

STEEL AND MEN

“Labor and Capital standing face to face, jealous and distrustful. . . .”



MARCH 30, 1889 —*Excerpted from Andrew Carnegie’s dedication of the Library in Braddock, Pennsylvania, across the Monongahela River from Homestead. Many of Braddock’s citizens were employed at the Carnegie-owned Edgar Thomson Works in that community.*

ADDRESS TO WORKINGMEN

I have said how desirable it was that we should endeavor, by every means in our power, to bring about a feeling of mutual-ity and partnership between the employer and the employed. Believe me, fellow workmen, the interests of Capital and Labor are one. He is an enemy of Labor who seeks to array Labor against Capital. He is an enemy of Capital who seeks to array Capital against Labor.

I have given the subject of Labor and Capital careful study for years, and I wish to quote a few paragraphs from an article I published years ago:

“The greatest cause of friction which prevails between capital and labor, the real essence of the trouble, and the remedy I have to propose for this unfortunate friction [are as follows]:

“The trouble is that men are not paid at any time the compensation proper for that time. . . . What we must seek is a plan by which men will receive high wages when their employers are receiving high prices for the product, and hence are making large profits; and *per contra*, when the employers are receiving low prices for the product, and therefore small if any profits, the men will receive low wages. If this plan can be found, employers and employees will be ‘in the same boat,’ rejoicing together in their prosperity and calling into play their fortitude together in adversity. There will be no room for quarrels, and instead of a feeling of antagonism there will be a feeling of partnership between employers and employed. There is a simple means of producing this result, and to its general introduction both employers and employed should steadily bend their energies. Wages should be based upon a sliding scale, in proportion to the net prices received for product month by

month. It is impossible for Capital to defraud Labor under a sliding scale.”

Gentlemen, since [my article] you have had a trial of that sliding scale; you are under its operation now.

Never before have my partners and myself taken such pride, such interest, such satisfaction in our business as this year, when, having adopted the sliding scale, we walk through these mills knowing that instead of Labor and Capital standing face to face, jealous and distrustful of each other, we and our workmen are now practically partners, sharing in the present depression of prices together, but also bound to share in the advance in prices which must come sooner or later. This common interest has changed the feelings of my partners and myself to our workmen. You are no longer only employees, you are also sharers with us in the profits of our business, and, sooner than return to the old plan by which Capital and Labor were antagonized, and we had to quarrel every year upon the subject of wages, I would retire from business altogether. As far as I am concerned, I will never again have anything to do with manufacturing unless Labor is given a sliding scale. . . .

The other day I received a letter, dated March 14, from a Homestead man from which I wish to make an extract:

“*Dear Sir*—A tradition prevails that once upon a time you promised to do some thing for Homestead soon. When, or where, or to whom, this promise was made no one can exactly tell. It is enveloped in the mists of antiquity, and commands respect accordingly.”

“Do something for Homestead,” well, we have expected for a long time, but so far in vain, that Homestead should do something for us. But I do wish to do something for Homestead. I should like

(Address, continued)

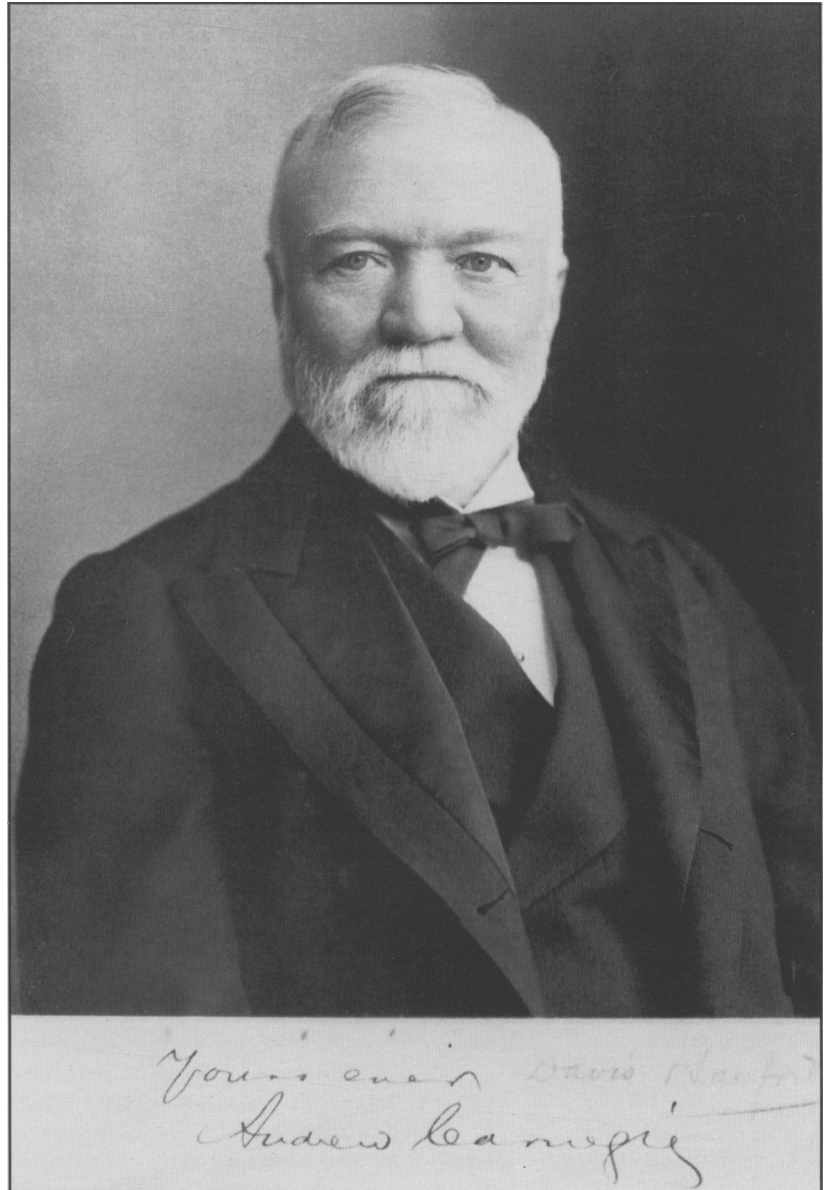
to see a Co-operative Society formed there. I should like to see a library there. I hope one day I may have the privilege of erecting at Homestead such a building as you have here; but this letter compels me now to say that our works at Homestead are not to us as our works at Edgar Thomson. Our men there are not partners. They are not interested with us. On the contrary, an Amalgamated Association has for years compelled us to pay one-third more in the principal department of our work, the plate mill business, than our great competitors pay in Pittsburgh. They have compelled us to pay, three times as much per ton as our leading competitors outside of this district, and are driving away our trade in consequence. A few workmen at Homestead make far more than the managers of the works, and the great mass suffer in consequence. . . .

When the labor in the Homestead works, like the labor in the Edgar Thomson, goes hand in hand with us as partners, I trust that able men there will come forward, as they did here, and establish their Co-operative Society, and all I can say in answer to my correspondent is, that anxious as that correspondent may be for something to be done for Homestead, my anxiety to do for Homestead is beyond that of my correspondent. I am only too anxious to do for them what I have done for you, and to do so for all of our works in turn. I know of no better use, I know of no use so just as to apply my wealth for the benefit of the men who have done so much to produce it. This I gladly promise. —The first dollar, or the first hundred thousand dollars I receive from Homestead will be devoted to the building of such a Library as this.

In regard to the concern in which you are now partners with us, in the selection of whose head you have the deepest personal interest, we have been equally fortunate. Mr. Frick began to work like yourselves . . . in the ranks. It is unnecessary for me to speak of Mr. Frick's abil-

ity. His career proves that. A railway clerk, at a pittance per month, who creates the largest coke business in the world, and is still on the right side of forty, needs no recommendation from anybody. His career stamps him as a manager and leader of men. I congratulate you upon your chairman. ❖

(facing page) Workers in the rail mill of the Homestead Works during the 1880s. Many of them are holding a turning wrench, a tool of their trade.





*AUGUST 1886 —Excerpted from
an article by Andrew Carnegie,
in The Forum.*

RESULTS OF THE LABOR STRUGGLE

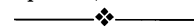
It has . . . been clearly shown that public sentiment sympathizes with the efforts of labor to obtain from capital a fuller recognition of its position and claims than has hitherto been accorded. And in this expression, "a fuller recognition," I include, not only pecuniary compensation, but what I conceive to be even more important to-day, a greater consideration of the working-man as a man and a brother. I trust the time has gone by when corporations can hope to work men fifteen or sixteen hours a day. And the time approaches, I hope, when it will be impossible, in this country, to work men twelve hours a day continuously.

While public sentiment has rightly and unmistakably condemned violence, even in the form for which there is the most excuse, I would have the public give due consideration to the terrible tempta-

tion to which the working-man on a strike is sometimes subjected. To expect that one dependent upon his daily wage for the necessaries of life will stand by peaceably and see a new man employed in his stead is to expect much. This poor man may have a wife and children dependent upon his labor. Whether medicine for a sick child, or even nourishing food for a delicate wife, is procurable, depends upon his steady employment. In all but a very few departments of labor it is unnecessary, and, I think, improper, to subject men to such an ordeal. In the case of railways and a few other employments it is, of course, essential for the public wants that no interruption occur, and in such case substitutes must be employed; but the employer of labor will find it much more to his interest, wherever possible, to allow his works to remain idle and await the result of a dispute, than to employ the class of men that can be induced to take the place of other men who have stopped work. Neither the best men as men, nor the best men as workers, are thus to be obtained. There is an unwritten law among the best workmen: "Thou shalt not take thy neighbor's job." No wise employer will lightly lose his old

employees. Length of service counts for much in many ways. Calling upon strange men should be the last resort.

The results of the recent disturbances have given indubitable proof that trades-unions must, in their very nature, become more conservative than the mass of the men they represent. If they fail to evolve the conservative element, they go to pieces through their own extravagance. I know of three instances in which threatened strikes were recently averted by the decision of the Master Workman of the Knights of Labor, supported by the best workmen, against the wishes of the less intelligent members of that organization. Representative institutions eventually bring to the front the ablest and most prudent men, and will be found as beneficial in the industrial as they have proved themselves to be in the political world. Leaders of the stamp of Mr. Powderly, Mr. Arthur, of the Brotherhood of Locomotive Engineers, and Messrs. Wihle [sic, for Weihe] and Martin, of the Amalgamated Iron and Steel Association, will gain and retain power; while such as the radical and impulsive Mr. Irons, if at first clothed with power, will soon lose it.



CARNEGIE, FRICK, AND THE HOMESTEAD STRIKE

by *Joseph Frazier Wall*

On 1 July 1892, the Carnegie Steel Company, Limited came into being. It was the result of the merger of Carnegie, Phipps & Company and Carnegie Brothers & Company. Capitalized at \$25,000,000, it was the largest steel company in the world, capable of producing more than half of the total steel production of Great Britain. The flagship of this fleet of steel plants, iron mills and blast furnaces was the recently acquired plant at Homestead, which had been converted into America's largest open hearth steel mill.

Andrew Carnegie and the man whom he had selected to serve as chief executive officer of Carnegie Steel, Henry Clay Frick, were inordinately proud of their creation, but they had selected a singularly inauspicious birth date for their new giant. For on that hot July morning, Homestead lay paralyzed by both strike and lockout, a paralysis that threatened to spread from the newest mill at Duquesne to the oldest at 29th Street in Pittsburgh.

The basic issue was unionization. There were no trade unions in Carnegie's older plants, but unhappily for Carnegie, when he purchased Homestead in the early 1880s at little more than its original cost, he not only acquired the industry's most modern and efficiently designed rail and beam rolling mills, but he also got six highly organized and well-disciplined labor lodges of the powerful Amalgamated Association of Iron and Steel Workers.

Homestead had been a part of Carnegie, Phipps & Company prior to the creation of Carnegie Steel, and in 1889, the steelworkers' union

had won a major victory when after a brief strike, William Abbott, president of Carnegie, Phipps, agreed to a three year contract which gave to the union most of its demands. In the spring of 1892, labor had confidently expected the company to renew the same contract. Now, however, Homestead would be part of a much larger Carnegie organization, headed by a new chief executive officer, and Henry Clay Frick was no William Abbott. He was generally regarded as the most implacable foe of organized labor within the industry, a reputation which he had deservedly earned in the coal fields of Pennsylvania.

Frick was determined that in 1892 there would not be a repetition of Abbott's panicky yielding to labor. Frick intended to offer the union a new contract whose terms would be so unfavorable that it would be rejected out of hand. Frick did not intend to negotiate. It was either take it or leave it, and if the union left it, as Frick was sure it would, he would go on to deal with the workers on an individual basis. Unionism in the Carnegie Steel empire would be eliminated.

Frick's position was clear. What was less certain was Andrew Carnegie's position. Although Carnegie held no office in the new company he had created, not even membership on the board of directors, he did hold 55 percent of its capital, and quite clearly, the company was his to direct. He held the script for the show firmly in his own two hands, and he could scrutinize and criticize every gesture made, every line spoken, on this impressively large new stage.

As he faced the inevitable show-

*down with labor in the spring of 1892, Frick could not be sure what that script handed down from on high would be, for there were two distinct Carnegie personalities at conflict with each other within the same individual. There was first, the idealistic Carnegie, the child of radical Scottish Chartism, who had drawn his political philosophy from the teachings of his father and his maternal grandfather, Tom Morrison. This was the Carnegie who had written *Triumphant Democracy*, who had bought a chain of newspapers in England to beat the drum for egalitarian republicanism, who had stood by Abbott in 1889 in the latter's concessions to labor, and who, most alarmingly, had written two articles in *Forum* magazine upholding the right of labor to organize and decrying the use of strikebreakers.*

But there was also the other Carnegie, the aggressive, hard-headed businessman who had built out of Andrew Kloman's small iron forge in Allegheny the world's greatest steel company. This Carnegie was always worrying about costs, always wanting more profits, not to dispense in dividends but rather to reinvest in the company to make it ever larger. Would it be the Carnegie who wanted to be loved, or the Carnegie who wanted to be powerful who would prevail in the summer of 1892? Of one thing Frick was certain. It must be either Frick or the union—one or the other would go.

Frick needed to have no fear as to which Carnegie would decide the issue. Given the alternatives of losing face or losing Frick, Carnegie did not hesitate in giving his chief



Thaddeus Mortimer Fowler's lithograph of "Homestead, 1902." The Pemickey Bridge, upper left, locates the Homestead Works in relation to the community along the river. By 1892, the rural village of 1881 had become an industrial boom town. In the decade after the strike, the plant expanded and many new immigrants swelled the population of greater Homestead to 18,000.

executive the *carte blanche* the latter demanded in dealing with the union. On May 4, before leaving for his annual summer sojourn in Scotland, Carnegie dashed off a brief note to Frick: "We all approve of anything you do, not stopping short of approval of a contest. We are with you to the end."

With this note in hand, Frick could direct operations as he saw fit. As expected, his contract terms were rejected by the union. Frick refused to bargain further. Instead, he called upon the Pinkerton Detective Agency to bring in 300 guards to secure the closed Homestead plant and to allow the entry of strikebreakers who could put the mills into operation. So the stage was set for the tragedy of Homestead.

When he told Frick he would "approve of anything you do," Carnegie did not anticipate any great trouble. "Of course you will win," he wrote to Frick on June 10 from

Scotland, "and win easier than you suppose, owing to the present condition of the market." Certainly Carnegie never imagined that there would be blood shed on the banks of the Monongahela, that Homestead would in the years to come serve as a symbol to American labor of the injustice and perfidy of the "bosses," or that he himself in spite of—or perhaps especially because of—his noble words on the rights of labor and his benevolent gifts of libraries and art museums would become to both liberals and conservatives the supreme hypocrite of his age, even more despised by labor than was Frick, who had directed the operations. "You can't trust any of them" was the moral the workers drew from Homestead. It was better to confront a Frick with a hard heart than a Carnegie with a false tongue.

In the years that were to follow Carnegie tried to recover what he had lost at Homestead by shifting

all the blame on to Frick, by insisting that if he had only been on the scene there would have been no importation of Pinkerton guards, no massacre, and no strikebreakers. In time he would create his own version of Homestead which bore little relation to reality. "I have one comfort," he was to write his good friend, British statesman William Gladstone, "self-approval." It is doubtful, however, that he had even that. Twenty years later, he would write in his autobiography, "Nothing I have ever had to meet in all my life, before or since, wounded me so deeply. No pangs remain of any wounds received in my business career save that of Homestead. It was so unnecessary." These lines, at least, have the ring of absolute veracity in his otherwise largely imagined account of what had happened on those July days a century ago in a place which had once borne the name of Amity Homestead. ❖

*JULY 14, 1892 —Reprinted from
Frank Leslie's Illustrated Weekly.*

H. C. FRICK

H.C. Frick, the manager of the Carnegie Steel Company, is a young man still—the youngest of Pittsburgh's millionaires, probably, and certainly the brainiest. He was born in December, 1849, in Fayette County. His first business experience was obtained at a very early age in A. Overholt's whisky distillery, but when he was barely twenty-one he was already interested in a coke-making plant, and before long he had embarked as an operator on his own account. He made his first big strike about 1872, when, having built a branch railroad from Broadford to Mt. Pleasant, he sold it to the Baltimore and Ohio Railroad at a handsome profit. The money that he made in this deal he immediately invested in coal land and additional coke plants. By January, 1882, the coke interests held by him and E.M. & Walton Ferguson had reached such a magnitude that Carnegie Brothers & Co. paid \$1,500,000 for a half interest in them. Mr. Frick then bought the Standard Coke Works, J.M. Schoonmaker's plant, and the Connellsville Coal and Coke Company's works, bringing the whole property up to between 20,000 and 25,000 acres of Connellsville coal land, while later purchases bring the holdings of the Frick Company to upwards of 35,000 acres of the very best coal. The company has nearly 10,000 coke ovens, which in a busy time produce about 16,000 to 18,000 tons of coke daily.

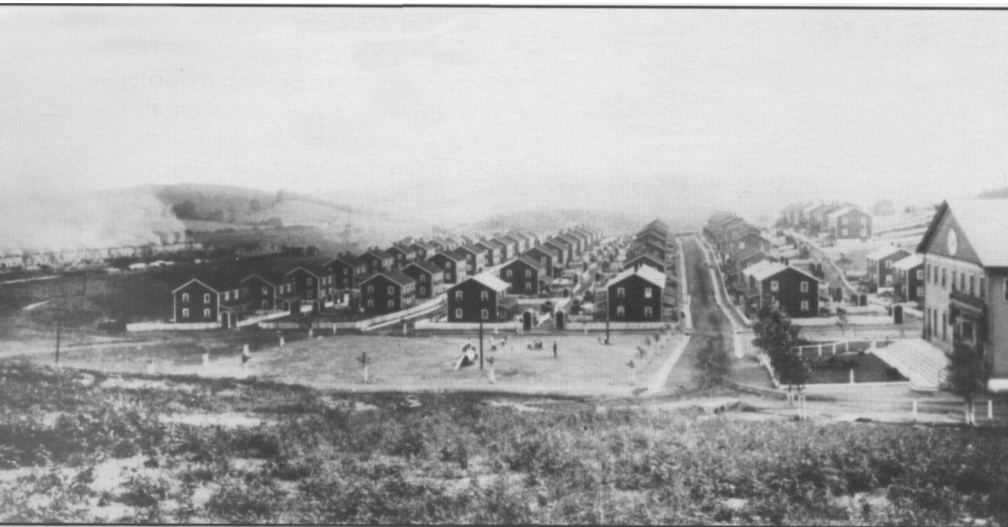
On the death of David A. Stewart in December, 1888, Mr. Carnegie, recognizing the great business ability of Mr. Frick, offered him an interest in the firms of Carnegie Bros. & Co., and Carnegie, Phipps & Co., which Mr. Frick accepted and paid for. He at once was made chairman of Carnegie Bros. & Co., and when all the Carnegie interests were consolidated, the other day, Mr. Frick became chairman of the new company, and the active head of an immense business. Mr. Frick married Miss Childs, of a well-known Pittsburgh family, some years ago, and they have two children, who share with them a beautiful home in the East End, the most popular suburb of Pittsburgh. Mr. Frick is of a forceful, self-reliant nature, and in previous conflicts with labor organizations has shown a determination to carry his point at all hazards. ❖



Henry Clay Frick, 1890s



(left) H. C. Frick Company, like many mining companies, paid part of their workers' wages in "scrip," which could only be used to buy merchandise in the company store.



Excerpted from U.S. Senate Report No. 1280, testimony given November 23, 1892, by H.C. Frick on the H.C. Frick Coke Company's labor relations.

FRICK TESTIMONY

Q. When did the labor troubles begin with you in your business, and from which class of labor, that is the native or foreign labor, did complaints begin and continue?

A. The first strike of any importance that I remember occurred in 1886, in the coke region. It began on the 16th of January, 1886. The principal cause was for the reason that we refused to allow the women, the wives of foreigners then in our employment, to assist their husbands on the coke yards. In 1885, I think it was, the State of Pennsylvania passed a law prohibiting the employment of women. While we had never employed any women, never had a woman's name on our pay roll, yet the wives of these foreigners would go to work with their husbands and assist them. As these men did piecework, we paid them for what piecework they did. On the State passing this law, which went into effect on the 1st of January, 1886, we issued an order that women should not go with the men to work. This caused the strike—it was the start of the strike. After the strike was once started other questions arose. Finally, on or about the 22nd of February, 1886, we conceded an advance to the workmen of 10 per cent. I think all resumed work. After making that concession they worked but a short time until they wanted something more, and we had continual trouble up until

April 29, 1887, when, after having granted almost everything they asked and reaching a point where we could make no further concessions, we finally got the labor unions to agree to leave the demand they made at that time to arbitration. We selected three men to represent us, the labor union selected three to represent them, and those six selected Mr. John B. Jackson, of this city [Pittsburgh], as the seventh man. The case was of course submitted to him, he rendered a decision refusing the workmen the demand they made. They immediately struck against the award. That strike continued until the 27th of July, I think, that same year. In the meantime the Frick Coke Company granted the demands. The other operators, however, fought the strike out and won. Then after that date, we will say the 27th of July, the Frick Coke Company, who owned a large number of ovens in the region, were paying 12 ½ per cent more wages than the other operators in the same region. That continued, I think, until February, 1890, when a general scale was agreed on covering wages in the Connelsville [sic] region and when other operators commenced to pay the same. The agreement then made expired on the 10th of February, 1891. At that time, after repeated conferences, we were unable to agree upon a new scale, and I think it was in March of that year after, as I say, repeated conferences, and being unable to agree with our workmen, we posted notices stating just what wages we would pay. Our employes refused to accept it, and we began to introduce new workmen. Our experience had been such with organized labor that we could place no reliance on the agreements they made with us, and we concluded that we would end the thing once for all, and determine whether we had a right to employ whom we pleased and discharge whom we pleased. That strike lasted, I think, until the latter part of May of that year, at which time we succeeded in starting our works with what is called "nonunion workers," and from that time until the present we have had no trouble. Our men have been contented and happy. We have not been bothered with the labor agitator and with committees asking all sorts of concessions.

(above) This 1912 photo of Marguerite, an H.C. Frick mining site in Westmoreland County, displays the rigid layout of the typical company town. The company store is to the right; the coke ovens to the left.



THE COKE REGION

by Eugene Levy

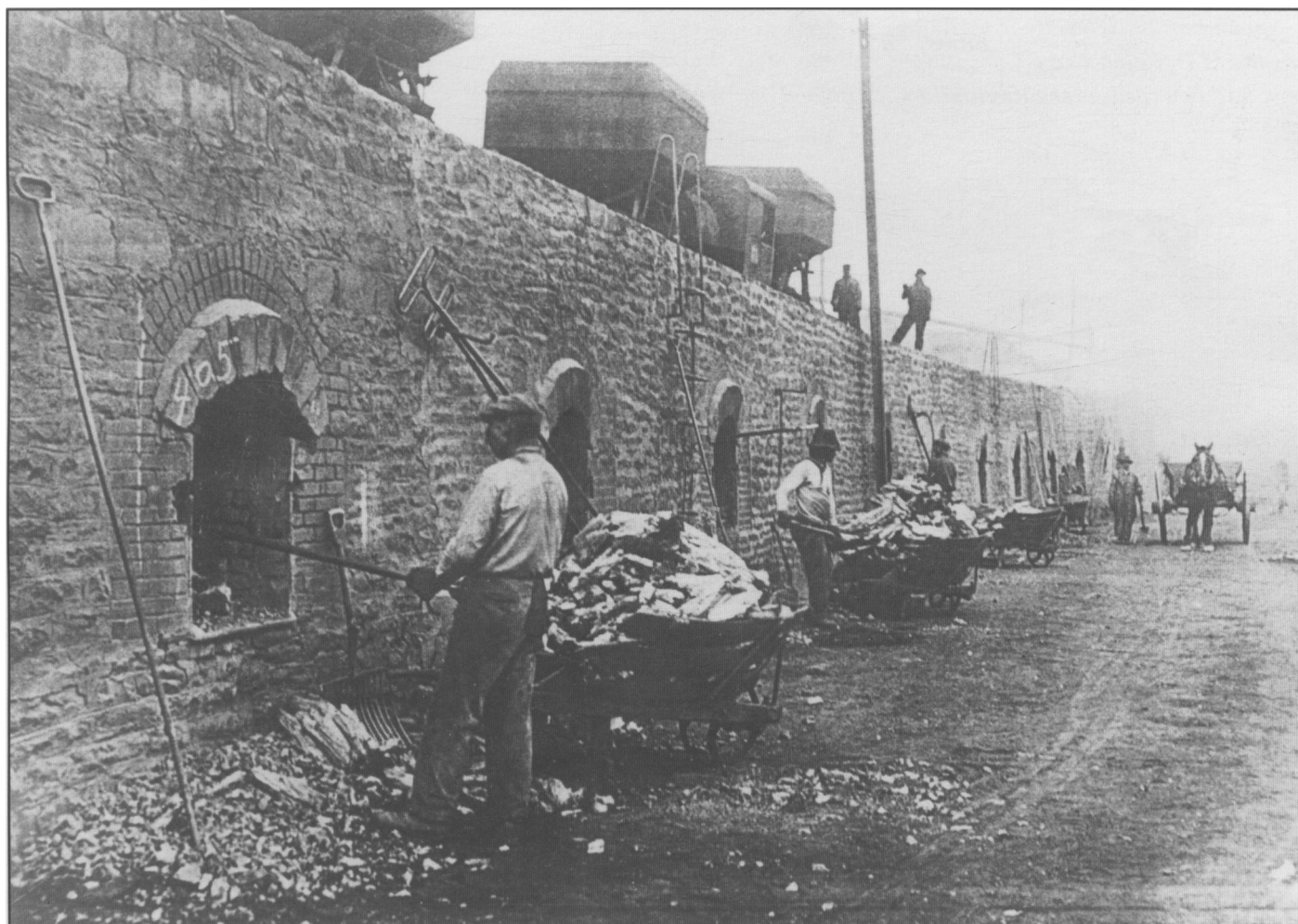
Underlying the pre-eminence of Pittsburgh as an iron and steel center was the nine-foot-thick “Pittsburgh” seam of coal. The expansion of steel production owed much to the river and rail transportation networks that were well developed by the 1890s, but it is doubtful that Pittsburgh and its mill towns would have come to dominate steel-making in the United States until World War I, had it not been for the region’s superior coking coal.

Despite many technological changes over the past 150 years, then, as now, baking coal in an oven for one to three days drives off various chemicals in the form of gases and leaves behind coke, a porous but solid material, 85-90 percent carbon. Coke’s physical and chemical qualities make it ideal for use in iron-making blast furnaces. Coke will physically support the many tons of iron ore dropped on it in the furnace; it burns long and

hot, refining the ore to produce molten “pig” iron. Molten pig iron, in turn, is an essential ingredient in most steel-making processes.

The best of the coking coal lay east to southeast of Pittsburgh in what would soon come to be called, after a prominent town at its center, the Connellsville Coke Region. Extending for some 50 miles across Westmoreland and Fayette counties, this region dominated coke production in the United States from the 1870s through the 1910s.

Coke ovens in late 19th-century America were not located in massive centralized facilities near steel mills, like the coke-producing technology of today. Early mine owners built row after row of dome-shaped



brick ovens, the interior of each some eight feet high and twelve feet in diameter, next to the coal mines that provided the necessary raw material. The Coke Region in 1900 had 22,000 “beehive” ovens, producing just over 10 million tons of coke annually (about half of the nation’s output) with much of that tonnage going into Pittsburgh’s blast furnaces.

Local entrepreneurs around Connellsville began making coke in beehive ovens in the 1840s, but demand grew slowly until after the Civil War. By the mid-1860s the rapidly expanding steel industry needed more and more iron, one of its basic ingredients. The iron-making blast furnaces in turn needed coke. Demand escalated and coke production soon took off. Capitalists from around the country sought area coal lands, but by the late 1870s Henry Clay Frick, a local boy, had emerged as the dominant force in the industry. Twenty years later, the H.C. Frick Coke Company, by then a part of Carnegie Steel, produced about two-thirds of the Region’s coke.

Initially miners from around Pittsburgh and from eastern Pennsylvania made up most of the Coke Region’s labor force. By the late 1880s, however, an increasing percentage of workers were recent immigrants, many of them from Southern and Eastern Europe. Whether “Americans” or “Hunkies,”

(facing page) Workers pulling coke from a row of beehive ovens, with the tools of their trade—rakes, leveling bars, shovels—close at hand, c. 1890s.

(right) H.C. Frick’s Union Supply Company operated company stores at most of the Frick mine sites. This one, shown in 1895, was at Broadford.

most workers and their families lived in “patches,” isolated settlements scattered across the rural landscape where the houses, as well as nearly everything else, were built and owned by the mining company. Frequently the mine and the patch shared the same name: Mammoth No. 2, United No. 1, Mutual, Leisenring No. 3, Leith. At Mammoth No. 2, a modest-sized H.C. Frick patch, the families of the miners and coke-yard workers occupied approximately 60 double frame houses facing the mine shaft, the company store, and 199 beehive coke ovens belching acrid smoke day and night.

Living conditions ranged from ill-built shanties to 12-room houses for the mine superintendents, but the typical residence was a double house, each side with two rooms downstairs, two rooms upstairs, and an outhouse in the back yard. In good years (and times were frequently not good in a cyclical industry such as coal mining) most workers made about \$20 a month, from which came rent of \$6 to \$7, the cost of food and clothing from the company store, and coal for

cooking and heating. H.C. Frick patches were probably the best maintained (and the most paternalistic), but everywhere in the Coke Region it was a hard-scrabble existence with the mine owners and their superintendents masters of the scene.

Many of the mining operations in the immediate Pittsburgh area employed union workers, but the Coke Region proved difficult to organize, dominated as it was by one company. Union organizers made some small gains after several strikes in the late 1880s. Frick then took a firm stand, and by 1891 he could declare his company free from all union agreements. In testimony before a sub-committee of the Judiciary Committee of the U.S. Senate on November 23, 1892, Frick proudly maintained, “We had a right to employ whom we pleased and discharge whom we pleased.” Frick’s success in beating back efforts to organize his coal and coking operations provided a ready model in the campaign to drive the Amalgamated Association of Iron and Steel Workers from all of Carnegie Steel, Homestead included. ❖



RIOTS OF COKE DRAWERS.

Although strikes have become more and more frequent, the number that causes riots constantly becomes less, for every year more disputes between employers and the employed are settled by arbitration or by mutual concessions, and even when both parties remain stubborn, the strikers are so well cared for by their unions that the strongest temptation to do violence is removed. But the Hungarian laborers in the coke region near Pittsburg, Pennsylvania, have no union, will make no concessions nor think of arbitration, and their violence recalls the temper of the strikers at Pittsburg in 1877. Three years ago they were brought to the coke ovens to take the place of native laborers who made a strike, and they have learned too well the method of their predecessors.

There are in this region 12,000 coke ovens, at most of which Hungarians and Poles, men and women, are employed. They receive twenty-seven cents per wagon for digging coal, and from fifty-five to sixty cents per oven for drawing coke. They asked for an increase of five cents per wagon and per oven, which the owners refused to grant, and claimed that they were unable to grant. On January 18 many of the Hungarians stopped work, and the strikers were reenforced during the next three or four days, until 3600 ovens were shut down, and 5000 men were idle. They immediately began to do deeds of violence. On the 19th, 200 Hungarians and Poles, led by Steff Stanex, a gigantic miner, who was the most daring spirit among the strikers, all armed and many intoxicated, marched with banners, to the music of a fiddle and of a wash-boiler as a drum, made an attack on the Alice Coke-works near Connellsville, drove the workmen away, pulled open oven fronts, and did what damage to property they could.

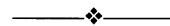
From Mount Pleasant southward there is a continuous line of ovens for twelve miles, at nearly all of which Hungarians were employed, and at several of them riots were caused by the drunken strikers. At the Morewood mines there was an encounter between the 300 armed followers of Steff Stanex and a posse of special officers. The Hungarians, men and women, armed with revolvers, clubs, and knives, resisted arrest. A pitched battle ensued. As many as a hundred shots were fired. Several men were badly beaten, a number were wounded, and one was killed. The hills above the works were covered with native workmen, women, and peaceful miners, who collected to witness the battle. The Hungarian women fought with their husbands and brothers, and after they were driven into their houses they continued to shoot. At several other places the strikers marched to music, sometimes of a drum, sometimes of a bass-viol, threatening violence. A company marched through the streets of Scottdale armed with fence rails, clubs, pick handles, crow-bars, and such rude but dangerous weapons, and made raids on the dram-shops, many of the women as well as the men becoming drunk. At another place, the Donnelly and Diamond works, a riot occurred in which five Hungarians and three Americans were fatally wounded. A negro man at one settlement, without provocation, fired at a procession, which forthwith became a mob, and gave him a beating that will prove fatal.

These Hungarians are the most difficult class of laborers to manage when they are peaceful, or to pacify when they are enraged. Few of them speak English. They live here in the same squalid fashion as in Hungary. They know nothing of American life or manners, or of the courts, or of working-men's rights. Their only idea of carrying a point is of carrying it by physical force. Many of the men have

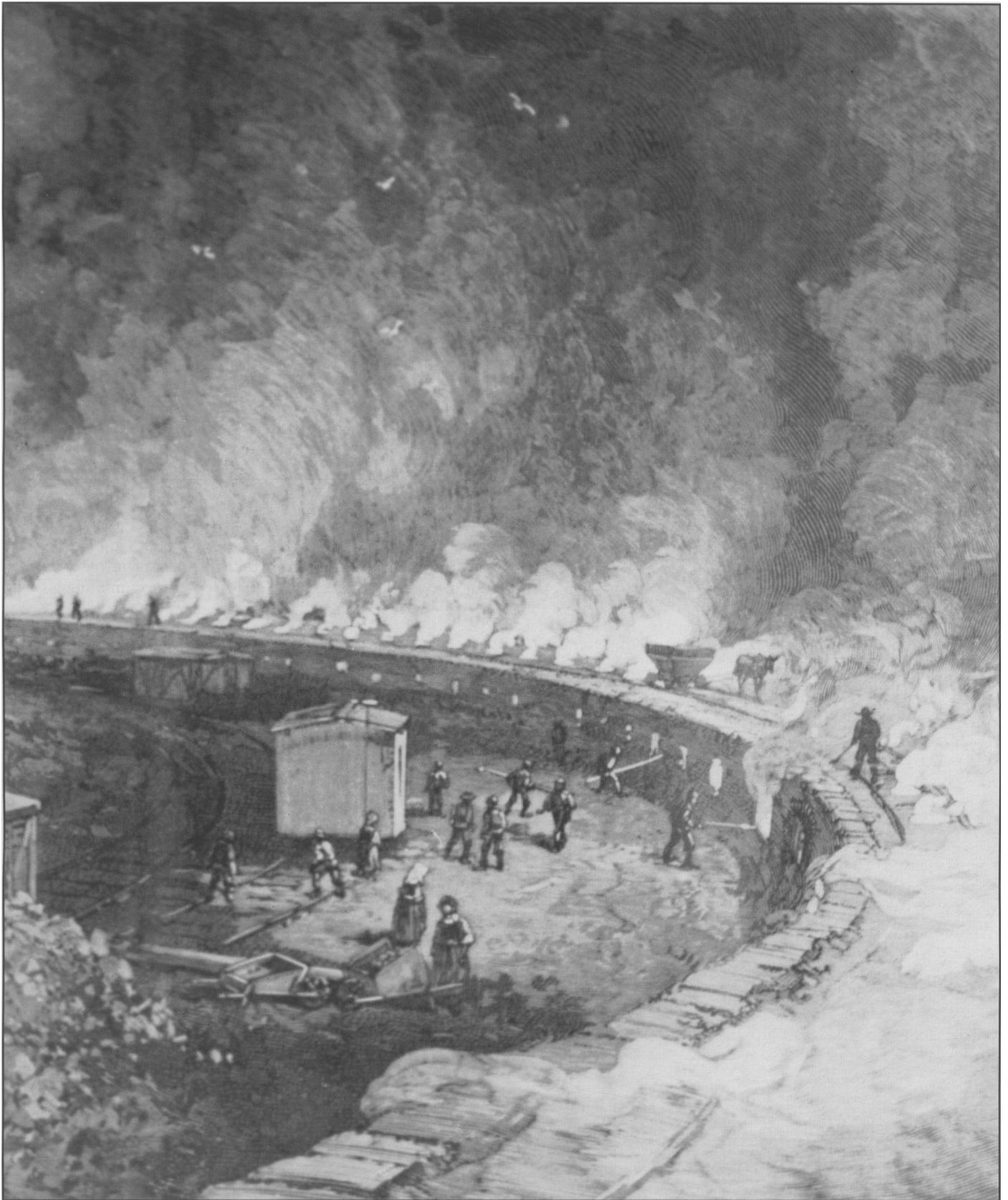
done service as soldiers, and they know how to fight, and are not afraid to resist officers of the law. Indeed, they have no other notion of an officer than as of an enemy in war.

There are employed in this Connellsville coke region as many as 6000 laborers, exclusive of miners. The most of them are coke "drawers," and their labor consists simply of filling the ovens with coal, and after it has become coke of drawing it from the ovens. It is not skilled labor, and the only serious result of a strike of coke drawers, beyond a brief period of idleness at the ovens, is the damage done by the violent strikers.

The danger in such a case is the danger of a fight, and not of the strike itself. The disturbance has demonstrated that the employers who brought the Hungarians to take the place of native or naturalized laborers that commanded higher wages are not likely to profit by the experiment. The loss of property and of profits during the interruption of work, and the expense that will be involved in gradually substituting other workmen for the violent Hungarians, even if the wages are not increased, will equal the savings in the wage account since they came, to say nothing of the loss of a dozen lives. The owners of these coke ovens have a monopoly, no product of such excellent qualities as fuel for furnaces being obtainable elsewhere as in this limited territory.



(facing page) This detail of Charles Graham's wood engraving "Among the Coke Furnaces of Pennsylvania," Harper's Weekly, January 30, 1886, shows a curved row of beehive ovens, probably near Connellsville. The women, wheeling barrows of coke to waiting railroad cars, are in ethnic dress. Their presence in the coke yards aroused public indignation.



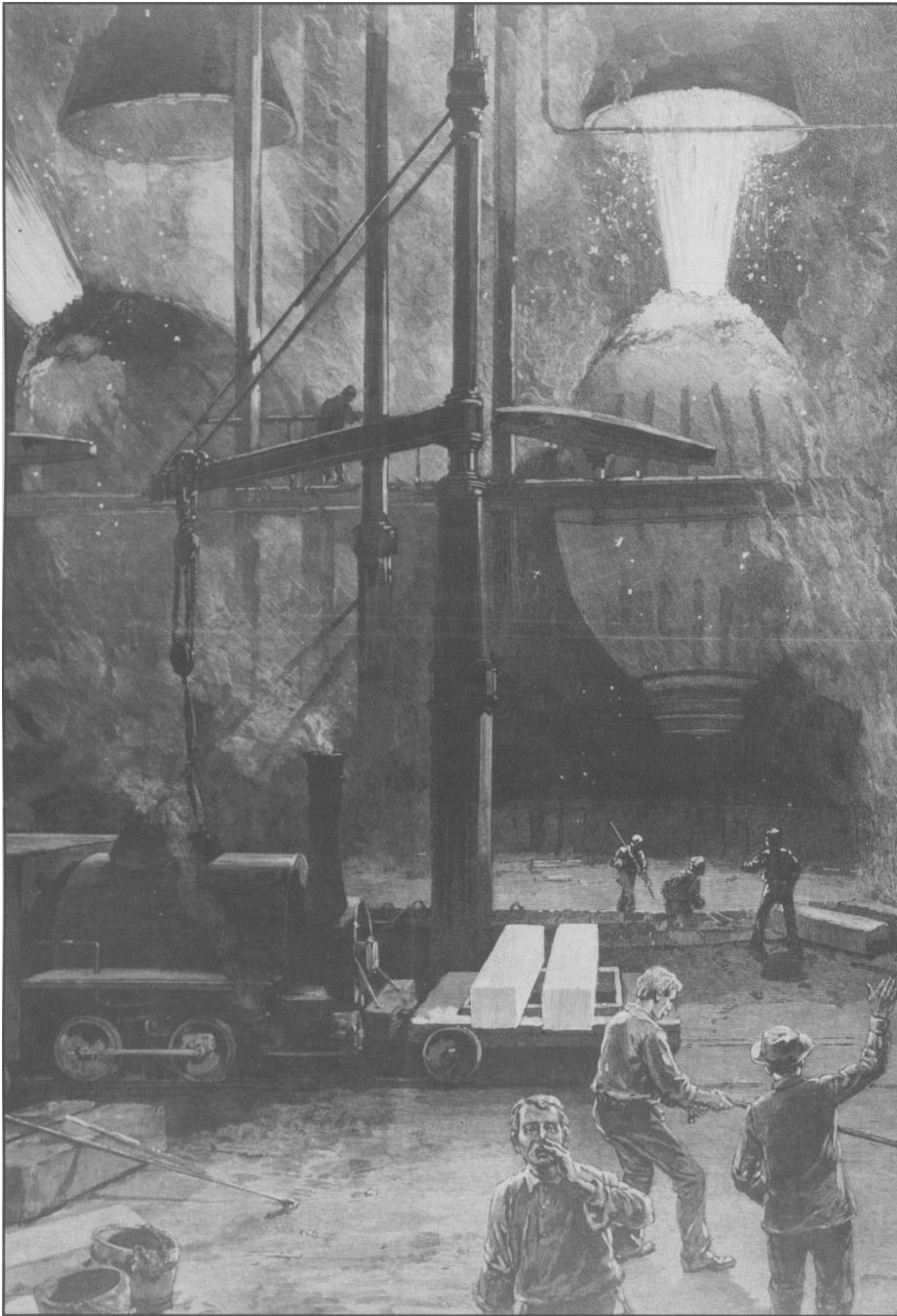
APRIL 2, 1892 —Excerpted from
The Local News, *Homestead*.

ANOTHER FRIGHTFUL ACCIDENT AT THE MILL.

The History of the Homestead Steel works of Carnegie, Phipps & Co., is marked with a large number of frightful accidents, not to speak of innumerable minor mishaps. That of last Saturday, wherein one man lost his life and seven others received more or less serious injuries, and still others narrowly escaped a similar fate, was scarcely less terrible than many recorded in the past. Notwithstanding the labor saving devices of improved machinery and the increased skillfulness of the workmen, there is no guarantee that such catastrophes will not be repeated, again and again at the mill.

The following account by one of the workmen employed in the Converting department, explains just how the accident occurred.

When the blast is put on, it forces a terrific blaze containing particles of the molten steel, out against an iron shield. In the course of a few hours there is an accumulation of metal on the shield or wall which of course is quite heavy and must be removed at frequent intervals, otherwise it would fall, which it did in this instance. The accumulation is called the "skull." Passing somewhat under the shield is a pressure pipe leading from the hydraulic ram to the converter or vessel. It is the pressure of water in the ram and pipe that controls the movements of the vessel, as well as the many cranes in the converting department. When the "skull" fell, it struck the pipe referred to, causing the pressure to escape. Released from control, the vessel containing molten metal tipped over and emptied into the pit below where it came in contact with moisture, resulting in a terrific explosion. The metal was scattered in all directions, some of it striking the opposite wall seventy feet away. It is not surprising that many workmen were burned. Indeed the great wonder is, that more were not fatally burned. The list is long enough however.



Charles Graham's wood engraving, "Making Steel at Pittsburgh—The Bessemers at Work," Harper's Weekly, April 10, 1886. This image of the Bessemers at the Edgar Thomson Works in Braddock became the signature image of 19th-century Pittsburgh industry. Graham was the first artist to present Pittsburgh mill workers as dignified and serious men engaged in dangerous work.

*JUNE 1, 1892 —Excerpted from
an article, "Steel Wonders,"
by Harry B. Latton in an issue of
The Pittsburg Times devoted to
promoting local industry.*

THE HOMESTEAD PLANT

It is elements of genius, skill, and experience combined together with unlimited confidence in the future of the country and millions of capital that has made the great steel works at Homestead, owned by Carnegie, Phipps & Co., Limited. It was the skill of the practical men of this mill which produced a grade of steel possessing tensile strength 43 per cent greater than any open-hearth or Bessemer metal heretofore made. It was due to research and the expenditure of vast amounts of money by this firm that enabled the National Government to commence the construction of a navy which is already creditable to the nation. Some achievements already accomplished which but recently were declared impossible by eminent metallurgists have warranted the declaration that "nothing is impossible."

This plant, which now comprises 600 [actually around 90] acres with 87 acres under roof, was only commenced in 1880. As in other concerns in the galaxy of Carnegie enterprises, Mr. Carnegie is the senior partner. Until recently, Mr. William L. Abbott was chairman, but he retired April 1 to enjoy a season of rest and was succeeded by Mr. H. C. Frick. The duties of the office of Vice Chairman devolve upon Mr. H. M. Carry, one of the best metallurgists and practical steel men in the country. The secretary, Mr. Otto H. Childs, is also thoroughly practical, and possesses a capacity for business which has long ago placed him to the front rank. I. C. Phipps, a nephew of Henry Phipps Jr., is treasurer. Like Mr. Carnegie, Mr. Henry Phipps Jr., whose interest ranks only second to the first named, does not take active part in the management.

Of the operating department, Mr. John A. Potter is superintendent, and has entire charge of the conduct of the great mill. He is a young man, only a few paces in the thirties, but has the experience of a veteran, having lived in iron and steel atmospheres on both sides of the water.

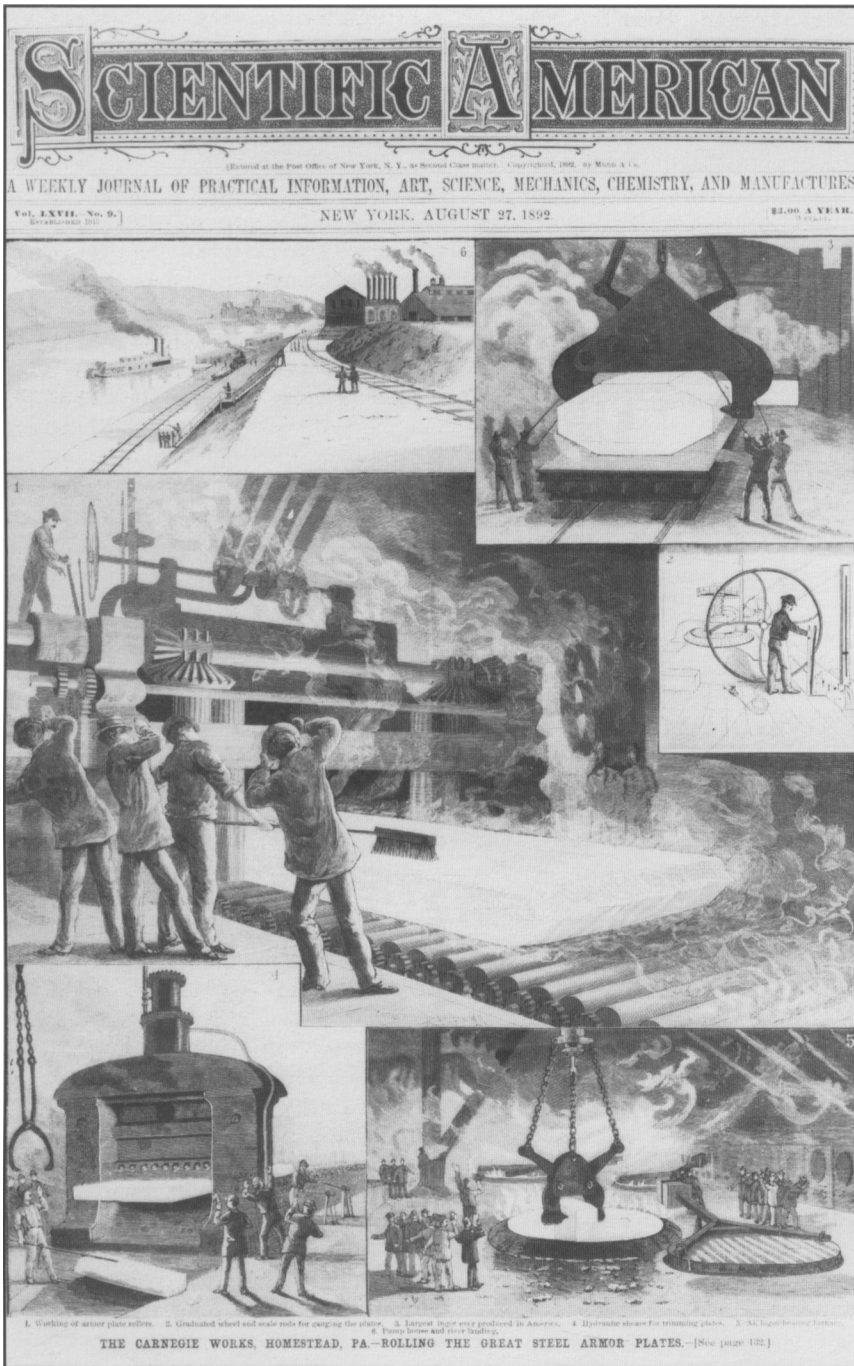
THE PRODUCT OF THE PLANT

There are no blast furnaces here, although the firm owns the Lucy furnaces

in Pittsburg. This plant produces plates of various character, boiler, armor, etc., beams and various shapes of structural material. The buildings are all constructed of soft firebrick, roofed and trussed with steel. The hoisting apparatus of the plant consists of numerous hydraulic cranes, some of which will raise and deposit anywhere within the arc of the circle which it describes a weight of 200 tons—equal to eight car loads. Think of a lifting monster capable of taking up as much weight as eight cars carry. It is marvelous. The pressure in the water chambers of these cranes is 600 pounds to the square inch. One man handles the largest with the same ease that an engineman draws the throttle of his engine. The amount of water required to operate these and other appliances in the mill, feed the boilers, etc., is 7,000,000 gallons per day.

MAKING ARMOR PLATE

The process of making armor plate—and this is now with additions recently completed the largest in the world—is perhaps the most interesting process. Furnaces known as open hearth are used to melt and prepare the metal in this work. There are in one furnace department eight open hearth furnaces, each having a capacity of 80 tons, though 25 tons is seldom exceeded. The contents of these furnaces may, if desired, be run into one casting or ingot. If an armor plate is to be made, it is cast in the pit near the furnaces. This pit is a large circular area below the surrounding surface. All the armor for a vessel is made according to pattern. The entire portion of a vessel to be armored is constructed of wood, and is virtually cut up in sizes to suit the plates. Each piece represents the portion of the vessel upon which the plate will rest. In miniature these pieces would resemble cutup puzzles. Then patterns, referred to above, for the plates are made, and when a plate is finished it must fit exactly to the wooden facsimile of the portion of the vessel for which it is intended. If a bolt head protrudes through the side of the vessel, the facsimile piece will show it, and the plate must be cut or indentured at precisely the right place to fit over the bolt head. An ingot is cast in sand molds in the pit, and from it the



This cover illustrates various steps in the process of manufacturing armor plate at the Homestead Works. Published by the patent agents Munn and Company of New York, the magazine often promoted the agency's corporate clients.

(Homestead Plant, continued)

plate is made. When the steel is ready, the open hearth furnaces are tapped, and streams of molten steel run into the mold; and the ingot is made. The weight varies from 20 to 100 tons. It is then stripped, taken from the metal mold while still hot and is transferred on a special car to the press shop. This car has a capacity of 150 tons, five times that of the average freight car. At the press shop, two large cranes that could lift an ordinary house take this mountain of metal and put it in a furnace where it is heated. When the ingot is in proper condition, it is lifted from the furnace, placed on the big car, and is carried to the Armor rolling mill. It is a mill so vast that mere figures are powerless to convey a full appreciation of its size. An entire foot of steel weighs over 600 pounds. In an ingot weighing 30 tons there are 120 cubic feet and 200 cubic feet in a 50 ton ingot. These great rolls flatten and widen the ingot until it has reached the desired size. It is then taken again to the press shop where any rough or ragged ends are cut off by a hydraulic press of 2,500 tons capacity. It will shear a plate of steel six inches or a foot thick as quickly as a hungry tramp will cut a tenderloin steak.

The plate is then placed in a furnace to be tempered. When that process is completed, it is removed and placed into a bath containing 100,000 gallons of oil, where it is allowed to cool. After cooling, it is again put in a furnace and brought to a red heat, called annealing, thence is placed in an annealing pit and covered with ashes and sawdust and allowed to remain 12 or 18 days. At the end of that time the plate, over which so much time and hard work has been spent, is carried to the great armor plate machine shop, a vast building, larger than machinery hall at the Pittsburgh Exposition building. Here is a collection of the most gigantic planers, drills, presses, saws, lathes, and tools that was ever made. Some of the planing machines weigh 200 tons.

GOVERNMENT INSPECTION

Upon the arrival of the plate in this shop, the Government Inspector selects his physical tests. If found perfect and up to contract the plate is then finished, a

branch of work exceedingly important, for every part of the plate, even if it is to be destroyed the first hour of service, must be made according to design without the variation of a fraction of an inch. When a group of from 10 to 20 plates are ready for shipment, the Government Inspector checks at random for another test. If it stands the test, the plate is sent to the testing ground at Indian Head, and then it is set up and fired at by the highest power guns. If this plate does not stand the test, the entire group is rejected and thrown upon the contractor's hands.

At no time in any melting department of the mill is a heat made without analysis. With a laboratory the finest in the State, with chemists and metallurgists whose skill is unsurpassed, a uniform product precisely as desired is assured. The chemists analyze all the raw materials to be used. Exhausting tests of every character are constantly being innovated.

But there are other mills. The armor plate department of the Homestead works is only a part. The beam and structural mills are to an unprejudiced, practical steel man, works of art. Mr. Potter lifts his hat to the great new beam mill each morning and shakes hands with himself. This mill, and some planes and forges in the armor plate department, all in operation, stand where tulips grew last fall.

THE BEAM MILL

In order to better explain the beam mill, it should be mentioned that a cogging mill is necessary to prepare the ingot for the beam mill. These mills, separate or combined, are the largest in the world. The cogging mill is called 40 inch. That is, it will take a bloom weighing 15 tons and roll it down to any desired size for either beam shapes or forge blooms. One remarkable feature is the hot saw in connection with the cogging mill. This saw will go through a bloom 24 inches square as quickly as a circular saw will go through a strip of wood. If beams are being made, the cogging mill reduces the big ingot to beam shape, and then it is carried automatically on driven rolls to the structural rolls, operated by an engine developing 5,000 indicated horsepower at 75 revolutions per minute. The fly wheel of this engine weighs 100 tons. At the structural rolls, a beam 35 inches wide by 100 to 120

feet long can be made. From these rolls it continues its course to the saws, where it can be cut to any desired length. After being sawed, the beam starts backward and goes through the process of fitting, punching, and finishing, and finally goes to the depressed shipping track, upon which the top of a gondola rises even with the level of the ground. Here is a hydraulic crane which will take a beam from any point within the crane's radius and deliver it to the desired place. So rapidly is the work of making beams prosecuted that frequently when ready for shipment, they are still hot.

Besides the eight open hearth furnaces mentioned in connection with the armor plate mill, there are eight other furnaces of the same kind from 30 to 40 tons capacity. Near by is the plate mill, which rolls to any desired size and to the width of 120 inches. It was probably not mentioned that the armor plate mill can roll 100 ton ingots, and that it has the largest shears in the world, 54 by 54 inches which cut steel of any thickness with the greatest of ease.

The new Bessemer department is equipped with four 18 foot cupolas, vessels in which iron is melted before it is run into the converters. There are two 12 ton converters. Everything in this department is operated automatically, with hydraulic pressure. The capacity of the department without crowding is 20,000 of ingots for beams, channels, T's, and other structural material per month. The old Bessemer mill has been changed to a large refractory house for the grinding of clays, mixing, and other uses.

THE PERFECT SYSTEM

Throughout the entire plant the most perfect system prevails. The yards are gridironed with railroad tracks to facilitate the transportation of raw or finished material, or material in process of completion. Nineteen locomotives of all sizes are required to handle the traffic. The plant has at the most convenient point, shops for repairing and turning rolls, in which there are 10 lathes; machine shops in which are employed 30 machinists and their helpers. The blacksmith shop, with forges, steam, hammers, etc., keeps 25 men busy. Repairs to gas and steam and water pipes and required connections

demands the constant employment of a dozen men. There are carpenters, tanners, pattern makers and mechanics of every branch employed.

When it is realized that this plant produces so many kinds and shapes of material, it is easily understood that the utmost care is required on the part of the management and that much skilled labor is required. The open hearth furnaces require 32 skilled melters, one for each furnace for each shift. It must not be forgotten that this mill never stops except a few hours on Sunday. The eight rolling mills require 10 skilled rollers, and so on.

The entire plant is lighted with electricity. The system comprises 300 arc and 2,200 incandescent lights. An important use to be made of electricity is to replace numerous small engines with electric appliances. Contrivances called buggies that transfer ingots, billets, or slabs to and from heating furnaces are operated by engines. Electricity will give the engines used in this and several other capacities a long rest.

The office building of the company is a large Gothic brick and stone structure standing on an eminence overlooking the entire plant. Here are the business quarters of Superintendent Potter and his assistants, draughtsmen, and engineers, the large accounting, and other offices.

Further removed from the mill are eight handsome residences built for the operative managers, and a handsome club-house for the accommodation of guests and officers. The firm has also erected 40 other houses for their better class workmen. All the 3,500 employees appear contented. They are paid on the sliding scale based on the ceiling price of billets for the term of three months preceding. The minimum selling price, however, is fixed at \$25.

From a little village a few years ago, Homestead has grown to a borough of nearly 12,000 inhabitants, chiefly supported by the great Homestead Steel Works.

