Form No. 10-300 (Rev. 10-74)

THEME: American at Work
SUBTHEME: Science and Invention

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

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

1 NAME

HISTORIC: John B. Tytus House

AND/OR COMMON: 300 South Main Street

2 LOCATION

STREET & NUMBER: 300 South Main Street

__NOT FOR PUBLICATION

CITY, TOWN: Middletown __ VICINITY OF

CONGRESSIONAL DISTRICT: 8th

STATE: Ohio CODE: 39 COUNTY: Butler CODE: 017

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
XX BUILDING(S)	X PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	X PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	X YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME: Patrick and Jeri Rosi

STREET & NUMBER: 300 South Main Street

CITY, TOWN: Middletown __ VICINITY OF

STATE: Ohio 45042

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: Butler County Courthouse

STREET & NUMBER: Courthouse Square

CITY, TOWN: Hamilton

STATE: Ohio

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: National Register of Historic Places

DATE: May 1975 X FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS: Office of Archeology and Historic Preservation, NPS

CITY, TOWN: Washington

STATE: D.C.

62

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
X EXCELLENT	DETERIORATED	X UNALTERED	X ORIGINAL SITE
GOOD	RUINS	ALTERED	MOVED DATE_____
FAIR	UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The John B. Tytus House in Middletown, Ohio, is a three story red brick building.[1] The architect and builder are unknown. Architecturally the house combines elements of Romanesque and Tudor revival styles. The building is L-shaped in plan and among its principal features are: a shed roofed two bay front porch which has large, arched openings; a three sided bay at the south end of the main facade which ends with a short conical roof; intersecting gable roof lines; and various arched and rectangular windows, some of which are leaded glass.

The house was constructed in two stages. The first portion was built in approximately 1868. This section, which fronts on South Main Street, originally contained the four principal rooms of the first floor; a service stair; four bedrooms flanking a hall as well as three bathrooms on the second floor; and three large attic rooms on the third floor. The second stage, built onto the rear in 1890, contains a breakfast room and kitchen. A bedroom and sleeping porch were added to the second floor as a part of this addition.

The first floor interior is elaborate. The foyer-reception room is lavishly ornamented with the original oak panelling, stairway, and banisters. The room is lighted on two sides by diamond paned leaded glass windows. The fireplace and chimney breast are detailed with reed and fluted pilasters flanking the firebox. Ceiling height is 16'. An archway divides this space from the stairway and through it can be seen the music room. The music room and alcove space to the left of the fireplace contain cherry woodwork in the mantlepiece and wainscot. The mantle shelf features carved Adam style garlands and wreaths. Two 7' high windows light the room. Ceiling height is 12' and overhead is a plaster ceiling with "Elizabethan" style ribs in diamond and elongated hexagon pattern. The stairway which divides this room from the reception room is original with elaborate oak panelling. The dining room features a barrel vault ceiling. It contains a set of chairs, table, and sideboard attributed to Eastlake and formerly in the ownership of the Tytus family. The wrought iron and brass chandelier are also original. The study is a small room with a fireplace just behind the reception room and it contains some wide woodwork around the doors and hearth. The walls are papered in the original rose and floral pattern over a dado of ashlar patterned brown paper.

---

1. The architectural description of the house is taken almost verbatim from the National Register of Historic Places description which was prepared in 1975.

(Continued)

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
X 1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		X INVENTION		

SPECIFIC DATES 1875-1944 BUILDER/ARCHITECT unknown

STATEMENT OF SIGNIFICANCE

The sources of invention have long fascinated students of the history of science and invention. In a major study of the economic roots of invention Jacob Schmocker, the late University of Minnesota economist, formulated what he called an economic "law" governing the relationship between invention and technological change. "Major inventions are made normally," Schmockler contended, "because particular economic opportunities have become more inviting, and not because some scientific finding suddenly pushed them over the horizon."[1] The significance of John Butler Tytus's invention of a practical hot wide strip continuous steel rolling process can be interpreted according to Schmockler's "law." As an employee of the American Rolling Mill Company (Armco) Tytus long sought a means by which steel could be continuously rolled. He recognized that the invention of such a process would significantly reduce the costs of steel production and also open up large new areas for the use of steel in manufacturing in general and in automobile production in particular. Tytus sought a new industrial technology because of the income and increased productivity he perceived could be gained from the invention. He found the technology in the invention of the continuous strip rolling process. According to Carl M. Becker, "Tytus's invention of the continuous mill was a landmark in the history of technology and it contributed significantly to the growth of the steel industry."[2]

LIFE

John Butler Tytus was born December 6, 1875, in Middletown, Ohio. His father was a well-to-do paper mill operator. After local schooling and attendance at a New York prep school, Tytus entered Yale, his father's alma mater. Although Tytus would later become famous in a technological field, he did not study science or engineering at Yale. His attention was drawn to the humanities and in 1897 he received a BA in English literature.

---

1. Jacob Schmockler, Patents, Invention, and Economic Change (Cambridge, 1972), p. 73.

2. Carl M. Becker, "John Butler Tytus," Dictionary of American Biography, Supplement Three, (New York, 1973), p. 779.

(Continued)

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Carl M. Becker, "John Butler Tytus," Dictionary of American Biography, Supplement Three, (New York, 1973).
John Jewks, et. al., The Sources of Invention (New York, 1969).
Jacobs Schmockler, Patents, Invention, and Economic Change (Cambridge, 1972).

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY one acre

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	16	7 2,3 7,9,5	4,3 7,9 7 6 9
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

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
James Sheire, Historian

ORGANIZATION
Historic Sites Survey, National Park Service

DATE
January 1976

STREET & NUMBER
1100 L Street NW.

TELEPHONE
202-523-5464

CITY OR TOWN
Washington

STATE
D.C. 20240

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL X 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.

FEDERAL REPRESENTATIVE 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

70

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

A two story brick carriage house stands at the rear of the lot and carries through the stylistic theme of the house. A wooden barn enclosed the left and rear sides of the brick portion. The brick section is in only fair condition and the wooden portion is deteriorated.

Three Hundred South Main Street was built by John B. Tytus's father and it was Tytus's principal home throughout his life. The house remained in the Tytus family until approximately 1972 when it was purchased by the present owner. Neither the exterior nor the interior have been significantly altered from the John B. Tytus period. There are no intrusions.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

Returning to Middletown Tytus entered the family business. While working at the paper mill he had the opportunity to study paper making and especially the rolling machines that converted the wood pulp into paper. When his father died, the family sold the paper mill and John went to work for a bridge builder in Dayton. While working in Dayton Tytus learned the rudiments of civil engineering and further familiarized himself with basic engineering concepts. Returning to Middletown in 1904 he decided to seek employment with the American Rool Milling Company, a steel fabricating firm that had opened a plant in Middletown in 1901.

When Tytus first went to work for Armco, he desired to learn the steel business from the ground up. The Yale graduate's first position was as a common laborer. Although the work was hard, Tytus gained invaluable first hand knowledge of the basics of steel making and rolling. Between 1904 and the 1920's Armco promoted Tytus to positions of increasing managerial responsibility. In 1906 he became superintendent of a new plant in Zanesville, Ohio, and in 1909 he moved back to Middletown as operations chief. During these years he also worked on designs for improving the steel rolling process.

In 1921 Armco purchased the Ashland Iron and Mining Co. in Ashland, Kentucky, giving Armco its first blast and open hearth steel furnaces. Tytus immediately recognized that the company's new steel making capacity provided an excellent opportunity to develop his continuous strip rolling process. Although the development of such a process would involve considerable capital expense, he approached Armco officials and the company's board of directors and urged them to invest in his process by building a new plant in Ashland. Realizing that such a technological breakthrough would greatly enhance the company's position, management approved the scheme and the plant was constructed. The revolutionary plant began operations in 1924 and by 1927 it was turning out 40,000 tons of rolled steel a month, significantly more than enough to earn a profit. Other major steel companies quickly realized the importance of the process and adopted it under licensing granted by Armco. By 1940 at least twenty six continuous mills had been constructed in the United States at a cost of more than $500,000,000, for the period a very large investment in new plant and equipment.

The development of the continuous strip rolling process was the major achievement of Tytus's life. After its successful introduction in 1920's Tytus continued to work for Armco in a managerial role, rising to become

(Continued)

64

company vice-president. In 1935 the American Iron and Steel Institute awarded Tytus its Gary Memorial Award for his contributions to the steel industry. Tytus lived in Middletown for the rest of his life. He died in Cincinnati on June 2, 1944, and was buried in Woodside Cemetery in Middletown.

WORK

John B. Tytus's invention of a practical hot wide strip continuous steel rolling process was the direct result of his search for a solution to the specific technological problem of rolling steel sheets. Tytus did not come to the task unprepared. Thanks to his work in his father's paper mill, which included working with rolling machines, Tytus was familiar with the basic technology of rolling machines. While working in Armco's Middletown plant as a laborer, he had the opportunity to study carefully the existing labor intensive process for flattening steel. Under this process sheets of steel were passed by hand through wingerlike rolls until they reached the desired thinness. In analyzing the problems of achieving a continuous rolling process that would eliminate the need for handling and also vastly increase the length and width of the sheets, Tytus conceptually isolated five variables that required precise control: 1) determination of the exact contours of the rolls through which the steel passed, 2) determination of the temperature of the rolls, 3) determination of the composition and springiness of the rolls, 4) determination of the spacing of the rolls, and 5) determination of the shape, composition, and temperature of the sheet steel.[4] The plant at Ashland, Kentucky, which Armco built in 1924, translated Tytus's conceptions into "hardware" reality. From 1924 to 1927 each of the above variables went through a long process of testing refinement. Numerous changes were made in the contours of the rolls as well as in their temperature and spacing. The shape, composition, and temperature of the steel were also tested and retested. By 1927 the process had proved its viability. Sheet steel passed smoothly through the continuous rolling process without buckling and emerged at the desired thickness and width. By the 1930's sheet steel

---

4. John Jewks, et. al., The Sources of Invention, (New York, 1969), p. 242.

produced by the continuous mill process was in use throughout American industry. The automobile industry, with its huge demand for sheet steel out of which to stamp the ever changing contours of the American car, quickly became a major consumer as did the electric appliance industry and many others.

John Butler Tytus was not an inventive genius on the Edison model. He is remembered in the history of invention for this singular accomplishment. "He and his invention," Carl Becker points out in assessing his position as an inventor, "were characteristic emanations of an industrial age attuned to science, technology, and expanding markets."[5] Tytus was the practical inventor; the man who, first, saw a need for technological innovation to improve an industrial process, and, second, invented the necessary technology to achieve it.

---

5. Becker, p. 782.