

THE GLASS HOUSE BOYS

Child Labor Conditions in Pittsburgh's Glass Factories,
1890-1917

JOHN WILLIAM LARNER, JR.

CHILD labor in the United States at the turn of the twentieth century was not an uncommon fact of the nation's economic life. Two historians of America's recent past, Frank Friedel and Arthur S. Link, have estimated that approximately 1,700,000 children under the age of sixteen were employed in the country at that time. Professor Friedel added in his analysis that roughly ten per cent of the girls between the ages of ten and fifteen years old and twenty per cent of the boys in the same age group were gainfully employed during the first years of this century.¹ "Small help" was accepted to the extent that over one-half of the states in 1900 had no minimum age requirements for workers. Non-agricultural child labor at the turn of the century seems to have been concentrated mostly in southern textile mills, anthracite coal mines of northeastern Pennsylvania and glassworks in the river valleys of western Pennsylvania, West Virginia and eastern Ohio. This article seeks to define the extent and working conditions of the latter group of industrial small help, the "glass house boys."

The United States Bureau of Labor Statistics reported in 1927 that the number of children under sixteen years of age employed in the nation's glass industry stood at 5,658 in 1880. The greatest number of children employed by the glass factories in a single year was 7,116 in 1899. Each five-year interval during the twenty years between 1899 and 1919 was characterized by consistent decline in the number of children working in glass houses. The most substantial decrease took place between 1904 and 1909 when the number of child employees was cut from 6,435 to 3,561 — a difference of 2,874 "glass house kids." By 1919, according to the report, 1,413 children under sixteen worked in

Mr. Larner is Instructor in History on the Altoona Campus of The Pennsylvania State University; currently he is on ten-month leave at West Virginia University, Morgantown, West Virginia.—Ed.

1 Arthur S. Link, *American Epoch, A History of the United States Since the 1890's* (New York: Alfred A. Knopf, 1955), 70; Frank Friedel, *America in the Twentieth Century* (New York: Alfred A. Knopf, 1960), 43.

the glass factories of the nation.² Significant though they may be, the figures of the Bureau of Labor Statistics do not relate the full dimensions of the issue. Undoubtedly there were many children whose employment was illegal in light of lax enforcement of weak state child labor laws, and whose presence in the glass houses was graciously overlooked by employers and factory inspectors alike. This fact is important in regard to the latter group, because the statisticians of the federal government Labor Department were dependent upon their reports. On this basis, it is safe to assume that the practice of employing children under sixteen in the glassworks was more extensive than indicated by the United States Bureau of Labor Statistics.

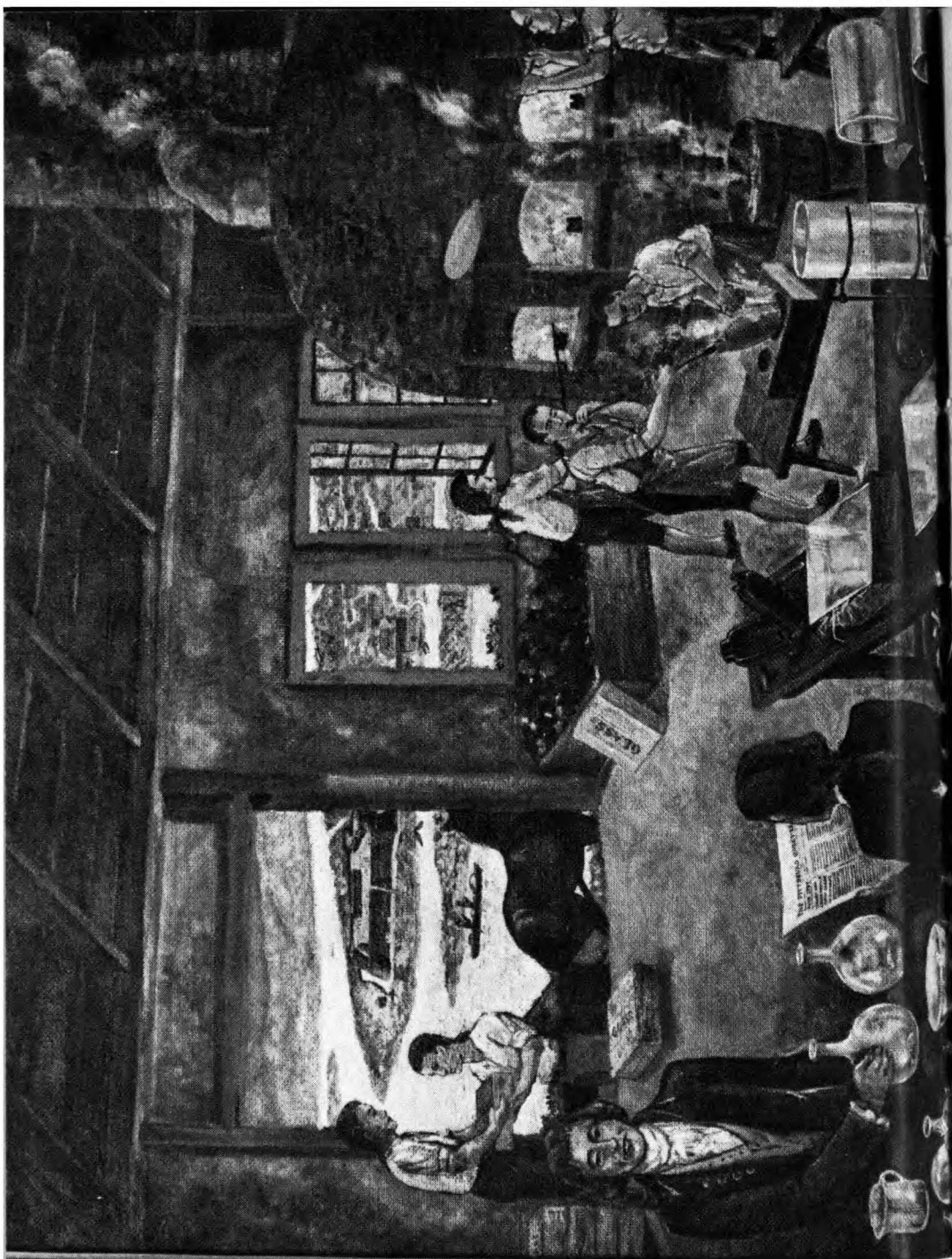
Pennsylvania in the early years of the twentieth century generally enjoyed the dubious distinction of having a singularly high number of employed children, particularly when compared with other industrial states. The United States Commissioner of Labor reported in 1911 that Pennsylvania led all glass-producing states in the number of both under-age children and children without the required certificates of age employed in its glass houses.³ Florence L. Sanville, an active child labor reformer of the time, ardently insisted that "other states manufacture glass, but Pennsylvania alone exploits nearly three times as many boys under sixteen years of age as does any one of her rival commonwealths — Ohio, West Virginia, Indiana, Illinois."⁴ Other featured social protest journalists of the period enjoyed a field day with the glass factory child labor situation in the Keystone State, and a few of them indicated that it compared unfavorably with the child labor problem of the South.

Pittsburgh, long the center of Pennsylvania's glass industry, was the focal point of the state's glass house small help problem. As early as 1797 Major Isaac Craig and General James O'Hara, both of Revolutionary War fame, established a window glass factory, and glass became Pittsburgh's first product for export. Shortly thereafter, in 1808, two local entrepreneurs, Thomas Bakewell and Robert Page, started another glassworks along the Monongahela River which produced glassware for domestic purposes along with bottles and other glass containers. Rich in the raw materials essential to glassmaking — sand,

2 United States Bureau of Labor Statistics, *Monthly Labor Review*, XXIV, No. 4 (April, 1927), 12, Table 12.

3 United States Congress, Senate, *Report on Conditions of Woman and Child Wage-Earners in the United States*, 19 vols., III: Glass Industry, 61st Cong., 2nd Sess., Sen. Doc. 645, 20. (Cited below as Sen. Doc. 645.)

4 Florence L. Sanville, "Daybreak for Pennsylvania's Working Children," *The Survey*, XXXIII (February 6, 1915), 482.



The original of the painting by Edgar A. Roth reproduced above is in the Glass Room of the Historical Society building.

limestone and coal (for heat) — the Pittsburgh region over the nineteenth century gave rise to a number of glass factories. By the end of the century local histories reported with pride that a single section of Pittsburgh, the South Side, supported well over seventy glass houses.

The discovery of seemingly unlimited quantities of natural gas in West Virginia, Ohio, Indiana and Illinois shortly following the turn of the century forecast dark days for the Pittsburgh manufacturers. Natural gas possessed the distinct advantages of being a supremely efficient and, at the same time, moderately inexpensive fuel. One is inclined to suspect that there may be a measure of correlation between this development and Pittsburgh's loss of nearly one-third of its pressed and blown ware plants between 1905 and 1910.⁵ Nevertheless, the twenty-two to twenty-four glass houses which operated in the Pittsburgh area in the years following 1910 utilized small help in sufficient numbers to maintain the interest of reformers.

Information about the working conditions of the glass house boys may be found with varying degrees of reliability in several sources. First, more often in terms of heat than of light, are the exposé articles of outraged muckrakers of the progressive era — Charles Lionel Chute, Florence Kelley, Edwin Markham, Florence L. Sanville and others. While their purposes were, for the most part, quite honorable, the frequent use by these writers of flamboyant expressions such as "vortex of Vesuvius" and "Calvin's hell" leads one to question their objectivity. But the exuberant thrust of their literary style testifies to the strength of their reform instinct.

Pittsburgh's local newspapers (with the exception of the Bull Moose *Pittsburgh Leader*), the leading glass manufacturers' weekly, the journal of the non-union glassworkers and the house organs of the two glass blowers' unions most closely connected to the small help problem printed conspicuously little about working conditions — other than passing occasional comments about the boys' annual spring walk-outs.⁶ On the other hand, these sources (particularly the glass manu-

5 *American Glass Trade Directory* (Pittsburgh, Pennsylvania: Commoner Publishing Co., 1905-1910).

6 The leading periodicals of the glass industry at the turn of the century were the following:

The National Glass Budget, published weekly from May 21, 1898, to date by the Budget Publishing Co. of Pittsburgh, Pennsylvania, was the spokesman of the manufacturers.

The Commoner and Glassworker (titled *Commoner and Labor Herald* October 2, 1887, to October 9, 1887; *Commoner* October 9, 1887, to November 27, 1887; and *Commoner and American Glassworker* December 3, 1887, to August 31, 1889), published by the Commoner Publishing Co. at Pittsburgh, Pennsylvania, weekly from October 2, 1887 to date, generally

facturers' weekly) bristled with editorial opinion at every threat of proposed legislative limitation on the glass house boys. However, even in this connection the industry's periodicals grant little insight into working conditions in the glass plants.

Somewhat more useful are two government-sponsored studies, one at the national level and the other by the Commonwealth of Pennsylvania. The United States Commissioner of Labor, reporting in 1910 to the Senate on conditions of women and children in industry, focused particular attention on the duties performed by the glass house boys.⁷ Although published in 1927, a decade after the question of glassworks small help had become nearly a dead issue, *Opportunities and Conditions of Work for Minors Under Eighteen in the Glassware Industry* by the Pennsylvania Bureau of Women and Children presented job descriptions within the non-mechanized glass factories applicable to the first two decades of the century.⁸ When checked against contemporary statements, these two sources seem to present reliable data from which a representative view of the glass house boys' world can be constructed.

A comparatively small number of children were employed in the manufacture of plate and window glass. Most of them were to be found working in the pressed and blown ware divisions.⁹ While the employment rate of children in the glass industry as a whole increased 2.5 per cent between 1890 and 1900, it jumped 5.6 per cent in the bottle and small ware branch during the same period.¹⁰ In the study made by the United States Commissioner of Labor between 1907 and 1910 it was revealed that at the end of the century's first decade ninety-eight per cent of the glass house boys were employed in the manufacture of pressed and blown ware.¹¹ Women and girls employed in the glass

represented the interests of the non-union glass worker and the small manufacturer.

The American Flint, published monthly by the American Flint Glass Workers' Union of North America in Toledo, Ohio, from November, 1909, to date, expressed the opinions of the men working in the non-mechanized factories.

The Bottle Maker, published monthly from July, 1921, to February, 1925, at Philadelphia, Pennsylvania, and Camden, New Jersey, by the Glass Bottle Blowers' Association of the United States and Canada, gave form to the views of glass workers employed in machine bottle and container manufacture.

7 Sen. Doc. 645, throughout.

8 Pennsylvania Bureau of Women and Children, *Opportunities and Conditions of Work for Minors Under Eighteen in the Glassware Industry* (Harrisburg: 1921), 6-15.

9 United States Bureau of Labor Statistics, 12, Table 12.

10 Owen R. Lovejoy, "Child Labor in the Glass Industry," *Annals of the American Academy of Political and Social Science*, XXVII, No. 2 (March, 1906), 304.

11 Sen. Doc. 645, 20.

industry were assigned to the finishing rooms, areas where decorating and packing were accomplished. The boys, however, worked in the furnace rooms of the glass plants.

A common belief of the day was that boys over sixteen years of age were too slow, clumsy and inefficient to work in the glass houses.¹² In all probability, most boys realized by the age of sixteen that work in the glass house did not afford opportunities for apprenticeship. By its nature the glass industry required small help and, in the bind of the situation, they were willing to hire boys well under this age. Realizing this need of the glass manufacturers, the boys accepted employment in the glassworks; but once they became fifteen or sixteen years of age, the glass houses often were forsaken in the pursuit of apprenticeship.

Boys were hired by the glassworks to perform a variety of tasks. In the days before the introduction of presses and bottle-making machinery a "gatherer," a skilled worker, would take the blower's "punty," the blowing rod, and gather a ball of molten glass on the end of it. The blower would take the punty and lower the ball of glass into a mold. When the article had been blown to occupy the full volume of the mold, the glass blower would continue until a small thin bubble formed between the punty and the piece of work. The bubble was broken in order to release the punty from the piece of hot glass ware. A "mold-boy" then opened the mold to release the job. A "snapping-up boy" took the hot article to a furnace which featured many small holes in the top. The neck of the piece of ware was placed in one of these "glory holes" so that it could be reheated for finishing. This was the function of the "finisher," an adult skilled worker. Upon completion of this phase of the operation a "carrying-in boy" would run the item of glass ware on a wooden paddle to the lehr or annealing oven where it would make a gradual transition from 1000 degrees Fahrenheit to room temperature. Treatment in a lehr safeguarded the object from a disturbance of crystalline structure certain to occur in the event of sudden cooling. Once the blower had finished with a punty it was given to a "cleaning-off boy" so that the excess glass would be removed in preparation for a fresh ball of molten glass. The above outline is typical of the operation used in the production of glass containers and lamp globes.

In the case of pressing operations, used in the manufacture of trays, signal lenses and dishware, the routine was altered to a degree. Rather than the gatherer giving the punty to a blower, the ball of glass

¹² Lovejoy, 303.

simply was dropped into a pressing mold. The "presser," a skilled adult, pulled a lever which activated the mold and the object took form. The mold was opened, and the mold-boy lifted the ware from it with pincers and placed it on a board. At that point a "warming-in boy" carried it to the glory hole. In cases where a distance separated the board from the glory hole a "carrying-over boy" ran the item to the warming-in boy. Both the finisher and the carrying-in boy operated as when handling blown articles.

The manufacture of ware such as large-mouthed jars required two additional positions. A "holding-ball boy" and a "blocker," an adult skilled worker, took positions between the gatherer and the blower. The holding-ball boy would blow slightly into the punty, begin to expand the glob of glass and then pass it to a blocker. The blocker gathered additional molten glass on the already expanded ball. This procedure guaranteed the blower sufficient molten glass on the punty to form large ware.

A great number of "gathering-bits boys" were hired into the production of both blown and pressed ware. As their title suggests, they simply gathered the odd pieces of glass from the floor of the shop and placed them in the furnace to be melted with a batch of new glass.

Daily wages of glass factory small help varied considerably according to time and place. The daily rates paid, near the middle of the period under examination, by a Sharpsburg, Pennsylvania, glass house indicate a scale that was about typical for the time: carrying-in boy \$1.35, mold-boy 95c, cleaning-off boy 90c, snapping-up boy and gathering-bits boy 75c.¹³

The average glass house was a hastily constructed, one-story, frame building surrounding a great brick central furnace. Frequently there was no floor other than the bare ground. Around the furnace was a platform about one foot to eighteen inches above the floor or ground, as the case happened to be. There were a number of openings, sometimes a dozen, in the side of the furnace. The clay pots of batch, or molten glass, were within these openings. The gatherer, the blower and the cleaning-off boy occupied the platform. This group of workers comprised a team or shop, and one shop worked at each opening of the furnace. Glass factory custom long ago had established this platform as a highly special place, not to be trespassed upon by the unauthorized

¹³ *Wage-Earning Pittsburgh*, Vol. VI of *The Pittsburgh Survey*, ed. Paul Underwood Kellogg (6 vols.: New York: Russell Sage Foundation, 1914), 298. The glass factory noted in *The Pittsburgh Survey* is probably Tibby Brothers located at Main and Twenty-second Streets in Sharpsburg.

or the unwanted. The blower's platform was restricted to members of the white race, and if Negro boys were working in a glass house, the rotation plan was altered so that they would not receive the cleaning-off post.¹⁴

Just below the platform was the mold next to which in a crouched position sat the mold-boy. A few glassworks provided low chairs for the mold-boys, but the nature of the assignment demanded considerable bending — even with the approximate comfort of a low stool.

When it is considered that the temperature of molten glass is 2500 degrees Fahrenheit, one can almost feel the heat of a glass house. Investigators for the Commissioners of Labor found that on a day when the outside temperature was ninety degrees the following indoor temperatures prevailed: working hole in the furnace 142 degrees, cleaning-off boy's position 105 degrees, mold-boy's station 113 degrees, at the glory hole 118 degrees, at the finisher's bench 104 degrees, snapping-up boy's position 103 degrees and carrying-in boy's place in front of the lehr 125 degrees. The glass houses shut down during July and August for obvious reasons; however, the findings of these investigators indicate that the average indoor temperature over the working year varied between 100 and 130 degrees.¹⁵

The intense heat of the glass factory often was held accountable for a high incidence of stiff necks and colds, the common ailments of the glass house boys. Probably the carrying-in boy was most troubled by fluctuations in temperature. If the run from the finisher to the lehr was long, he likely was subjected to extremes of temperature — all the while running and balancing delicate articles. Small wonder he frequently was reported the victim of respiratory diseases.

Glare did not seem to represent a significant hazard to the boys. Few of them were in positions where they were subjected to extreme glare. Only the warming-in boy suffered in this respect, mainly because he placed the necks of the articles in the glory hole. The lehr usually did not cause sufficient glare to affect the eyes of the carrying-in boy.

A factor having deleterious effects on nearly all glass factory employees was the extraordinarily heavy dust content of the air. The mixing operation essential to the preparation of the batch maintained a uniformly high dust content throughout the furnace room. Probably the next serious contributor of foreign matter to the air of the glass

14 Sen. Doc. 645, 59.

15 *Ibid.*, 74-75.

factory was the phenomenon of "blow over," the silicate cloud caused by the breaking of the thin bubbles between the punty and the mold. The mold-boy was the direct victim of blow over since his work required hovering over the mold itself. To a lesser degree the snapping-up boy was plagued by blow over. Nearly all the employees of small establishments were exposed to the effects of blow over. Not only was it injurious to the eyes and tracheal passages, but also, as one worked and perspired, the blow over accumulating on the skin caused irritation.¹⁶

The most common glass factory injuries were cuts and burns. The floors always were littered with broken glass, even in the large works where gathering-bits boys were hired to sweep the floors. It was acknowledged generally that the major reason for cuts and burns was the natural inclination of boys to "play around."

In addition to the omnipresent danger of broken glass, a number of the boys experienced skin irritations due to radiation from the hot glass.

Glass house pay was on the piecework basis; therefore, speed and efficiency were of the essence. On the other hand, most glass factories were crowded and movement restricted. A careless carrying-in boy or an impulsive snapping-up boy could diminish the wages of an adult master craftsman. The presence of this situation undoubtedly increased the nervous tension already inherent in glassware production. Rest periods were seldom given, but job rotation for small help was practiced in many shops and by breaking the monotony contributed to a somewhat more tolerable atmosphere.

The advent of the continuous tank for melting and maintaining the batch inaugurated night work in the glass houses in the years immediately following the turn of the twentieth century. Prior to the coming of the continuous tank, small clay pots lying within the furnace openings served as containers for the batch. At that time work was halted in the early evening, not to be resumed until the following day. The introduction of night work presented a new dimension to the glass factory small help problem. A few glassworks refused to tolerate the practice from the outset, while others declined to hire a boy unless he consented to work nights. A number of factories established the rule that a specified team of boys would follow a particular blower through his pattern of shifts.¹⁷ The net result of the continuous tank was that by 1908 two-thirds of the boys under sixteen years of age

¹⁶ *Ibid.*, 65.

¹⁷ *Wage-Earning Pittsburgh*, 195.

employed in Pennsylvania's glass factories were working nights.¹⁸ The demand for night workers increased further, and factory owners often promised a bonus of 50 cents or 75 cents to a boy who would work every night of the week.¹⁹

The initiation of night work in the glass houses gave added urgency to the need for a solution to a problem already recognized by social reformers as serious. Florence L. Sanville, drawing a prose portrait of the early morning movements of the glass house night worker, relates that the "... boy's hard-pressed activity among the glowing furnaces stops suddenly before the chill dawn breaks, anywhere from 2:15 to 4:15 A.M. Then he had the alternative of walking to his home, which might be at a considerable distance from the works; or, if permitted, of curling up near the furnace and keeping warm until daybreak. For a week he leads this abnormal existence; then for a week on the day shift, he works when the day world is working and sleeps when his brothers and sisters sleep. His life is a constant effort at readjustment; . . ." ²⁰

Not all was dreary in the glass houses. The boys were a high-spirited group. Most contemporary sources indicate that there was constant singing and shouting. The music and cheering became so loud in many glassworks that employers attempted to muffle the boys' enthusiasm. This became a special problem for night work establishments in proximity to residential districts, a common situation in the Pittsburgh area.²¹ Each shop possessed its hierarchy of small help, and each glass house boy valued his position within its structure. Although mindful of the economic and social ills fostering child labor, some of its most severe critics seemed to understand the attractiveness of the glass house to the imagination of a boy. The compilers of *The Pittsburgh Survey* in the midst of criticizing a Sharpsburg bottle works for their employment of children agreed that: "It is easy to understand the lure of the glassworks, the undefinable magic that chains to the entrance-way groups of small boys who have failed to have been taken on. The molten wax-like glass in the furnace, the skillful twist and turn which prepares the embryonic bottle for the mold, the speed with which the wax bubble is made a thing of use, the white light, red glare, and shifting shadow, the dexterity of the bare-armed men, combine to cast

18 Pennsylvania Bureau of Women and Children, 15.

19 "The Tragic Significance of Cheap Bottles," *Current Literature*, XLI (August, 1906), 220.

20 Sanville, 482.

21 Sen. Doc. 645, 83.

a spell over the gaping youngsters and to arouse a compelling belief in the efficiency and commercial success of the glass blower.”²²

What became of the glass house boys? What reasons account for the eventual disappearance of one of the most highly institutionalized forms of child labor? The answer, unknown at present, probably is to be found among diverse patterns of social, political, economic and technological forces — muckrakers, automatic bottle-making machinery, changing attitudes of the glass blowers’ unions, school attendance laws, enforced minimum working age laws and additional technological improvements necessitated by a prosperous soda pop industry created by Prohibition.

²² *Wage-Earning Pittsburgh*, 297.