Pennsylvania coal mine was the victim of a roof-fall. As miners worked in their cramped quarters and stooped to avoid hitting their heads on the low ceilings of mine chambers, they were well aware that the ceilings could crumble at any minute.¹⁴

The dusty atmosphere of the mine produced a second hazard that did not occur as regularly as roof-falls, but nonetheless affected miners' health and livelihood. Although mine explosions and fires accounted for less than a sixth of all fatalities in southwestern Pennsylvania between 1880 and 1914, these events often became the most shocking tragedies for coal miners and their families. Explosions and fires were responsible for the largest single-day death tolls in Pittsburgh regional mines around the turn of the century. Other main hazards in southwestern Pennsylvania mines emerged as coal companies mechanized the extraction processes after the 1880s. Moving mine cars were as dangerous underground as their surface counterparts were in stock yards of steel mills. Almost one in three nonfatal accidents in southwestern Pennsylvania mines between 1906 and 1910 was caused by a collision between rolling mine cars and workers. ¹⁵ Mine cars were

only one of a growing number of mechanical devices underground that brought as much physical risk to mining as increased extraction quotas. A contemporary description of a mechanized coal mine in Pennsylvania highlighted the noisy chaos of life underground, suggesting that swiftly moving cars were the least of miners' worries: "Machinery crashed and roared. Gongs and warning bells jarred their nerves with the apprehension of unseen danger. The floor was a network of tracks and a cobweb of cables to entrap the feet. The roof hung low enough to menace their heads. Whole trains of low mine cars that were being shifted on the switches threatened to crush the unwary"?

The realities of the largely unskilled workforces that filled steel mills and coal mines in Pittsburgh by the turn of the century meant that more common laborers were injured than skilled workers. Language differences, lack of industrial work experience, and managerial neglect combined to place recent immigrants directly in the line of fire when it came to difficulty and danger. One social reformer remarked that in local industry, "aliens, noted for their strength rather than their knowledge," were hired for jobs that only the most experienced workers could perform without frequent error.¹⁷ The result was a series of accidents that befell unsuspecting novices and defenseless veterans alike. The same luring practices that funneled particular ethnic groups to particular types of work exposed them to the brunt of accidents and isolated them from relatively safer skilled positions. A Polish steelworker for Jones and Laughlin characterized the early 1910s as a grim time for work safety in Pittsburgh when "people died like bugs," quickly, randomly, and instantly forgotten by management. ¹⁸ Samuel Bloch, writing in the *Amalgamated Journal*, accused employers of treating the immigrant worker like a "bedbug or a cockroach or a troublesome mosquito." To the majority of industrialists, Bloch continued, workers were "like vermin" who could be replaced with little effort and were thus expendable.¹⁹

The Artificial Limbs Market

The expendability of the Steel City's injured workers did not mean that all were merely tossed aside and forgotten. On the contrary, entrepreneurs recognized a nascent market centered around the seeming permanence of particular types of injury. The artificial limbs industry was but one of a series of turn-of-the-century enterprises that emerged at the crossroads of science, medicine, and commerce. Along with patent medicines, electrical therapies, and various physiological apparatus, prostheses were marketed as products that offered incredible gifts of rejuvenation to those who had become victims of modern life's myriad afflictions. Naturally, limb-makers' discussions of the body focused on an extremely limited range of injuries; amputation was never the most prevalent type of injury in the city's mills and mines, but it was the most glaring and eloquent evidence of industry's hazards. Crystal Eastman hoped that her emphasis on the economic consequences and visual shock of dismemberment would rouse public sentiment into organized action after decades of middle-class apathy in Pittsburgh. The undeniable presence of the amputee on Pittsburgh streets became an exploitable fact for reformers and entrepreneurs alike. Although the artificial limbs industry's proposed solution to industrial trauma offered little to those burned, crushed, or gassed while on the job, the concerted effort to make the dismembered body

the central figure of the rehabilitation drama further demonstrates that missing limbs were powerful symbols of modern industry's shortcomings.

While employers and legislators organized industrial safety campaigns and debated the merits of workers' compensation in Pennsylvania, the prosthetic approach to the problem of the injured working body also gained momentum after the turn of the century. Artificial limbs were as much a tentative solution to the problem of vulnerable working bodies as safety and financial programs, but they addressed the physical effects of accidental injury more than other institutional remedies. Safety programs emerged as compromises between labor reformers who publicized the ugly fact of accidents and employers who longed for efficient production and less negative publicity. Workers' compensation came about as the culmination of decades of labor grievances and a state legislature pressured by reformers and the actions of its neighboring state governments. The artificial limbs industry, on the other hand, had existed in the United States for more than half a century by the time the problem of dismemberment emerged as the most tangible evidence of industry's hazards. The push for a prosthetic solution to Pittsburgh's problems was not so much a response to the display of vulnerable working bodies in the pages of the Pittsburgh Survey as an amplification of selling practices that had made limb makers successful with military clientele before the turn of the century.

The key to marketing artificial limbs in Pittsburgh in the first two decades of the twentieth century was manufacturers' frequent shift between displaying the injured body as a motivational force for consumption and hiding the injured body by making it a walking illusion of bodily integrity. Limb-makers were careful to show the debilitating physical, social, and economic effects of amputation in advertising materials to compel the injured worker to purchase a prosthetic device; their catalogues became showcases for human wrecks made anew through the proper use of their products. Moreover, limb-makers' other critical message was that the artificial limb provided a measure of concealment on the streets of Pittsburgh that rendered the injured body invisible to prying eyes. The amputee's use of a prosthesis, like its marketing in dozens of catalogues and advertisements distributed throughout the country, depended upon the shame of physical abnormality coupled with his desire to both hide the vulnerability of his body in public and display his body as a reconstructed tool in the workplace. The double logic of prosthesis-in which artificial limbs reminded all who saw them of violent dismemberment but also suggested a possible mechanical transcendence of the human body-focused on the injured body's equal evidence of weakness and strength.²⁰ Both visual cues were valuable in the limbs market.

The artificial limbs industry in Pittsburgh in the early twentieth century was a combination of local manufacturers with small workshops and national firms with large distribution offices. The late nineteenth century saw the emergence of a fledgling prosthesis industry in the Steel City when the area's leading company, the Artificial Limb Manufacturing Company (ALMC), was established in 1869. By the mid-1880s, Pittsburgh commercial directories heralded the company as "widely known and deservedly popular" throughout Pennsylvania and applauded its dedication to producing new types of limbs for the better comfort and mobility of its clients. ALMC advertisements, which ran throughout Pittsburgh's labor press in the 1870s and 1880s, intimated that the company's staff, corn-

posed entirely of amputees, was especially sensitive to the needs of the injured and the intricacies of wearing a limb on a daily basis. From this first prominent manufacturer in the city, the scale of Pittsburgh's artificial limbs industry grew steadily until the prospective limb purchaser had many options from which to choose. The prosthetic boom in Pittsburgh came during the first decade of the twentieth century, when well-advertised national manufacturers began erecting sales offices in the city. Local branch offices of national firms connected the major marketing campaigns launched from such manufacturing centers as New York, Chicago, and Minneapolis with the burgeoning Steel City limbs market. In 1900, four firms sold artificial limbs in Pittsburgh—ALMC, Feick Brothers, Neubert and Sons, and Otto Helmond, an individual craftsman. By 1910, six more companies had come to Pittsburgh, including national distributors American Artificial Limbs, Doerflinger Artificial Limb Company, National Artificial Limb and Brace Manufacturing Company, and J. F. Rowley.²¹ Advertisements for these companies appeared frequently in both the establishment press and the labor press from the 1890, through the 1910s and invariably promised the bestmade, least expensive, and most comfortable limb available on the market.²²

Advertisements in newspapers were only a secondary way in which limbmakers attracted injured workers to purchase their products. Manufacturers' product catalogues promoted an array of prosthetic devices by creating dreamworlds of bodily integrity and pride in which accidents were the beginning of fantastic journeys for working bodies. Limb manufacturers used their catalogues to promise injured workers both renewed physical capabilities and social reintegration: the man who lost his job when he lost his armor leg, catalogues claimed, did not have to spend the rest of his days out of work and useless. Instead, with the aid of a well-made artificial limb, the former industrial worker could once again fulfill his role as wage-earner.

Images of men wearing artificial limbs, structured displays of the various components of prosthetic devices, and tales of actual customers thriving with their new arms or legs conveyed four distinct visions of the prosthetic consumer—the consumer as a man whose body appeared to be whole; as a man whose unbroken body invited him into a world of elevated social status; as a product of American technological power; and as a body that *worked* once again and could thus go back to wage-earning. Catalogues employed a symbolic repertoire that offered a vision of not only the best products on the market, but also the ideal, re-constructed consumer. Artificial limb companies were in the business of selling both body parts and self-image. Limb-makers thus encouraged injured workers to hide wounds of work from public view to conserve their manhood and normalcy and, conversely, to display the mechanical remedy with pride to enhance their claims to physical ability and technological wonder. Here was the key to limb catalogues' turn-of-the-century dream-worlds; limb-makers used their thick advertising volumes to respond to workers' desires for renewed physical ability and somatic normalcy, playing up the idea that the prosthesis produced a body that moved and worked as a whole, coherent unit and avoiding the notion that the disabled could adapt to or accept their dismemberment without making such a purchase. The dual strategies of emphasis and elision here centered on the injured body itself; the body of the injured worker, like the rhetoric of the advertisement, became a site of successive exhibition and camouflage. Limb-makers

instructed the injured worker to present his body to the world with the logic of the salesman, accentuating the pleasant and impressive qualities of prosthetic reconstruction and masking its limitations.¹

Disguise

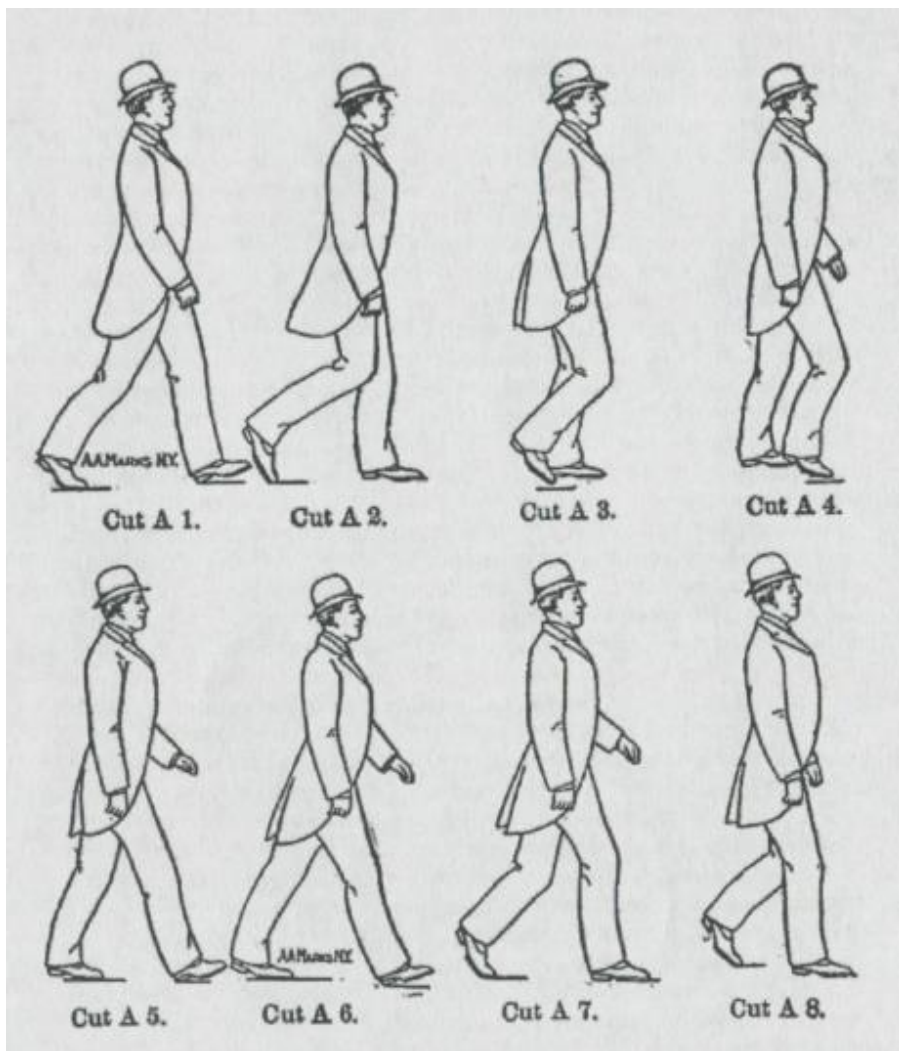
Limb-makers' first concern was to persuade the prospective client that artificial limbs made it possible for a man with a glaring disability to slip back into the crowd of the able-bodied, unblemished and undetected. A. A. Marks, a national distributor based in New York whose catalogues were widely available in the Pittsburgh region and who did most of its business through the mail, claimed that there were "many thousands of people" throughout the United States who could "mingle with other people without disclosing their loss" because they had used the company's prostheses.¹ The problem of visible disability, according to limb-makers, was that it branded the accident victim as both unsightly and unemployable. The "sudden, alarming" ubiquity of the amputee that characterized post-Civil War United States was mirrored after the turn of the century by the prevalence of the industrial walking wounded-men who lost arms, legs, fingers, and eyes and subsequently lost their jobs.²⁵ When editors of the Pittsburgh Survey exposed such men in the streets of Pittsburgh with Lewis Hine's photographs, they exploited the power of staring to shock the reader into civic action. Limb catalogues also used the power of the stare, but to make a purchase seem necessary and inevitable. The scrutiny that catalogues turned on the visible stump exposed to the public was not a spontaneous or disinterested glance at injury, but the stare that Rosemarie Thomson argues "estranges and discomforts" both the viewer and the viewed.²⁶ The public disclosure of limbleness became an unpardonable decision for the injured man, an act that set him apart from the passerby, invited unwelcome inquiries, and made public life unpleasant for everyone. Limb-makers argued that dismemberment in the course of industry was a reality that could be acknowledged within the fraternity of the wounded but should be hidden elsewhere. When the injured worker read a limb catalogue, the viewer and the viewed-the pair rendered uncomfortable by the act of staring-were one in the same; both possessed a problem of physical ability and public image that could be remedied by the advertised product. The prospective purchaser who suddenly saw himself as the subject of countless double-takes and whispered conversations would, presumably, be more inclined to solve the problem once and for all.

A key continuity between artificial limb companies' appeals to Civil War veterans in the late nineteenth century and industrial workers in the early twentieth century was an emphasis on the ease with which the injured could mask the loss of a limb and conceal the embarrassing fact of dismemberment. Manufacturers stressed the aesthetic perfection of limbs that only experts trained in their science and manufacture could detect as artificial. Feick Brothers noted that "those who wear artificial limbs seldom wish to expose their misfortune," thus the key to a comfortable life after dismemberment was vigilant concealment of the stump and the artificial limb.²⁷ A. A. Marks stressed a similar point, declaring that "no person who maintains his self-respect, no matter what his disability may be, cares to be constantly reminded of it, and the commiseration of others, above all

things, is the most abhorrent."²⁵ Limblessness was strange, but it was also pitiful and worrisome. According to limb-makers, the loss of an arm or a leg produced psychological burdens for the man who had constantly to fret about his public appearance, lest he become a childlike or feminized subject of general sympathy. J. F. Rowley addressed the injured worker's need directly, stating that "one of your reasons for buying an artificial leg is to disguise or hide your loss from the public; you want to appear as a man, and you can do this only by learning to use the leg perfectly ... the man who hitches, limps, or swings while walking, deceives no one, for all know he has an artificial leg." As much as conspicuousness, manhood was at stake. Those who lost a limb should be prepared to forget their loss and move on in life without the persistent memory of dismemberment. Because accident victims' "minds and dispositions" gradually became "prepared by Nature to bear their misfortunes," it was essential that they stop others from reminding them of the freakish nature of dismemberment. A. A. Marks concluded that only an artificial limb could "conceal the loss, restore a natural appearance to the person, avoid observation and comment, and, , , become companionable and necessary to the wearer's mental comfort." The "annoying and odious" attention of strangers was the first affliction of dismemberment that could be solved through prostheses.^P

To deflect this scrutiny, limb-makers modeled their products after the appearance of Anglo-American body parts and the mechanics of experimental test subjects. Manufacturers stressed that they had devoted much thought and observation to the design and engineering of their limbs. An ALMC newspaper advertisement that ran in the late nineteenth century promised that its newest artificial leg offered the "nearest approach to the natural member of any invention of the age,"¹¹ J. Feick Brothers, too, chose the phrase "nearest approach to the natural member" to suggest that its limbs came as close to human anatomy as was technologically possible at the turn of the century. Though artificial limbs could not be perfect substitutes for lost body parts, Feick Brothers stressed that "there is no perfect limb"-they could be made to such a degree of sophistication that the wearer's body and the stranger's eye could be easily tricked.¹²

A covered prosthesis' natural appearance, stressed limb-makers, produced situations in which only the manufacturer himself could identify those with disabilities from the able-bodied. Because manufacturers studied the motion of the human body in minute detail, they claimed to be able to approximate the body's functions with wood, metal, and rubber. A. A. Marks produced a series of drawings of a man walking that, much like the work of the era's chronographers and scientific managers, broke the body's rhythms into discrete stages. (Figure 1) Marks' image was meant to convince the reader that their craftsmen and designers had mastered the mechanics of walking; all that was left was to engineer a suitable simulation. The artificial limb that "represented the natural movement" of a man in motion was designed to work smoothly by bridging these disjointed positions and obeying the "laws governing locomotion"; it turned a progression of poses into a smooth, continuous performance.^P J. F. Rowley noted that with most artificial legs, a man who walked slowly could "make a fair appearance," yet when he quickened his pace to three miles per hour, his motion became "awkward and ungainly," making him "the observed of all observers."^Y The best legs, therefore, were those to which the amputee could easily acclimate himself and



incorporate into his anatomy. The pinnacle of prosthetic engineering recreated the walk, the balance, and the complete repertoire of common motions that made the uninjured body perform easily and without conscious thought.

The J. F. Rowley Company informed its future clients that "to see is to be convinced" of the quality and authenticity of its artificial legs.³⁵ Evidence of prostheses' illusory authenticity was crucial to manufacturers' marketing narratives. Harlan Hahn noted that representations used in bodily advertisements "may have been even more important than their content," for they forged a direct, tactile connection between marketing image and bodily image that was other-

wise clouded by technical claims and copy clichés³⁶. J. F. Rowley adopted this visual premise as the central marketing device of its 1911 catalogue; the volume was meant to "encourage the unfortunate by placing photographic reproductions of men showing the extent of their loss and restoration." Manufacturers used the before-and-after technique rampantly as a means of convincing the amputee of the tricks he could accomplish with prosthetic devices. The first image in these series showed a man, often seated, with his stump or stumps exposed in an overt presentation of his injury. The second image typically depicted the same man standing, fully clothed, the sleeves or legs of his suit filled with, unseen artificial limbs. Drawings presented in all catalogues showed men in the process of dressing themselves and applying their artificial limbs. When limbless, the men appeared stiff and uncomfortable; yet when standing with limbs in place, they were transformed into models of gentlemanly fashion and ease. A contrasting technique was the revelation of injury after the achievement of illusion. J. F. Rowley's catalogue featured an image of three men standing side-by-side, one of whom wore two artificial legs. All three men were of a similar height and build, and each dressed alike, in jackets, pants, and bow-ties. Rowley challenged the catalogue reader to detect the illusion, a task that was particularly difficult without seeing the men in motion. A second photograph revealed the bearer of the artificial limbs, holding the other two men on his shoulders to prove the strength of the devices.^f

Illustrations of amputees fully clothed in business suits suggested the strong link between the concealment of an injury and the art of social disguise. Prosthetic limbs allowed the injured worker to play the part of an able-bodied man, yet it also gave him a claim to a world of respectability that seems rather strange in light of the economic realities of working-class life. Limb-makers' second symbolic strategy was to equate the injured worker's use of an artificial limb with an immediate boost up the socioeconomic ladder. Images of men using artificial limbs featured clothing styles that highlighted their apparent wealth. Indeed, clothes displayed in catalogues often overshadowed prosthetic devices themselves, completely covering limbs and thus masking any evidence of artificial reconstruction. Limb-makers placed industrial workers-men who, if fortunate enough to be able-bodied and employed, made barely enough money to support themselves and their families on a weekly basis-among the ranks of the wealthy to suggest the hidden power of artificial limbs, the integral role that they played in the art of social masquerade. If participation in high society was merely a matter of imitation and deception, a view promoted by many social critics in the late nineteenth century, then the physical illusion provided by an artificial limb made the injured worker a prime candidate for social success. Industrial workers in the hunt for an inexpensive and comfortable prosthesis discovered sales pitches that emphasized both the camouflage provided by limbs and the new roles they could play once properly disguised.

Limb companies made it clear that they recognized their customers' financial difficulties. A. A. Marks claimed that prices of different limb models were set with the poor working man in mind. Marks' catalogue noted that the "greater number of wearers of artificial limbs are in limited circumstances. It is exceptional to find a wealthy person in need of one. The wage-earner, the laborer, the man who works in the mill, the engineer fireman, brakeman, or the miner, the private in the army,

these make the greatest number of limb wearers...)"⁸ The J. F Rowley Company provided a similar disclaimer in 1911, arguing that even though "any need worth supplying is worth being well supplied," the firm was "not unmindful of the fact that there are a vast number of individuals who find it a difficult matter to raise the necessary money to purchase an artificial leg at or in the vicinity of One Hundred Dollars."³⁹ Why, then, the frequent use of photographs and drawings of well-to-do men in business suits and top hats, if these men were to be surrogates for the industrial worker who had to scrape the money together to afford the limb in the first place? The class appeals of these respectable limb-wearers seem out of place in such catalogues, yet their presence can be explained in terms of the intimate connection between the performance of "able-bodiedness" and the performance of social grace and affluence. In essence, limb-makers threw open the curtain to reveal the artifice of social identities in modern, urban society. The amputee who appeared whole and the man of limited means who appeared wealthy were cut from the same cloth; both donned props to present their bodies to the public in certain ways. Images of refined bodily presentation were meant to hint at the possibilities offered by prosthetic reconstruction. Although limbs may have been priced to make them accessible, the social tableau presented by images of men wearing limbs was decidedly elite and inaccessible for the common mill worker. The point was not that a Pittsburgh worker with an artificial limb could suddenly renounce his working-class status for the world of the city's affluent neighborhoods, but that he could take part in the similar practice of configuring his body in public as he wished.

Many testimonials and illustrations included in limb catalogues made the connection by presenting men who appeared well-to-do while wearing artificial limbs. Limb-makers produced image after image of nondescript men in well, tailored suits and top-hats who epitomized the refined and elegant appearance of their ideal customers. A further mingling of artifice and wealth came in the form of the inventor-amputee. Some of the same men who wrote in catalogues of their business successes as pioneers of the prosthetics industry were also keen to show that they, too, used their products. Owners and patentees of prosthesis firms presented themselves as inventive geniuses hard at work in their craft workshops and corporate boardrooms. They combined the highly-praised attributes of the artisan with the crucial risk, taking and decision-making skills of the prosperous entrepreneur. According to limb catalogues, owners' innovations and technical insights knew no bounds. John Rowley, the inventor of the patented Rowley Leg, appeared in his catalogue as a man who saw an economic opportunity where none had previously existed. The Rowley Leg came about as a result of the inventor's dissatisfaction with existing prosthetic options. The catalogue set the scene: "At the very outset the founder was convinced of the vast room for improvement in the comfort, durability, and life-like action of the existing artificial legs and what might be accomplished with a good artificial leg and a thoroughly competent teacher. I, Rowley, the "thoroughly competent teacher," combined the technical knowledge of the inventor with the empathy of the accident survivor and the physiological insights of the student of human motion. The catalogue summarized his wealth and status in the business world with a biographical sketch and the standard series of before- and-after photographs."

Display

Along with marketing messages that stressed the artificial limb's power to let its wearer slip into the obscurity of somatic normalcy, limb-makers also provided two contrasting messages that encouraged workers to display their prostheses as objects of personal pride and utility. Invisibility might have been desired on Pittsburgh streets, but if injured workers were to regain their ability to earn a wage in a competitive labor market, they would need to show that their artificial limbs functioned as well as their original arms and legs. In order to convince the amputee that his prosthesis was a device worth showing in certain contexts, manufacturers first tied its production and performance to the ever-increasing potential of machine technology. Limb-makers argued that artificial body parts were the culmination of decades of scientific and mechanical effort. Limbs, conceived by inventive craftsmen, were brought to fruition by the precision and repetition that could only be offered by modern machinery. Wearing an artificial limb made the injured worker a walking advertisement for American engineers' lofty achievements, a billboard for mechanized production.

As the J. F. Rowley catalogue explained, "An artificial leg is a mechanical device, a machine if you will, pure and simple. As in all other machines an artificial leg consists of parts, and ... the whole leg ... represents the parts assembled or combined." A prosthetic device was both an effective replacement for the natural limb and an amalgam of screws, bolts, hinges, and clamps. The essence of human motion could be mimicked by bringing various parts together in a mechanical system. However powerful and precise the machinery, limb manufacturers still required skilled men to work the machines and produce the best prosthesis that technology could afford. Therefore, man and machine worked side-by-side to combine the craftsman's skill with the machine's precision. This vision of cooperation is astounding because it was offered to workers who had suffered greatly from the apparent incompatibility of man and machine in fast-paced workplaces. Here was a therapeutic narrative of machinery-c-machinery that attempted to mitigate the damage it had done. Machinery removed workers' limbs, but it also provided them with replacements, which were compact machines themselves. The Rowley catalogue revealed the extent to which artificial limbs were marketed as machines in their own right. Rowley explained: "You will have the further advantage of wearing an artificial leg, every part of which is standardized; i.e., tools, jigs, and dies used by us in the manufacturing of metallic furnishings for legs make every certain part exactly like, therefore all parts are interchangeable and easily replaced without interference or delay should you meet with an accident." Turn-of-the-century industrial workers were well acquainted with the concept of interchangeable parts, and their own precarious position in the largely unskilled Pittsburgh workforce cast a dire meaning on the phrase "easily replaced without interference or delay."!

Limb catalogues' task, then, was to make favorable and inspiring the image of interchangeable parts and machines that produced them. Images of artificial limb components revealed the technical precision that formed the foundation of prosthetic reconstruction. The sharp edges, smooth lines, and polished surfaces of parts displayed in catalogues suggested that machines could make wonderfully intricate and beautiful products. The internal anatomy of limbs was equally

intricate, connecting dozens of parts into a sophisticated mechanical system. The standardization of parts was essential, for it made limb repair a simple task. The artificial limb was the sum of its parts, a fully-functioning machine built from precise and wondrous gadgets. Images also reemphasized the point that human motion was fundamentally a mechanical process. With the help of the body-as-machine metaphor, images of mechanical joints could make the argument that steel and aluminum couplings were not mere imitations of human tissue, but rather imitations that, in terms of performance, were so close to the real thing that such distinctions mattered little. Limb catalogues stressed that machines and machine-made parts were not to be feared or loathed. Instead, they gave the injured worker the opportunity to recapture the spirit of wholeness and ability that had been taken from him.

The significance of the limb-machine was that it gave the amputee working power once again. The dismembered body was a source of both wonder and pity; men who had lost limbs were visually exotic, but also deprived of social utility. A central purpose of the artificial limb, then, was to return the accident victim to his rightful position as a wage-earner by allowing him to perform work again. Erin O'Connor's assertion that dismembered "unmanned" male workers, giving their bodies a "distinctly feminine side," suggests that the late-nineteenth-century conception of manliness in American working-class culture centered on bodily integrity. The "theatrical malingerer" of the amputee's stump-its phantom pains, its reluctance to heal, its sensitivity-raised concerns about the ability of working men to return to the workforce.⁴ Limb manufacturers, on the other hand, defined the worker's body in terms of what it could do. A. A. Marks promised that "persons wearing two artificial legs are so thoroughly in control of their means of locomotion that they go about much as other people. They readily resume their former occupations, no matter how arduous they may have been."⁴³

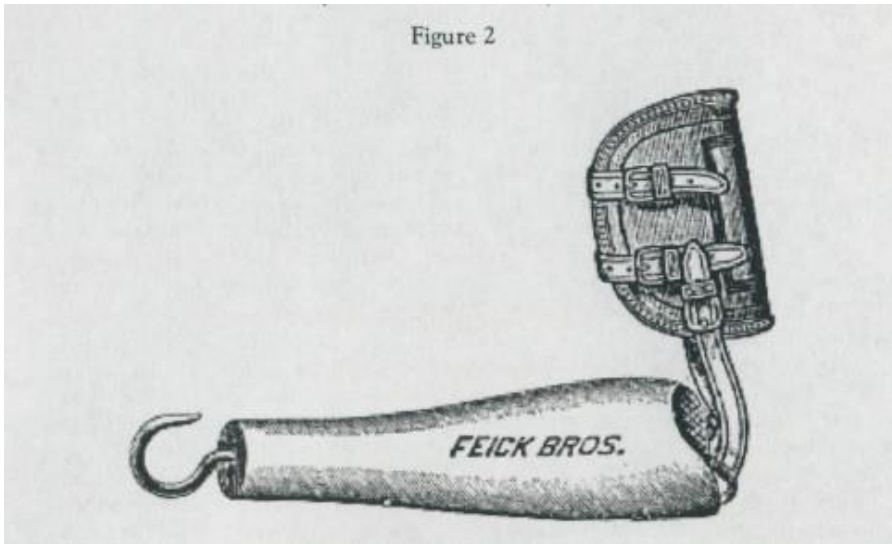
After dismemberment, the industrial worker's body became a tool in the hands of the limb maker, the focus of a process in which "a helpless member of society" became "a useful one."⁴⁴ J. F. Rowley noted that by using their products, "helpless cripples [had] become useful members of society" once again. Limb-makers presented the accident victim as a man whose work ethic was as strong as ever, but whose body needed to be reworked to satisfy that ethic. Physical ability after prosthetic reconstruction was a matter of overall balance, ease of movement, and dexterity. Limb-makers used rather outlandish means to show that men with artificial limbs could use their bodies in a variety of physical situations. J. F. Rowley's catalogue suggested the range of physical movements offered by artificial legs with images of men walking tightropes and riding bicycles in generic industrial settings. Both acts required a fine sense of balance and the ability to coordinate the movement of artificial legs with the rest of the body. Although the worker-amputee would never have to balance on a tightrope or ride a bicycle to prove his social utility, limb-makers presented these types of images as proof that artificial legs would provide a sturdy base upon which men could work. Catalogues were, after all, a subtle form of entertainment in which the amputee could imagine his possibilities after being remade. The tightrope and the bicycle introduced a sense of wonder into the narrative of physical renewal, posing a challenge to body/machine hybrids that were always up to the task.⁴⁵

Like the American surgical community of the early twentieth century, limb manufacturers believed that the primary value of an amputation stump was its ability to accommodate a prosthetic device and reestablish normal function. This utilitarian view of stumps extended to the limb itself when limb-makers considered industrial work as the goal for artificial arms and legs. Limbs meant to facilitate industrial work, as opposed to those meant to give the amputee a more natural appearance in public, were not made with aesthetics in mind. Instead, limb-makers produced working limbs with an eye toward cost and basic function. Although a middle-class accident victim or a skilled worker with ample compensation might seek an attractive, realistic limb, doctors and manufacturers alike stressed that for many workers it was "better to sacrifice appearance to strength and utility." The industrial worker's artificial limb was a device whose design was determined by the needs of the industrial workplace, an appendage that could be "laid aside as a mere tool" at the end of the workday.⁴⁶ The cheap but useful artificial limb, "a perpetual reminder of the wearer's bereft condition," gave no illusion of bodily integrity! but allowed the accident victim an opportunity to balance himself on the mill floor or the mine chamber and even manipulate tools with a mechanical hand or arm. Peg-legs and hook-arms served the most basic functions of supporting weight and lifting objects without any pretense of anatomical authenticity. The difference between "elegance and unility" in artificial limbs translated into a matter of cost for the amputee. Feick Brothers' peg-leg, the company noted, was "intended for laboring men, and others whose means will not permit the purchase of an expensive artificial limb." Though a full-model limb for an amputation between the knee and the ankle cost \$70, Feick Brothers' peg-leg cost only \$10. Similarly, A. A. Marks peg-legs started at \$15.⁴⁹

The most-advertised type of practical artificial limb in the early 1910s was the artificial arm that accommodated a variety of working implements for a variety of tasks. Feick Brothers sold two versions of artificial arms that came with detachable hands, allowing the injured worker to attach a variety of tools for different types of work. (Figure 2) This "very useful tool for laborers, farmers, and railroad employes," was the ultimate expression of prosthetic utility; the manufacturer made no attempt to produce a life-like limb in this case, for the purpose of the device was not illusion but work.⁵⁰ The artificial arm here became a workbench, a platform for any type of tool that an industrial worker could use. Armed with such a device, a worker could swap hooks, pinchers, files, or clasps (in addition to knives, forks, and spoons) at will, making his new arm almost as versatile as the original. A. A. Marks also sold artificial arms with interchangeable tools and presented a drawing of such tools at work in a workshop. (Figure J) The images cropped the workers' bodies, focusing on artificial limbs at work without attempting to incorporate them into the men's entire somatic ensembles. Here mechanical arms and their deserved presence in the workplace filled the artist's frame; for each illustrated worker, a natural arm worked in tandem with an artificial arm to show how one complemented the other.⁵¹

The promise of artificial limb catalogues! as Lisa Herschbach has noted, was that "loss was constructive; that amputation in particular could layout new paths, voyages of discovery, and that science and technology would show the

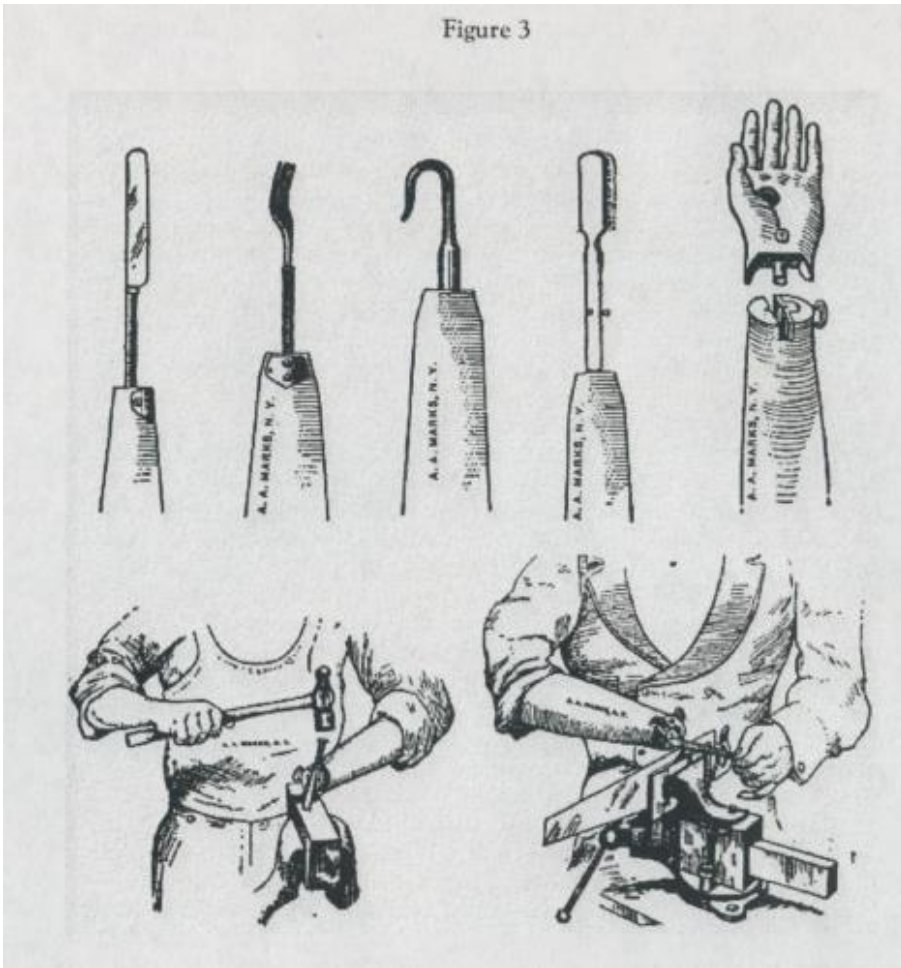
Figure 2



way."S2 Symbols employed in limb catalogues were meant to sell manufacturers' products and secure patentees' places in American techno-medical history, but they were also meant to establish a community of consumers around the use of prosthetic devices, a group of people with the same problem following the same path toward a solution. In the 1870s, writer William Rideing noted a new trend in the marketing of artificial limbs to Civil War amputees. Manufacturers began including testimonial sections in their limb catalogues as another way to impress upon prospective customers the quality of their products. Rideing noted that testimonials expressed the "experiences of crippled men whose infirmities have been relieved ... by the dexterity of artisans in human-repair shops.u53 When limb-makers turned their attention to industrial workers after the turn of the century as their main clientele, the use of testimonials and correspondence networks became even more prominent. Part of the objective of letter-writing was to make consumers believe that they had access to every scrap of information available on artificial limbs. Feick Brothers noted that at the turn of the century, there had been "entirely too much mystery thrown about the making of artificiallimbs."S4 Equipped with lengthy lists of actual amputees who wore artificial limbs, limb-makers stressed, the prospective customer could have all his questions answered and never feel alone in dismemberment.

Limb-makers capitalized upon the isolating effect of injury to make themselves and their catalogues seem essential for the amputee. Entrepreneurs attempted to unite the atomized mass of the industrial limbless into a cohesive network of savvy consumers. Most catalogues ended with lengthy collections of customer commendations that followed a standard sequence, providing a brief account of the dismembering accident, a favorable review of the prosthesis' performance, and an affirmation of the manufacturer's supremacy. Many letters from grateful customers then ended by welcoming the correspondence of prospective customers. A steamboat worker from Kentucky declared himself "ready and willing

Figure 3



to give any information ... to anyone in need." Another man from New Jersey encouraged "everybody that has need of a leg" to visit him and observe him in action.⁵⁵ Testimonials were meant to establish letter-writing networks that could exchange information about the best models of artificial limbs, the most comfortable techniques of wearing limbs, and the shared experiences of the turn-of-the-century injured. Pittsburgh's injured workers were promised a close and meaningful connection with amputees across the country who understood the hopelessness, indignity, and poverty of dismemberment. A. A. Marks encouraged prospective buyers to provide the company with a list of men with whom they wished to correspond; Marks would send the list of addresses upon receipt. F. Rowley went even further, establishing a "Ten Year Club" for individuals who had worn a Rowley leg for ten years or more and wanted to correspond with both veterans and newcomers to the world of artificial limbs. In its 1911 catalogue,

the company supplied one hundred letters from satisfied customers, including their addresses.⁵

Questions remain of how Pittsburgh workers responded to these prosthetic narratives and how many of them actually purchased artificial limbs after suffering permanent injury in the workplace. One thing is certain—the cost of the most sophisticated prostheses offered by Pittsburgh limb-makers put them out of reach for the majority of accident victims. Limbs with movable joints, cushioned sockets, and a smooth, tan complexion cost between \$70 and \$150. The least elaborate, most utilitarian prostheses on the Pittsburgh market cost between \$10 and \$30. At a time when average yearly incomes for workers in Pittsburgh's major industries ranged from \$500 to \$800, the purchase of a "special" artificial limb, as the J. F. Rowley Company described its top model, would have been too much for many to bear.⁵⁷ Compensation amounts offered to workers under existing accident relief programs were notoriously uneven. Though some iron and steel manufacturers paid workers as much as \$800 for the loss of a limb, many firms offered only \$50. Several industrial employers in Pittsburgh offered workers artificial limbs as part of their compensation for work-related injuries. The United States Steel Corporation accident relief plan of 1910 gave artificial limbs to amputees in addition to twelve to eighteen months' wages. U.S. Steel's goal, however, was to assist workers in regaining their working ability; peg-legs and hook-arms would suffice for the work positions available to the injured. Several coal company programs reviewed by the Commissioner of Labor in 1909 provided workers with \$75 explicitly for the purchase of an artificial limb.⁵⁹ Coupled with the unemployment that immediately followed the loss of a limb, the compensation paid to injured workers from companies meant that "working limbs" were the only option for the vast majority of Pittsburgh industrial amputees. The appeals of bodily disguise and social emulation were subordinated to the appeals of display and reconstructed ability.

Injured workers in Pittsburgh and industrial America might have shared a sense of physical and economic loss, but they needed new cues to think of themselves as members of a distinct group, the prosthetically reconstructed. Although artificial limbs had been readily available on the American market since the 1840s, the turn-of-the-century limb industry made the first attempt to mobilize the industrial wounded into their own subculture. As injured workers pondered the possibility of prosthetic augmentation, they entered an ambiguous era in the Steel City in which their bodies were further converted into commodities, discarded and replaced when damaged. Limb-makers' advertising claims created long lists of new capabilities for amputees to desire as their own individual improvements, incorporated into the privacy of their own bodies. Yet their photographs and illustrations reinforced the notion that the body of work was a public asset, belonging to industries as useful tools and cities as models of perfection. Workers might hide their stumps to avoid personal discomfort, but what they displayed in lieu of disability was a facade of able-bodied normalcy. Catalogue images produced new therapeutic narratives for the type of men whom Hine posed on Pittsburgh streets and framed as helpless, futureless victims. Limb-makers promised help and a future by encouraging workers injured by the dangerous work of the Steel City to think of their bodies before accidents as merely the original versions of works in progress. Bodies could be

disfigured, but they could also be transfigured, updated and reworked again and again in a process dictated only by technical innovation and the size of amputees' pocketbooks.

A cohesive community of reconstructed workers was an appealing vision of group affinity based on a belief in a better industrial future. With a happy ending that combined physical ability and psychological ease, the prosthetic narrative was a marketable alternative to Eastman's vision of Pittsburgh's nightmarish tally of amputees: "In five years there would be 2,500. Ten years would make 5,000, enough to people a little city of cripples, a number noticeable even among Greater Pittsburgh's 600,000. It is no wonder that to a stranger Pittsburgh's streets are sad...⁶¹ Originating in these sad streets, the tales of Andrew Antonik and David Bishop suggested the miserable "before" and the miraculous "after" that was the heart of the prosthetic promise. Limb-makers' efforts were meant to restore the body of work by vesting it with renewed power and value while rescuing it from the swift decline that injury seemed to portend. The late nineteenth century brought "dreadful implements of death and mutilation" that could be combated successfully only if the loss of a limb was no longer a catastrophe, but merely "one of the minor misfortunes" of life.⁶² In a move that could be equally philanthropic and self-serving, manufacturers vowed that the able, working body would persist. City boosters seized upon the therapeutic narrative of artificial limbs, in which civic problems had ingenious solutions, strong bodies had renewed power, and working men had an auspicious future before them. Just as turn-of-the-century industrial workers carried the burden of faster paces and hazardous work routines, the artificial limb carried the burden of safeguarding the image of work as a lasting symbol of Pittsburgh.

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ENDNOTES

1. Crystal Eastman, *Work~Accidents and the Law* (New York, 1910), 149.
2. A. A. Marks, *Manual of Artificial Limbs~Copiously Illustrated~An Exhaustive Exposition of Prosthesis* (New York, 1914), 267.
3. For other contemporary criticisms, see Arthur B. Reeve, "Our Industrial Juggernaut," *Everybody's Magazine* 16 (February 1907): 147-57; and William Hard, "Making Steel and Killing Men," *Everybody's Magazine* XVII (November 1907), 579-93. For an excellent overview of intellectuals' concerns about industrialization, see James B. Gilbert, *Work Without Salvation: America's Intellectuals and Industrial Alienation, 1880-1910* (Baltimore, 1977). The best scholarly work on the Pittsburgh Survey is Maurine W. Greenwald and Margo Anderson, eds., *Pittsburgh Surveyed: Social Science and Social Reform in the Early Twentieth Century* (Pittsburgh, 1996).
4. On the ways in which local civic leaders sculpted images of the city, see Anthony N. Penna, "Changing Images of Twentieth-Century Pittsburgh," *Pennsylvania History* 43 (January 1976): 48--53.

5. S. j. Kleinberg, *The Shadow of the Mill*, W. K. W. Families in Pittsburgh, 1870-1907 (Pittsburgh, 1989), 28, 31. Hamlin Garland's 1894 article on Homestead steelmaking was one of the first national chronicles of local industrial hazards. See Hamlin Garland, "Homestead and its Perilous Trades," *McClure's Magazine* 3 (June 1894): 2-20.
6. Figures are based on an analysis of the *Annual Report of the Factory Inspector of the Commonwealth of Pennsylvania* (Harrisburg, 1895-1903).
7. Allegheny County, Office of the Coroner, "Record of Inquests Held," 1899-1915, in Pennsylvania State Archives, Harrisburg.
8. This analysis of steel industry accidents is based on *First Annual Report of the Commissioner of Labor and Industry*, 1913-14, Part II (Harrisburg, 1915), 15. The commissioner's report examined 18,931 accidents reported in 1914.
9. Workers' key to mill safety, according to the General Safety Committee of the Carnegie Steel Company, was to avoid "cylinder heads, belts, gears, shears, scrap drops, saws, flying shears, and any kind of moving machinery" unless necessitated by the "nature of their occupation." Few jobs inside or outside Pittsburgh steel mills afforded workers the opportunity to keep away from such hazards, yet the spirit of comprehensive vigilance remained on the top of safety engineers' list of effective practices. See Carnegie Steel Company "General Instructions to Employees to Avoid Accidents, March 1917," William J. Gaughan collection, Archives of Industrial Society, Archives Service Center, University of Pittsburgh.
10. *Annual Report of the Factory Inspector of the Commonwealth of Pennsylvania* (Harrisburg, 1893), 291-2. During the 1910s, the socialist weekly *Justice* published such brief descriptions of deaths in Pittsburgh workplaces as a standard feature of its call for industrial reforms.
11. U.S. Department of the Interior, Bureau of Mines, *Coal-Mine Fatalities in the United States, 1870-1914*, by Albert H. Fay, Bulletin 115 (Washington, D.C., 1916), 8. These figures represent only those accidents that were reported officially to the state's mine inspectors; thus, they probably underreport deaths in mines during these thirty-four years. The inspectors themselves were skeptical about the accuracy of their statistics, noting that they were dependent upon the honesty of coal companies. See *Annual Report of the Factory Inspector of the Commonwealth of Pennsylvania* (Harrisburg, 1905), 4.
12. Muriel Sheppard, *Cloud by Day, The Story of Coal and Coke and the People* (Chapel Hill, 1947), 154.
13. *Annual Report of the Secretary of Internal Affairs of the Commonwealth of Pennsylvania* (Harrisburg, 1880), 289.
14. Frederick L. Hoffman, "Accidents in Bituminous (Pennsylvania) Mines," *Coal Age* 27 (27 July 1912), 120-1.
15. *Ibid.*, 120-1.
16. William Gibbons, *Those Black Diamond Men: A Tale of the Anthracite Valley* (New York, 1902), 141.
17. Robert Watchom, "The Cost of Coal in Human Life," *Outlook* 92 (22 May 1909): 176.
18. Interview with Ignacy Mendyk, Series 2, Tape 13, Pittsburgh Oral History Project, Library and Archives Division, Historical Society of Western Pennsylvania, Pittsburgh.

19. *Amalgamated Journal*, 20 October 1910.

20. On the double logic of prostheses, see Mark Seltzer, *Bodies and Machines* (New York, 1992), 60.

21. *Cities of Pittsburgh and Allegheny; Leading Merchants and Manufacturers* (New York, 1886), 193; *Directory of Pittsburgh and Allegheny Cities* (Pittsburgh, 1900); *Pittsburgh Directory* (Pittsburgh, 1910). In 1909, the *Pittsburgh Sun* listed two other sources for artificial limbs—Forster Artificial Limb Company and Pittsburgh Physicians Supply Company. Neither was listed a year later in the city directory. Of the companies located in Pittsburgh, J. E. Rowley had the widest national reach; apart from its Chicago headquarters and Pittsburgh office, Rowley also had branch offices in St. Louis, Kansas City, Omaha, Indianapolis, Cincinnati, and Detroit.

22. A particularly consistent and lengthy run of ALMC advertisements can be found in the *Commoner and Leber Herald* in the summer and autumn of 1887. For representative advertisements from other manufacturers, see *Pittsburgh Sun*, 14 December 1909; *Justice*, 11 October 1913; *Iron City Trades Journal*, 21 May 1909, 4 June 1909.

23. Catalogues were not clear reflections of the aspirations of the injured, nor were they merely evil manipulations concocted to dupe the gullible. Instead, catalogues can best be characterized as collections of images seen through the distortions of a funhouse mirror, a metaphor used by Roland Marchand to explain American advertising's representational strategies between the World Wars. Marchand argued that American print advertisements skewed social realities, amplifying certain desires and fears while eliding any solutions to consumers' problems that did not involve a purchase. See Roland Marchand, *Advertising the American Dream; Making Way for Modernity, 1920-1940* (Berkeley, 1985), xvi. These kinds of appeal were not new at the turn of the century; as Lisa Herschbach has shown, limb-makers marketed their goods after the Civil War with similar themes of illusion, dignity, and utility. What was new after 1900, however, was the ideal figure upon whom limb-makers staked their claim to mechanical achievement. By the turn of the century, the diligent industrial worker had replaced earlier models of physical ability such as the craftsman, the farmer, and the ship captain as the main protagonist in manufacturers' tales of bodily reconstruction. See Lisa Herschbach, "Fragmentation and Reunion: Medicine, Memory, and Body in the American Civil War," (Ph.D. diss., Harvard University, 1997), 102.

24. A. A. Marks, 4.

25. David D. Yuan, "Disfigurement and Reconstruction in Oliver Wendell Holmes's 'The Human Wheel, Its Spokes and Felloes,'" in *The Body and Physical Difference: Discourses of Disability*, ed. David T. Mitchell and Sharon L. Snyder (Ann Arbor, 1997), 72.

26. Rosemarie Garland Thomson, "Seeing the Disabled: Visual Rhetorics of Disability in Popular Photography," in *The New Disability History: American Perspectives*, ed. Paul K. Longmore and Laud Umanski (New York, 2001), 347. Hine's photographs appeared in both Eastman's studio and John A. Fitch, *The Steel Workers* (New York, 1910). For an analysis of Hine's survey photographs, see Maurine W. Greenwald, "Visualizing Pittsburgh in the 1900s: Art and Photography in the Service of Social Reform," in Greenwald and Anderson, 124-52.

27. Yuan, 73-5; Feick Brothers, *Illustrated Catalogue and Price List of Surgical Instruments*, third edition (Pittsburgh, 1896), 552.

28. A. A. Marks, 183.

29. J. E. Rowley, *An Illustrated Treatise on Artificial Legs* (Chicago, 1911), 84.

30. A. A. Marks, 248.
31. *National Labml'ibune*, 11 June 1887.
32. Feick Brothers. 552.
33. A. A. Marks, 18. Marks noted that "kinetoscopic photography affords the most valuable aid to an investigation of the knee and ankle joints when performing their functions." For discussions of chronophotography and its uses in scientific management, see Anson Rabtnbach, *The Human Motar: Energy, Fatigue, and the Origins of Modernity* (New York, 1990); Marta Braun, "Marey and the Organization of Work," in *Picturing Time: The Wmk of Etienne-Jules Morey (1830-1904)* (Chicago, 1992), 320-48; and John Pultz, *The Body and the Lens' PhotoWaphy 1839 to the Present* (New York, 1995), 30.
34. J. E Rowley, 24.
35. *Ibtd.*, 5.
36. Harlan Hahn, "Advertising the Acceptably Employable Image: Disability and Capitalism," in *The Disability Stum" Reader*, ed. Lennard J. Davis (New York, 1997), 178.
37. J. F. Rowley, 94, connected Its "seeing is believing" argument to the authority of photography: "The science of photography is simply holding the mirror up to nature and making permanent the reflection therein, and we may as well say here that a photograph cannot be had of a man in any condition unless the man is there identically as Tepre~ sented ... In order to place this matter before you so there will be no question of your understanding it thoroughly, we secured the services of one of the most expert artists with a camera in America to take photographs (snap shots), of Rowley wearersin action, running, jumping, making pedal mounts on bicycles, etc. These photographs have been made into engravings by the half-tone process and appear on the following pages, and we will pay one hundred dollars in gold to the man who will prove that they are not made from instantaneous photographs (snap shots), or that they are not an exact reproduction of the man in action." Limb-makers' appeals during the transition period before the tum of the century can be seen in "On Marks' Artificial limbs," *Journalof the Franklin Institu.te* 127 (May 1889), 324-36; and "Marks' Improvements on Artificial Limbs," *Journal of the Franklin Institute* 136 (July 1893): 70. Both articles focus on the "natural" appearance of the prosthesis. The Marks firm, one of the most renowned manufacturers in the nation, was established in 1853 and by the early twentieth century owned factories and offices in New York City and several mills in Connecticut.
38. A. A. Marks, 143.
39. J. F. Rowley, 80.
40. *Ibid.*, 9.
- 4 L *Ibid.*, 86, 123.
42. Erin O'Connor, "'Fractions of Men': Engendering Amputation in Victorian Culture," *Comparative Studies in Society and History* 39 (October 1997): 744, 761.
43. A. A. Marks, 106. For comparison with European efforts to reconstruct the war wounded, see Seth Koven, "Remembering and Dismemberment: Crippled Children, Wounded Soldiers, and the Great War in Great Britain," *American Historical Review* 99 (October 1994): 1169; and Roxanne Panchasi, "Reconstructions: Prosthetics and the Rehabilitation of the Male Body in World War T France," *Differences* 7 (1995): 110-2.

44. A A Marks, 15.

45. J. F. Rowley, 12,44. Amputees were frequently used in turn-of-the-century popular culture as a source of amusement and trickery. On the contemporary use of amputees' prosthetic feats as entertainment in the early twentieth century, see Martin F. Norden, *The Cinema of Isolation: A History of Physical Disability in the Movies* (New Brunswick, 1994), 8-24. Norden notes that motion pictures such as *Don't Pull My Leg* (1908), *The Empty Sleeve* (1909), and *Story of a Leg* (1910) turned amputees into comic characters and their artificial limbs into props. The films managed to normalize the spectacle of amputees in public but also marginalized them as victims or con-artists,

46. Warren Stone Bickham, "Amputations," *Surgery: its Principles and Practice*, vol. 5, ed. William Williams Keen (Philadelphia, 1909), 805; E. Muirhead Little, *Artificial Limbs and Amputation Stumps: A Practical Handbook* (Philadelphia, 1922),97.

47. William Rideing, "Patched Up Humanity," *Appletons' Journal* 13 (19 June 1875), 783.

48. Panchasi, 122. The division of artificial limbs in terms of elegance and utility was formalized in the British military distribution system. By the 1910s, England's Ministry of Pensions had divided the artificial arms it provided to accident victims into three categories-heavy workers' arms, light workers' arms, and light dress arms. See Little, 86, 122.

49. Feick Brothers, 556; A. A Marks, 176, 267.

50. Feick Brothers, 558.

51. A. A. Marks, 224.

52. Herschbach,92.

53. Rideing, 784.

54. Feick Brothers, 552.

55. A. A Marks, 257.

56. J. F. Rowley, 123-4.

57. *Report of the Commissioner of Labor* (Washington, D.C., 1890), 1272-93; J. F. Rowley, 80.

58. Eastman, 301-2.

59. *Report of the Commissioner of Labor* (Washington, D.C., 1909),518.

60. In a much more indirect way than limb catalogues, the labor press also distributed information on artificial limbs and encouraged a sense of prosthetic affinity. Pittsburgh labor journals tried to foster a grim feeling of camaraderie around the prevalence of amputation and prostheses in working communities. In the autumn of 1913 the *Amalgamated Journal*, the weekly newspaper of the Amalgamated Association of Iron and Steel Workers, half-joked that the nation's supply of wood for artificial limbs was running low. "Save your legs!" the editorial board told its readers. The *Amalgamated Journal* also acted as a cheerleader of sorts, presenting its readers with tales of amputees who had overcome their disabilities to make themselves useful again. The journal told readers of a Long Island artist who, after losing both arms, painted with his mouth. The title of the article, "Works Without Hands," suggested the possibility of social utility even after dismember-

ment. Like the tightrope walker and the bicycle rider, the armless artist transcended his dismemberment to matter once again. See *Amalgamated Journal*, 6 October 1904 and 9 October 1913.

61. Eastman, 11,3. In a similar visual strategy, Edwin Bjorkman observed that "the streets of Pittsburgh are crowded with deformed and mutilated human specimens. Rows of crippled beggars crouch neat the mill entrances on pay-days." See Edwin Bjorkman, "What Industrial Civilization May Do To Men," *Work's Work* 17 (April 1909), 11494.

62. A. A. Marks, 179.