

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

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**NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM**

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*  
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

**1 NAME**

HISTORIC

Edward D. Libbey House

AND/OR COMMON

Toledo Society for the Handicapped

**2 LOCATION**

STREET & NUMBER

2008 Scottwood Avenue

NOT FOR PUBLICATION 9

CITY, TOWN

Toledo

CONGRESSIONAL DISTRICT

STATE

Ohio

VICINITY OF

CODE

39

COUNTY

Lucas

CODE

095

**3 CLASSIFICATION**

CATEGORY

DISTRICT

BUILDING(S)

STRUCTURE

SITE

OBJECT

OWNERSHIP

PUBLIC

PRIVATE

BOTH

**PUBLIC ACQUISITION**

IN PROCESS

BEING CONSIDERED

STATUS

OCCUPIED

UNOCCUPIED

WORK IN PROGRESS

**ACCESSIBLE**

YES: RESTRICTED

YES: UNRESTRICTED

NO

PRESENT USE

AGRICULTURE

COMMERCIAL

EDUCATIONAL

ENTERTAINMENT

GOVERNMENT

INDUSTRIAL

MILITARY

MUSEUM

PARK

PRIVATE RESIDENCE

RELIGIOUS

SCIENTIFIC

TRANSPORTATION

OTHER: Charitable Organization

**4 OWNER OF PROPERTY**

NAME

Toledo Society for the Handicapped (Mr. Robert Roberts, Jr.,  
Executive Director)

STREET & NUMBER

630 West Woodruff Avenue

CITY, TOWN

Toledo

STATE

Ohio

**5 LOCATION OF LEGAL DESCRIPTION**

COURTHOUSE,  
REGISTRY OF DEEDS, ETC.

Recorder's Office, Lucas County Courthouse

STREET & NUMBER

Adams at Erie Street

CITY, TOWN

Toledo

STATE

Ohio

**6 REPRESENTATION IN EXISTING SURVEYS**

TITLE

None

DATE

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FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR  
SURVEY RECORDS

CITY, TOWN

STATE

# 7 DESCRIPTION

<b>CONDITION</b>		<b>CHECK ONE</b>		<b>CHECK ONE</b>	
<input checked="" type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE	<input type="checkbox"/> MOVED	DATE _____
<input type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input checked="" type="checkbox"/> ALTERED			
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED				

## DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Located a short distance from downtown Toledo in one of that city's older residential neighborhoods, the Edward D. Libbey House has undergone little exterior alteration and looks much as it did when he resided here from 1895 to 1925 while revolutionizing the glass industry. The Shingle style house is a 2 1/2-story edifice covered with yellow-painted shingles. It sits on brick and stone foundations and features a partially raised full basement. It is the only known extant structure prominently associated with Libbey that has not been altered beyond recognition.

Around 1894 Libbey commissioned David L. Stine, the architect responsible for the Libbey factory at the 1893 Columbian Exposition in Chicago, to design a suitable residence. Its completion in 1895 coincided with the rise of his Libbey Glass Company to national prominence and the beginning of the most productive phase of Libbey's career when he and Michael J. Owens revolutionized the glass industry with a series of major technological improvements. Libbey and Owens, who resided only a few blocks away, probably discussed business in this house on numerous occasions. In the years after their deaths, the most significant Owens residences and all the important early factories associated with Libbey Glass, Owens Bottle, and Libbey-Owens Sheet Glass were either demolished or drastically altered.

The westward facing Libbey House is an irregularly-shaped structure capped with a combination of multigabled and flat roofs covered with asbestos shingles. Near the northwest and southwest corners respectively, the roof slopes feature a single gabled dormer. The roofline has an overhanging boxed wood cornice with shingle-covered brackets and gables with projecting verges. On its south end the house features a two-story round tower whose conical roof is pierced by a decorated and corbeled inside end chimney. A much simpler inside end chimney is located at the rear (east) facade of the house. The exterior walls are covered with yellow painted wood shingles, with the exception of the first story of the southwest corner which is faced with uncoursed rubblestone. Although most windows are set in rectangular surrounds and are of the sash variety, their arrangement varies widely. Multilight windows are used for the porch areas on the front (west) facade and south end while one-over-one sash type windows, grouped singly or in twos and threes and sometimes forming bays, are used elsewhere. The edifice features two flat-roofed porches with Greek Doric columns. One porch is on the south end and is enclosed with leaded glass windows, while the other wraps around the front (west) facade and a portion of the north end and is open. It features carved wooden balustrades.

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# **A SIGNIFICANCE**

PERIOD		AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION		
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE		
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE		
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN		
<input type="checkbox"/> 1700-1799	<input checked="" type="checkbox"/> ART	<input type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER		
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION		
<input checked="" type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input checked="" type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)		
		<input type="checkbox"/> INVENTION				

SPECIFIC DATES 1895-1925

BUILDER/ARCHITECT David L. Stine

## STATEMENT OF SIGNIFICANCE

Between 1880 and 1925 no one exerted greater influence on the development and direction of the American glass industry than did Edward Drummond Libbey. According to historian Lura Woodside Watkins, Libbey was "one of the most successful glass manufacturers the country has ever known" and had "a profound influence on glass-making the world over."<sup>1</sup> In 1888 he moved the financially troubled New England Glass Company to Toledo, Ohio, rechristened it the Libbey Glass Company, and, "set many unexcelled standards for the American glass industry," says glass expert Otto Wittmann. "Indeed, Libbey glass, in both cut and art glass, became the standard of the world for many years."<sup>2</sup>

Refusing to rest on his laurels, in 1903 Libbey took the lead in establishing the Owens Bottle Company, the forerunner of Owens-Illinois, Inc. According to Warren C. Scoville, a leading authority on the development of the American glass industry, by 1920 this company had become "the largest manufacturer of bottles in the United States."<sup>3</sup> In 1916 Libbey provided the leadership that led to the founding of the Libbey-Owens Sheet Glass Company, the predecessor of Libbey-Owens-Ford, and one of the Nation's leading manufacturers of window and plate glass.

During these same years, Libbey, working closely with Michael J. Owens and others, was responsible for "technological improvements of a truly revolutionary character," says Scoville, which caused "handicraft processes which had been faithfully followed for centuries" to be "either discarded or . . . adapted to machine methods."<sup>4</sup>

(continued)

<sup>1</sup>Lura Woodside Watkins, Cambridge Glass 1818 to 1888: The Story of the New England Glass Company (New York, 1930), 30.

<sup>2</sup>Cited in John W. Keefe, Libbey Glass: A Tradition of 150 Years, 1818-1968 (Toledo, 1968), 3.

<sup>3</sup>Warren C. Scoville, Revolution in Glassmaking: Entrepreneurship and Technological Change in the American Industry, 1880-1920 (Cambridge, 1948), 109.

<sup>4</sup>Ibid., 149.

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# 9 MAJOR BIBLIOGRAPHICAL REFERENCES

(See continuation sheet.)

## 10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than 1 acre

UTM REFERENCES

A	<u>17</u>	<u>28,619,50</u>	<u>4,611,510.00</u>
	ZONE	EASTING	NORTHING
C			

B			
	ZONE	EASTING	NORTHING
D			

### VERBAL BOUNDARY DESCRIPTION

The boundary of the inventoried property coincides with the boundary of the legal lot known as 2008 Scottwood Avenue, Toledo, Ohio.

### LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

## 11 FORM PREPARED BY

NAME / TITLE

Ralph J. Christian, Historian, Historic Landmarks Project

ORGANIZATION

DATE

American Association for State and Local History December, 1977

STREET & NUMBER

TELEPHONE

1400 Eighth Avenue South

615/242-5583

CITY OR TOWN

STATE

Nashville,

Tennessee

37203

## 12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL     

STATE     

LOCAL     

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

TITLE

DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST

DATE

KEEPER OF THE NATIONAL REGISTER

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CONTINUATION SHEET Libbey House      ITEM NUMBER      7      PAGE      one

Inside, the house exhibits many original features, including solid brass door hardware, five fireplaces featuring elaborate mantels, lighting fixtures, oak and walnut paneling, and Libbey's wall safe which is hidden behind sliding oak wall panels. Generally a somewhat modified central hall plan is followed with three rooms on each side of a first-floor formal entry hall. This area is dominated by an open two-flight grand staircase flanked by Greek Doric columns and featuring a carved newel post and balustrades and decorated with ornamental brackets. The second floor features a centrally located open sitting room with fireplace that is flanked on each side by two bedrooms. The third level, which is reached by a rear stairway, consists of seven rooms and served originally as servants' quarters.

After Libbey died in 1925, his house continued to serve as a private residence for many years. In 1965 it was purchased by the Toledo Society for the Handicapped, and since that date it has been used for educational and social service purposes. The house has undergone very little interior or exterior alteration over the years. The only major exterior change occurred around 1965 when a covered wheelchair ramp was added to the rear (east) facade. The house is still surrounded by its original black-painted cast-iron fence and is beautifully landscaped. At present the Toledo Society for the Handicapped is planning to construct a new facility, and there is a strong possibility they will sell the Libbey House. The edifice is well-maintained and situated in a neighborhood with a strong commitment to historic preservation.

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CONTINUATION SHEET Libbey House ITEM NUMBER 8 PAGE one

Under Libbey's aegis, machines were developed to automatically blow light bulbs, tumblers, lamp chimneys, bottles, glass tubing, and window glass. Not only did Libbey use this equipment in his own factories, but through a licensing arrangement, these machines came into general use in glass plants throughout the world. These machines were the most important development for the glass industry, says distinguished historian Daniel J. Boorstin, "since the ancient invention of the glass-blowing iron." They not only transformed glass "from a luxury-treasure into a democratic medium," but they brought the United States into the forefront as a glass-producing Nation.<sup>5</sup> Before 1880 the American glass industry, according to Scoville, "had lagged definitely behind the European in matters of technology," but "by 1920 it had forged to the front in respect to developing and using efficient machines, producing on a large scale, and lowering manufacturing costs."<sup>6</sup>

Libbey resided in this westward facing, 2 1/2-story, Shingle style house from 1895 until his death in 1925, the years during which he played such a major role in revolutionizing the glass industry. Designed by David L. Stine, architect of the Libbey factory at the 1893 Columbian Exposition, it is little altered and is the only known extant structure prominently associated with Libbey or the early development of Libbey Glass, Owens Bottle, and Libbey-Owens Sheet Glass that has not been altered beyond recognition.

History

Edward Drummond Libbey was born April 17, 1854, in Chelsea, Mass., to William L. and Julia M. Libbey. For several years before his son's birth, the elder Libbey had been involved in the glass industry in various capacities, and during Edward's childhood, William was agent and part owner of the Mt. Washington Glass Company in New Bedford. Apparently Edward inherited his father's enthusiasm for glass, because after finishing high school in 1872 he announced that he would forego college for immediate entry into the glass business. At the time, William Libbey was agent for the New England Glass Company, one of the Nation's

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<sup>5</sup>Danial J. Boorstin, The Americans: The Democratic Experience (New York, 1973), 342, 340.

<sup>6</sup>Scoville, Revolution in Glassmaking, 197.

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CONTINUATION SHEET Libbey House ITEM NUMBER 8 PAGE two

leading manufacturers of fine glassware, and he helped Edward obtain a position as chore boy at its Cambridge factory.

Young Libbey soon tired of this menial position, however, and decided to resume his education. He entered Kent Hill Academy in Maine with the intention of eventually becoming a Methodist minister. Around 1873 Libbey contracted a throat infection which permanently impaired his voice, and at the advice of the school's rector, he withdrew from the academy because of this disability. In 1874 he rejoined his father at the New England Glass Company, this time in the position of clerk.

Despite New England Glass Company's national reputation, the firm encountered serious financial difficulties in the 1870's because its fine flint glass could not compete with the much cheaper soda lime glass being produced elsewhere. In 1878 William Libbey purchased the factory, and 2 years later Edward became his partner. After his father's death in 1883, Edward became sole proprietor, and he soon set about to make the company prosperous again. With the proceeds from his father's insurance policies, he paid off the firm's debts and undertook the production of Amberina, a type of flint glass which ranged in color from light amber to deep red. "From the sale of this patented product," says Scoville, "he reaped profits which later 'served as the principal foundation of his successful career'"<sup>7</sup> During the next few years, Libbey introduced other patented glassware, including Pomona, Peachblow, and Agata, with some success. At the same time, however, he was troubled by his constantly spiraling fuel costs which in some years devoured his profits and by labor problems which on several occasions shut down his factory. When his labor force went out on strike again in 1888, Libbey closed his Cambridge factory permanently and went west to seek a new location.

After considering several locations in the natural gas belt of the Midwest, Libbey chose Toledo because he was given a free plant site there. His decision probably was influenced as well by the fact that while visiting there he met and fell in love with Forence Scott, whom he later married. By late summer the

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<sup>7</sup>Ibid., 90.

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CONTINUATION SHEET Libbey House ITEM NUMBER 8 PAGE three

new factory on Ash Street, equipped largely with machinery stripped from the Cambridge plant, was ready. On August 17, 1888, Libbey, accompanied by a number of his former executives and 115 selected workers from the defunct New England Glass Company, arrived in Toledo by train and was accompanied to the new plant by marching band. At first Libbey tried to retain the company's historic name, calling it the W. L. Libbey and Son New England Glassworks, but in 1892 he changed the name to Libbey Glass Company.

Libbey's first 2 years in Toledo were anything but auspicious due to high employee turnover, an incompetent plant manager, poorly constructed glass furnaces, and inferior quality glass. Gradually, however, these problems were corrected, and by 1891 the company was on a firm financial footing, due in large part to a lucrative contract with General Electric to manufacture light bulbs. In 1893 the Libbey Glass Company achieved national prominence because of an exhibition factory it operated at the Columbian Exposition in Chicago. Nearly 2 million persons toured this facility, but even more importantly, according to Scoville, "because of the favorable publicity received at the fair, the Libbey trademark became known throughout the country as a guarantee of excellence in glassmaking."<sup>8</sup> As a result, according to Wittmann, the company "set many unexcelled standards for the American glass industry in the late years of the century. Indeed, Libbey glass, in both cut and art glass, became the standard of the world for many years."<sup>9</sup>

During the exposition, Michael J. Owens, the manager of the Libbey exhibit, began to toy with the idea of developing machinery that would blow glass automatically. At the urging of Libbey, he put his ideas into practice, and in 1894 a semi-automatic machine to blow light bulbs was put into operation in the Libbey Glass Plant, the first in a series of what Scoville calls "technological improvements of a truly revolutionary character" which caused "handicraft processes which had been faithfully followed for centuries" to be "either discarded or . . . adapted to machine methods."<sup>10</sup>

(continued)

<sup>8</sup>Ibid., 96.

<sup>9</sup>Cited in Keefe, Libbey Glass, 3.

<sup>10</sup>Scoville, Revolution in Glassmaking, 149.

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CONTINUATION SHEET Libbey House ITEM NUMBER 8 PAGE four

In 1895 Libbey and Owens organized the Toledo Glass Company whose primary purpose was not to manufacture glass but to improve and license machinery developed by Owens. During the next few years, the bulb machine was made fully automatic and adapted so that it could be used to produce tumblers and lamp chimneys as well, and the Owens machines came into general use in the glass industry. By 1903 Owens had perfected his fully automatic bottle blowing machine, which, according to Scoville, "constituted by far the most important labor-saving technique introduced in the bottle industry since the invention of the blowpipe."<sup>11</sup>

To fully exploit this new machine, Libbey and Owens organized the Owens Bottle Company in 1903. During the first 6 years of its corporate existence, this firm made bottles only in experimental batches as part of an ongoing effort to improve the machine. The company's main business was licensing other bottle and glass container manufacturers to use the machine, and within a few years it was in general use throughout the industry. In fact, Libbey and Owens granted so many exclusive licenses in certain lines of manufacture that when they decided to produce bottles on a large scale in 1909 they had to obtain sublicenses before they could use their own machines. After 1909 Libbey and Owens rapidly expanded the Owens Bottle Company until by 1920 it was the Nation's largest bottle manufacturer with 18 factories in 6 States.

In the meantime Libbey and Owens became interested in a new process for producing window or plate glass developed by Irving W. Colburn. For years glass of this type had been produced by skilled workers who blew, slit, and flattened cylinders of glass, but in 1906 Colburn patented a machine to make window glass in sheet form. Colburn, however, lacked the financial means to make his machine a success, and in 1912 Libbey, acting on behalf of the Toledo Glass Company, purchased his patents at a sheriff's sale for \$15,000. For the next few years Colburn and Owens worked on the machine until it was perfected. In 1916 Libbey and Owens incorporated the Libbey-Owens Sheet Glass Company to not only manufacture window glass but to license other firms to use the Colburn process. The new firm quickly prospered and soon became one of the Nation's leading manufacturers of sheet glass.

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<sup>11</sup>Ibid., 158.

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CONTINUATION SHEET Libbey Glass ITEM NUMBER 8 PAGE five

During his last years Libbey remained active in the glass industry despite the fact that he devoted a great deal of his time to civic, philanthropic, and educational activities. In 1901 he founded the Toledo Museum of Art and over the years played the major role in making it one of the Nation's leading art museums. On November 13, 1925, Libbey died in Toledo at the age of 71.

In the years after the deaths of Libbey and Owens (who died in 1923), the firms they founded continued to prosper. In 1929 the Owens Bottle Company merged with the Illinois Glass Company to create Owens-Illinois, now a leading manufacturer of glass, plastic, paper, and glass ceramic products. Libbey Glass operated for many years as a separate entity, manufacturing light bulbs and cheap glassware as well as its famous hand-blown glassware. In 1935 it was acquired by Owens-Illinois, and during World War II, it ceased its fine glassware operation. Presently it manufactures a wide variety of machine-made glassware to suit every taste and pocketbook. In 1930 the Libbey-Owens Sheet Glass Company merged with the Edward Ford Plate Glass Company, bringing Libbey-Owens-Ford into existence as well as the famous L-O-F shield on plate and window glass.

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CONTINUATION SHEET Libbey House ITEM NUMBER 9 PAGE one

Boorstin, Daniel J., The Americans: The Democratic Experience  
(New York: Random House, 1973).

Campen, Richard N., Ohio: An Architectural Portrait (Chagrin  
Falls, Ohio: West Summit Press, 1973).

Davis, Pearce, The Development of the American Glass Industry  
(Cambridge: Harvard University Press, 1949).

"Glassmaking of Yesteryear," The Shield, VII (November, 1976),  
1-18, 24.

Godwin, Blake-More, "Edward Drummond Libbey," Dictionary of  
American Biography, Vol. VI, Part 1 (New York: Charles  
Scribner's Sons, 1933), 233-34.

Goldberg, Al, "Of Flasks and Bottles," Toledo Blade Sunday  
Magazine, September 12, 1976, 4-11.

Keefe, John W., Libbey Glass: A Tradition of 150 Years, 1818-  
1968 (Toledo: Toledo Museum of Art, 1968).

Owens-Illinois, Inc., Libbey: Its History (Toledo: Owens-Illinois,  
Inc., 1968).

Rogers, Millard F. Jr., The New England Glass Company, 1818-1888  
(Toledo: Toledo Museum of Art, 1963).

Scoville, Warren C., Revolution in Glassmaking: Entrepreneurship  
and Technological Change in the American Industry, 1880-1920  
(Cambridge: Harvard University Press, 1948).

Silverman, Alexander, "Michael Joseph Owens," Dictionary of  
American Biography, Vol. VII, Part 2 (New York: Charles  
Scribner's Sons, 1934), 122.

Watkins, Lura Woodside, Cambridge Glass 1818 to 1888: The Story  
of the New England Glass Company (New York: Bramhall House,  
1930).

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