THE INDUSTRIAL GEOGRAPHY OF MIDDLETOWN, OHIO

A Thesis
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for the Degree Master of Arts

By
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FOREWORD

This study was made during the winter, spring, and summer of 1950. Although much of the material used was gathered from library sources, it was also necessary to obtain information directly from Middletown manufacturers and business men. I wish to acknowledge the prompt attention that was given to my inquiries. Mr. C. F. Peters of the Gardner Board and Carton Company, Mr. George B. Tyler of the Crystal Tissue Company, and Mr. D. G. Driscoll of the Sorg Paper Company were especially helpful in supplying information about the paper industry. Mr. William Sampson and Mr. John T. Anderson of the Armco Steel Corporation helped me to understand and to secure information regarding the steel industry. Mr. Eldon H. McLaughlin of the David J. Joseph Company explained the problems of scrap iron procurement. Mr. Herschel Day of the Oglesby-Barnitz Bank and Trust Company and Mr. George Crout of the Middletown Public Schools supplied me with information about the history and business activity of the city. The Middletown Chamber of Commerce generously supplied me with maps and information about Middletown industries.

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I. INTRODUCTION

Purpose of the Study

Located in the heart of the industrial Miami Valley in southwestern Ohio, Middletown has grown from a pioneer agricultural center to a modern industrial city of 33,634 population. During the course of its development it has experienced the bonds of three types of transportation. The Miami River, the Miami and Erie Canal, and the railroads have made the Miami Valley one of the great north-south transportation corridors in Ohio.

The periods of Middletown's early development can be expressed in terms of the particular type of transportation which was then dominant. These changes in transportation were in part responsible for changes in extent and nature of the industries.

Technical advances likewise influenced the growth of Middletown, but most of these occurred after the railroad came. An adequate supply of raw materials and a greater market made available because of the railroad increased the value of products and made
improvements in manufacturing possible.

The beginning of the present industrial period of Middletown probably started with the establishment of the American Rolling Mill Company there in 1900. This was a time when technical improvements in industry were greatly modifying the nature and the location of the market for steel.

The presence of the steel industry in Middletown increased the bonds between the city and the rest of the Miami Valley. The rise of steel manufacturing, however, was not at the expense of the established industries in Middletown.

It is the purpose here to present the course of events which led Middletown to attain the present day situation and to explain the forces which caused these events.

The Physical Setting

Location.-- The Great Miami River rises in Logan County in west central Ohio and flows south and southwest into the Ohio River about 15 miles below Cincinnati near Hardinsburg, Indiana. Middletown's location on the east bank approximately 30 miles north of Cincinnati, between Hamilton and Franklin, is near the center of the Miami Valley Manufacturing Region. (Map I)
Map I.

Location of Middletown
Topography.-- Most of the downtown section of Middletown lies on the valley floor, but a slight rise begins about 3500 feet east of the river and levels out at Baltimore Street. This is the first terrace off the valley floor and it bends toward the east away from the river as the latter flows southward. The next terrace begins about 4500 feet further east near Franklin Street. This is a more abrupt change and eastward from here the surface gradually rises until an elevation of about 800 feet is reached in the easternmost sections of the city.

Southward the valley floor widens out considerably and the country is flat until Dick's Creek is reached. This creek is flowing almost directly westward into the river. Its left bank introduces hilly country to the south.

The hills to the east and the river to the west tend to come together north of the city, and the valley floor narrows until there is scarcely room for a roadway between them. (Map II)

Water supply.-- Middletown lies over bed rock which consists of shales and limestones and is of Ordovician age. The course of a deep stage stream known as the Middletown River at one time occupied the Miami Valley
Map II.

Topographic Map of the Middletown Area

The map consists of the south central part of the Miamisburg Quadrangle and the north central part of the Mason Quadrangle. Since this survey was completed in 1906, the city of Middletown has grown in all directions except northwestward.
at Middletown. The elevation of its floor at Middletown is about 470 feet; since the elevation of the present valley floor is 653 feet, the thickness of the fill amounts to 183 feet. It is this fill which contains the excellent supply of ground water so important to the paper and steel mills of the city.

Middletown lies within an area glaciated by the Illinoian and Wisconsin ice sheets. Outside the valley floor the drift is about 25 feet thick.¹

Soils.--The earlier settlers in the Miami Valley found the Middletown area attractive because of the excellent qualities of the soils. Butler County was and remains one of the most productive agricultural areas in the state. The particular part of the county which is most desirable lies within the river valley and east of it.²

Within the valley the predominate soil type is of the Fox series. These soils are a reddish brown with lighter subsoils. Beneath the surface at from two to five feet is a subsoil consisting of calcareous sands and gravels. Although Fox soils are usually


²Henry Howe, Historical Collections of Ohio, Cincinnati, 1875, Vol. 1, p. 341.
found in low level places, they are well drained due to the nature of their subsoils. The subsoil also affects this particular series in such a way as to make it especially suitable for the growing of alfalfa and truck and market crops.3

On either side of the river and away from the valley floor the soil belongs to the Bellefontaine series. This is a yellowish-brown to reddish-brown soil on the surface with a yellowish to reddish-brown subsoil. It is not uncommon to find beds of stratified gravel within a few feet of the surface. Usually this soil is found in terminal morains, and the surface may be rolling or marked with knolls. Tobacco does well where it is reasonably level. Alfalfa, with its long roots reaching toward the limey subsoil, is a crop especially suited to the more hilly places.4

Clyde clay loams form an areally small but rather important part of the soils of this area. They occupy a few square miles just southeast of the city. This type of soil is the result of an accumulation of organic matter in slightly reworked glacial limestone drift material. The series is generally found in low


4Ibid., p. 56.
and level places, and it is thought that the repre-
sentative type found near Middletown was caused by
glacial till being deposited in old valleys.

When the area was first settled the farmers
found the Clyde clay loams inclined to be wet and
covered with forests. Some of the soils dried out
enough when the trees were removed to permit cropping
with good results. However, most of these soils had
to be drained before they could be planted.

The primary use of Clyde clay loams is for gen-
eral farming; it has been found that they are a rather
poor soil for wheat, though they are considered among
the finest corn soils in the state. The loams are
likewise well suited to clover, timothy, and native
grasses.5

Scattered through the areas of the Bellefontaine
and Clyde series are soils of the Miami series. They
are a light-brown surface soil with yellow to mottled
grey and yellow subsoils. These soils of the Miami
series are different in appearance than those which
surround them, but they have generally been found
suited to the same crops.6

5Ibid., p. 90.
6Ibid., p. 50.
Climate.-- According to Thornthwaite the Middletown area lies in the southern margin of the humid microthermal climatic zone (BC'r).\footnote{C. Warren Thornthwaite, "The Climates of North America According to a New Classification," The Geographical Review, Vol. 21, 1931, p. 651.}

Climatic data has been recorded for 25 years at Hamilton, which is about 15 miles southwest of Middletown. It shows that the average January temperature is 31.8 degrees Fahrenheit and the average July temperature is 76.8 degrees Fahrenheit. The frost free season is about 175 days. The average yearly rainfall amounts to 40.83 inches, and it is evenly distributed throughout the year.\footnote{Climate and Man, Yearbook of Agriculture, Washington, 1941, p. 1055.}

Significance of the physical setting.-- The Middle Miami Valley was settled by pioneers and for most of its history agriculture has been basic to its economy. Middletown was first of all a country town and the excellence of the agriculture in the surrounding countryside begot a prosperous trading community. The soils and climate permitted high yields of crops and this influenced the early type and size of industry which used the products of the fields for its raw materials. In the early days the river was the only
means of transportation to and from the village. Later, the accessibility of the location, because of the Miami Corridor, brought the route of the canal and the railroad to the village. The abundant supply of ground water permitted the establishment of the paper and the steel industries.
II. THE ANTECEDENTS OF THE INDUSTRIAL CENTER

The River Period

Settlement.-- Daniel Doty, one of the earliest settlers, describes the Middletown vicinity as ideal for farming, being "level and fertile and largely a prairie country, covered with smaller timber."¹

After the Treaty of Greenville had made the country safe from marauding Indians, Doty brought his family from the east to the Miami Valley and settled near the site of Middletown.²

Doty was a farmer and did not attempt to establish a village. That task was left to an enterprising man who was Middletown's first manufacturer. Stephen Vail had built a brush dam on the Miami and was using the power from it to run his mill, when he decided to lay out the village of Middletown.

The Middletown country was a part of the area that

¹Bert S. Bartlow and others, Centennial History of Butler County, Cincinnati, 1905, p. 282.

had originally been designated as the John Cleves Symmes Purchase. However, Symmes never obtained a clear title to all of these lands, and Middletown was north of what was finally considered the northern boundary of the Symmes Purchase.4

In 1802 Vail obtained a patent from the Federal Government for the north half of section 28 of town 2 in range 4 in the area between the Miami rivers. A street was laid out parallel to the river and the name, Water Street, was given to it. (MapIII) The 52 lots of the town were plotted east of Water Street. The other southwest to northeast street which was parallel to Water Street was called Main Street. The cross streets from north to south were called First, Second, Third, and Fourth Streets respectively. Between Water Street and Main Street was an alley which ran parallel to them. A considerable area between the river and Water Street was not laid out in lots and streets. Part of this space was utilized by the early industries and is occupied today by paper mills and a machine shop.5

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4Bartlow, op. cit., p. 282.

5Ibid., p. 282.
Map III

Middletown in 1802

The large blocks along Main Street contained five lots each. The more shallow blocks along Water Street contained three lots each. At this time the river was the only important means of travel to and from the village.
Industry.-- The early industry was closely associated with the physical environment. Raw materials were the products of the fields and forests, and power was furnished by the river.

Middletown displayed almost from the first characteristics of an industrial center. One mile north of the town was Vail's brush dam; mill races extended southward on both sides of the river. One of Vail's sons had a grist mill on the west side and Vail operated a flour mill and a saw mill in Middletown. Vail evidently was an excellent engineer, because his brush dam and mill race to Middletown remained in use until the hydraulic was built nearly 50 years later.6

There was plenty of land and abundant power in the early days, but labor was scarce and the market was limited. The farmer brought his grain to the mill to be ground and his logs to be sawed, and paid for the service in kind. It was a combination agricultural-industrial self sustaining economy.

Transportation.-- The route to this part of Ohio from Pittsburgh depended entirely upon water transportation. Despite the difficulties, boats came down the Ohio and,

6Ibid., p. 291.
when water permitted, continued their way up the Miami to Hamilton, Middletown, or Dayton. It was not uncommon to return to the east by traveling down the Miami to the Ohio, thence to the Mississippi, and finally around the coast to New York.7

Then the basic raw materials were plentiful and near at hand, and it was the market that was difficult to reach. Today the situation is reversed and the raw materials, though of a different nature, must be brought long distances.

As soon as agriculture could be established people began to look for markets. The only possible way out was down the rivers, and by 1800 both keel boats and the more numerous flatboats were in use on the Miami. If the river was high and not too swift, flatboats offered the more efficient means of transportation downstream. Accordingly, they remained in use on the Miami even after the canal was open south of Middletown. But when the canal reached Dayton in 1829, boats were no longer used on the river south of that city.8

The high cost of transportation was the greatest handicap to early Miami Valley industry. In this early

7A History and Biographical Cyclopaedia of Butler County, Ohio, Cincinnati, 1882, p. 629.

8Wilfrid Gladstone Richards, The Settlement of the Miami Valley of Southwestern Ohio, Chicago, 1948, p. 38.
time of exclusive river transportation there was a question whether the distilling industry or the flour milling industry was the more important. Historians differ as to the relative importance of these industries, but it appears that there were more stills than there were mills. Some writers contend that there was a distillery for nearly every farm. Distilling was the only way that many farmers could utilize their grain, although at this time it was not uncommon for farmers to feed their grain to livestock which was driven to markets on the seaboard. In spite of transportation difficulties, there was an early trend away from the self-sustaining type of community.

After steamboats came into use on the Ohio, the major transportation problem in the Miami Valley was getting goods to Cincinnati. Cincinnati was the collecting point for products consigned to the markets of the south and the west. In 1817 the cost of moving freight from Cincinnati to New Orleans by steamer was a dollar per hundred pounds.

The increase of mill dams on the Miami was making transportation difficult, and, at the same time, surpluses

9Goodwin, op. cit., p. 324.

10Charles M. Thomas, "Contrasts in 150 Years of Publishing in Ohio," Ohio State Archaeological and Historical Quarterly, Vol. 51, 1942, p. 188.
in the valley were becoming greater. But the river had never been a reliable means of shipping goods because of its erratic flow and shifting sandbars. The only alternative, however, was transportation by pack train or wagon over the primitive trails or roadways, which, at its best, was costly and extremely hard on the merchandise being moved. Because of this, river transportation continued until the Miami and Erie Canal opened and was able to offer it sufficient competition to cause its demise.

The Miami and Erie Canal was responsible for the beginning of a new period in the development of Middletown. Not only was transportation greatly improved by it, but more water power became available because of it.

The Canal Period

Building of the canal.— By 1825 steamboats were plying the Ohio and the Mississippi on schedule, and they connected the food producing regions along the Ohio and its tributaries with the plantations of the Mississippi and the exporting city of New Orleans. Lack of transportation in the interior regions of Ohio caused a surplus of agricultural commodities there. Prices of goods produced locally were low and prices of those brought in from the outside were high.
The need for an efficient method of transportation was clear.

Accordingly, no time was lost in beginning the Ohio canals after the opening of the Erie Canal had proved them feasible. Construction of the Miami and Erie Canal was begun at Middletown on July 21, 1825. Work progressed rapidly and in September of 1826 part of the canal was opened for use. By the close of 1828 the line was complete from Cincinnati to Dayton, and in 1846 the waterway connected the Ohio River at Cincinnati with Lake Erie at Toledo.

The effect of the canal upon industry.—The first great change which the Miami and Erie Canal effected in the Miami Valley was the change in commodity prices. Generally, the prices of goods produced in the Valley went up, and prices of merchandise brought in from the outside went down. Before the canal opened wheat sold in the Valley for 20 to 30 cents a bushel. After the canal opened the price rose to 50 to 75 cents a bushel. The increase in the price of other agricultural products was in proportion. All this meant that the

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11 Bartlow, op. cit., p. 294.


farmer could get more sugar and coffee for his wheat and corn than he could previously. In 1829 (this year the canal was opened from Cincinnati to Dayton), a bushel of wheat sold for enough money to buy 5 and 5/9 pounds of sugar or 3 and 1/2 pounds of coffee; a bushel of corn exchanged for 2 and 7/9 pounds of sugar or 1 and 2/3 pounds of coffee. Thirty years later, after the canal had been opened from the Ohio to the Lakes, a bushel of wheat exchanged for 14 and 1/2 pounds of sugar or 8 and 1/2 pounds of coffee, and the money obtained from the sale of a bushel of corn would buy 9 and 2/3 pounds of sugar or 5 and 5/6 pounds of coffee.\(^{14}\)

Industry and agriculture in the Middletown area began to expand as soon as the canal raised the prices of their products. At first the farmer received the greatest benefits from the canal, but the miller soon began to profit too. Prices of wood increased because it could be shipped to market at a reasonable cost. This stimulated the clearing of land, and the result was bigger yields from the farms. Bigger yields, of course, meant more wheat, and the output of the flour mills increased. In 1848 there were eight flour mills

\(^{14}\text{Ibid.}, \ p. \ 129.\)
on the river and the canal within three miles of Middletown. One large grist mill in Middletown received grain hauled in by wagons from distances of 20 to 30 miles. 15

Both the canal and the fertile farms of the Miami Valley stimulated the pork industry. Cincinnati in 1880 was a very important pork center and Middletown served as a nucleus of a sub-supply area. But Middletown was important in its own right as a pork packing center. About 1840 packing of pork became the major industry of the village. The product of Middletown, cured in the Jones packing house, was known by its brand name of "Jones' Hams" in many hotels and homes throughout the country.

Great interest in hog raising was manifested in the community along with the rise of the packing industry, and it was near Middletown that the famous Poland China breed was developed. Large hogs were the type preferred, and it was usual for four year olds to weigh from 700 to 1200 pounds. 16

Wool processing and whiskey distilling likewise gained in importance before the early part of the

16 Bartlow, op. cit., p. 298.
1850-1860 decade. It may be that the canal was not able to reduce transportation costs enough to cause the decline of the distilling industry. However, it is more likely that distilling remained profitable because of the abundance of grain and the ready market which whiskey continued to enjoy throughout the first half of the nineteenth century.

Generally it may be stated that the canal gave Middletown its industrial start. The industries, however, continued to be of the type that processed local agricultural products. Table I illustrates this point. It shows the kind of products that were shipped on the canal the year before the railroad came to Middletown.

Table I

Products Arrived and Cleared on the Canal in Middletown in 1850

<table>
<thead>
<tr>
<th>Article</th>
<th>Arrived</th>
<th>Cleared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ale and beer</td>
<td>58 barrels</td>
<td>224 barrels</td>
</tr>
<tr>
<td>Beef</td>
<td></td>
<td>33 barrels</td>
</tr>
<tr>
<td>Flour</td>
<td>76 barrels</td>
<td>28,961 barrels</td>
</tr>
<tr>
<td>Pork</td>
<td></td>
<td>8,042 barrels</td>
</tr>
<tr>
<td>Whisky</td>
<td>162 barrels</td>
<td>17,056 barrels</td>
</tr>
<tr>
<td>Bacon and pork (bulk)</td>
<td></td>
<td>2,249,760 pounds</td>
</tr>
<tr>
<td>Hogs, alive</td>
<td></td>
<td>144,400 pounds</td>
</tr>
</tbody>
</table>

17Documents Including Messages and Other Communications Made to the Fiftieth General Assembly of the State of Ohio, Vol. 16, Part 1, Columbus 1852, p. 356.
The effect of the canal upon the village.-- The route of the canal through Middletown was parallel to Main Street and about two blocks east of it. The east-west street which led to the river crossing was Third Street, and a bridge crossed the canal at this street too. Traffic coming to Middletown from the east and from the west would thus be concentrated upon Third Street. (Map IV) This meant that nearly everyone who brought goods to Middletown to be shipped out on the canal would come into town on Third Street. Since the canal was flowing in a north-south direction, goods to be shipped on the canal would not be brought into town from the north or the south. For this reason the preponderance of traffic in early Middletown which was of local benefit was east-west traffic. North-south traffic was more apt to move through town on the canal without stopping. For this reason the commercial part of Middletown began to build up along Third Street. This same trend was to continue when the Dayton Short Line Railroad later came through town in a north-south direction and built its station on Third Street. Later Third Street had its name changed to Central Avenue presumably because of the importance of this east-west traffic.
Map IV

Leading Industries in Middletown, 1875
Canal water power.-- In addition to furnishing transportation, the canal helped to supply industries with water power, but Vail's brush dam and mill race continued to furnish power for the mills along the river.

Just north of Middletown, at Enoch's Mills, elaborate plans for use of water power depended upon the dam which the state had built on the Miami for use by the canal. Enoch had secured from the state the exclusive rights to water which would be available from the dam after the needs of the canal had been supplied. He built a race from the dam to the site of his town, which had been completely planned and named Manchester after the industrial city in England. There were ninety-one lots fronting on fifty foot streets, with alleys that were all to be mill races. Bridges were to be built at all the intersections where the alleys crossed the streets. The project was never completed, but several houses were built for the employees of the mill and offices and shops were constructed.

It was the water rights which Enoch had secured that were eventually to affect Middletown. Soon it became clear that his industrial-village idea was
not feasible, and he sold his water rights to men who were interested in the development of Middletown. From the water power that was finally developed by these men, Middletown received a most important industrial stimulus.18

Middletown's first railroad arrived at about the same time a power hydraulic was completed. The hydraulic not only supplied power, but it also furnished a connection with the canal. Boats could be loaded directly from the factory docks. Since the railroad was on the side of the river opposite the factories, the canal was able to offer them better loading facilities than the railroad.

The Railroad Period

The first railroad.-- The Cincinnati, Hamilton, and Dayton Railroad had been originally planned to connect only Cincinnati and Hamilton. However, construction of the road was hardly begun, when plans were made to extend it on to Dayton. The road was built through Hamilton and crossed to the west side of the Miami just north of the town. From there on to Dayton it remained on the west side of the river. Unfortunately

18Bartlow, op. cit., p. 292.
for Middletown this placed the railroad on the opposite side of the river.19

The citizens of Middletown greeted the railroad with a great deal of enthusiasm, but it was of the kind that a child shows toward a new toy.20 Many thought a railroad serving practically the same region as the canal was unnecessary. Perhaps their doubts were justified because of the primitive type rails and rolling stock used at that time.

In spite of the nearness and relatively efficient service offered by the canal the railroad did well and was able to justify itself from the very beginning. At first passenger receipts surpassed those of freight, but the trend was toward a reversal of this. In a few years freight receipts took the lead over passenger receipts and continued to hold that position.

The record of the first full year of operation of the Cincinnati, Hamilton, and Dayton Railroad, from October of 1851 through September of 1852, shows that 204,198 passengers rode the trains and paid fares amounting to $167,950.00. Freight receipts for the year were $73,467.00. The total income of the road for

19Annual Report of the Commissioner of Railroads and Telegraphs, Columbus, 1868, p. 7.

20Middletown Emblem, September 25, 1852.
the services it offered amounted to $241,417.00.\textsuperscript{21}

This railroad was the only one to serve Middletown during the 20 year period after its completion. During that time the canal experienced both its best and its worst years.\textsuperscript{22}

\textbf{The hydraulic.--} Work on the Middletown hydraulic began a few months after the railroad reached the town and industries began to build along its banks as soon as it was completed in the summer of 1852.\textsuperscript{23}

The hydraulic conveyed water from the river above Middletown through the village on Water Street and back to the river again. (Map IV) Industries located along its banks were able to utilize the water as a source of power and for processing if needed.

Soon after the hydraulic was completed a flour mill with a capacity of 150 barrels a day was built along its banks. This was an industry which required a fairly wide market.\textsuperscript{24}

\begin{thebibliography}{9}
\bibitem{21} A History and Biographical Cyclopaedia of Butler County, Ohio, \textit{op. cit.}, p. 271.
\bibitem{22} Ernest Ludlow Bogart, \textit{Internal Improvements and State Debt in Ohio}, New York, 1924, p. 146.
\bibitem{23} Bartlow, \textit{op. cit.}, p. 293.
\bibitem{24} A History and Biographical Cyclopaedia of Butler County, Ohio, \textit{op. cit.}, p. 632.
\end{thebibliography}
Probably the most significant effect of the hydraulic was the rapid growth of the paper industry. Beginning with the Erwin Paper Mill the industry expanded and also fostered allied industries such as the manufacture of paper bags and paper mill machinery.

The Cincinnati and Springfield Railroad.-- The Cincinnati and Springfield Railroad Company was incorporated in 1870 and completed its trackage the following year. This was the first railroad built on the Middletown side of the river. It was known locally as the Dayton Short Line because of its direct route from Cincinnati to Dayton. This road passed through Middletown about a quarter of a mile east of the canal. With respect to the Middletown industries, its location was little better than that of the Cincinnati, Hamilton, and Dayton road. However, it was in a better position to build spur lines to the factories, and in later years every industry of importance in Middletown was served in this manner.

In 1871 the road of the Dayton Short Line was some distance east of the main part of Middletown which was still located between the river and the canal. The railroad station was built on Third Street, and this caused the commercial section of the town to extend along that street towards the station.

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25Annual Report of the Commissioners of Railroads of Ohio, Columbus, 1870, p. 575.
III. THE RISE OF INDUSTRY

Owing to the rapid increase in the market for paper and agricultural implements, Miami Valley industries grew rapidly during the second half of the nineteenth century.

The development of Middletown was vigorous in the two decades from 1870 to 1890. From 1870 to 1880 the population increased 49 per cent, and from 1880 to 1890 it increased 69 per cent.¹

The Civil War

The Civil War period was not one of outstanding development in Middletown. On the contrary, it appears that the war actually had a detrimental effect upon the growth of the village. No new industries were begun during the war, and receipts on the Miami and Erie Canal reached an all-time low during the last year of the war. Not even in the final year of the canal's operation were the receipts collected so meager.²

¹Alfred J. Wright, Industrial Geography of the Middle Miami Valley, University of Michigan, Papers in Geography, Ann Arbor, 1934, p. 33
²Bogart, op. cit., p. 146.
According to sources available, the only contribution of the village industry to the war effort was made by the Globe Paper Mill. Roofing paper was furnished the government and was transported by wagon from Middletown to Fort Dennison on the Little Miami River near Loveland, Ohio.3

Industrial Progress

The paper industry.— Paper manufacturing was the first of the new type of industries to be established after the advent of the railroad. There were several reasons for the locating of the industry in Middletown. Paper makers from Germany and Scotland had arrived in the Valley and had been engaged in the manufacture of hand made paper near Cincinnati where there was a local market for it. When paper began to be made by machinery in the Valley, about 1850, these men moved up the Miami and established mills where power was available.4 At about the same time that the change from the hand mill to the Fourdrinier mill took place, Middletown completed the power hydraulic. A paper mill located along the hydraulic in Middletown not only had the advantage of cheap power, but it had

3Bartlow, op. cit., p. 302.
4Thomas, op. cit., p. 187.
access to ground water which was near the surface, it had direct connections with the Miami and Erie Canal, and it was close to the Cincinnati, Hamilton, and Dayton Railroad.

After the Civil War, as the market for paper in the Valley grew, Middletown's centralized location with respect to the Valley became even more favorable for paper manufacturing. The old mills increased their capacity and new ones were constructed. Steam power became standard equipment, though locations continued to be on the hydraulic or the canal. Steam at first was used only as supplemental power.

Generally the type of paper manufactured depended upon the type of raw material used. The early mills used rags almost exclusively, which were obtained locally and from nearby urban centers. Ledger paper and newsprint were both made from rag stock, and manila paper was made from old rope and burlap. Board could be made from straw which was obtainable from the nearby farmers, but little of this type of paper was made in Middletown. By the time wood pulp began to be used in the eighteen eighties, the railroad pattern of the country was well developed and Middletown received pulp from northeastern United States and from foreign countries. Because of the high cost of bringing
this raw material such distances, specialization became the rule in the Middletown mills.  

The following review of the individual paper mills in Middletown during the decade 1880-1890 will serve to illustrate the importance of the industry to the city. It will also show that the mills had already begun to specialize.

The Oglesby Moore and Company was located on the hydraulic, used both water and steam power, manufactured blotting, super calandered, book, wrapping, and roofing paper, produced $150,000.00 worth of merchandise annually, and employed 75 men and 25 women.

Two paper mills owned by the A. Hill and Sons Company were located on the hydraulic. The Valley Mill produced manila paper and was equipped with both water and steam power facilities. It was one of the unsuccessful mills and was closed in 1881, however, when it later became the property of the Middletown Paper Company, operations were resumed. The other plant of A. Hill and Sons was called the Globe Mill, and it also manufactured manila paper. The value of its average yearly output was $240,000.00.

The Tytus Paper Company was located on the hydraulic

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and used water and steam power. About $400,000.00 worth of manila paper was manufactured annually. At one time this mill operated the largest steam engine in the west.

At the southern end of the hydraulic was located the Sutphin and Wrenn mill. With 20 men and 30 women it produced $200,000.00 worth of book paper, blotting paper, and newsprint annually. Most of the newsprint used by the Cincinnati papers was furnished by this mill.

In the southeastern part of the town near lock 11 of the canal was the Wardlaw Thomas Company mill. Water was diverted from the canal past the mill and into the canal again below the lock. This mill produced about 1400 pounds of flour sacking and manila bag paper each day. Forty people were employed.

The Amanda Paper Mill was located just south of Middletown on the canal. It had been built to function as a straw board mill utilizing the straw from the nearby farms, but this operation was not successful. The mill later attempted to produce light weight papers, and failed with that line also.

The Harding Paper Company was located on the canal below the Amanda mill at Excello. About 900,000 pounds of quality writing paper were produced annually.
Eighty women and 130 men were employed.

The total paper industry in Middletown in the eighties produced about 12,333,000 pounds of paper each year, 440 people were employed, and gross sales amounted to about $1,190,000.00 annually.\(^6\)

The tobacco industry.-- In 1869 the Wilson and McCallay Tobacco Company which was owned by Messrs. Wilson, Sorg, Auer, and Jacoby moved from Cincinnati to Middletown and located on the canal at Sixth Street.

In 1877 Sorg and Auer sold their share of the above business to the other partners and established a new tobacco concern known as the P. J. Sorg Tobacco Company. Their building was located on Third Street near the Dayton Short Line Railroad. This was the first important Middletown industry to be located east of the canal.

In 1870 Wilson and McCallay produced about 3,000,000 pounds of tobacco and employed nearly 400 people. Toward the end of that decade the P. J. Sorg Company produced nearly 2,000,000 pounds of tobacco and employed about 300 people.

In 1898 the Continental Tobacco Company purchased the P. J. Sorg Tobacco Company. Later the former company also acquired the Wilson and McCallay Company and

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\(^6\) A History and Biographical Cyclopaedia of Butler County, Ohio, op. cit., pp. 632-633.
consolidated the works of the two factories into the one building which had been occupied by the P. J. Sorg Company.7

Other Industries.-- It was only natural that a town with paper mills manufacturing manila paper and located in a flour milling region should turn to the manufacture of paper bags.

In 1875 the Johnson and Webster bag factory was organized and began manufacturing about 700 bags a day. The machinery had been invented by Webster. The concern only stayed in business for a period of six months, but the bag manufacturing business had been started, and the partners of the dissolved firm each founded a bag factory.

The Webster Bag Company was located in a new building which had been built by Webster. The concern utilized 70 bag machines of Webster's design, and it was able to produce 500,000 bags each week. Johnson's bag plant operated on a comparable scale.

In 1883 the bag manufacturing industry suffered greatly when the Johnson plant was destroyed by fire. Shortly after this, Webster closed his factory. Paper men have not suggested any reason for the inability

7Ibid., p. 633.
of these bag companies to stay in business. Perhaps the industry was not able to produce bags at the high rate of speed that would be necessary for such a low cost product. The figures given above would seem to indicate this.

Not wishing to lose such a convenient customer as the local bag industry, the Tytus Paper Company bought the rights to Webster's machines and formed the Ohio Bag Company. However, this early attempt at forward integration was not successful. This time it was clear that Webster's machines could not compete with those of other bag manufacturers, and the Tytus-controlled company was forced out of the bag manufacturing business.

In 1899 E. L. McCallay purchased the Ohio Bag Company building and formed a new business which he called the Advance Paper Bag Company. McCallay was able to increase production to 1,250,000 bags per day. This kind of production assured the success of the McCallay enterprise, and bag manufacturing has remained an important Middletown industry since that time.8

As the paper and other industries in Middletown became more highly mechanized, they created a demand

8George Crout, Industrial Middletown, Middletown, No date, p. 45.
for specialized types of repair work and mechanical equipment. The result of this was the rise of small machine shops which specialized in doing repair work on paper and tobacco manufacturing machinery. Many of these evolved from repair shops that had been doing work on agricultural implements and wagons.

The most important of the early machine shops was the La Tourrette and Harrison Company which was founded in 1873. This concern leased a building from the Middletown Agricultural Works, which had been repairing agricultural implements, and began the manufacture of machinery utilized in the production of paper and tobacco.9

The Shartle Brothers Company which was to become the most important machinery manufacturing concern in Middletown was founded in 1894.10

Other manufacturing concerns which had no ties with the paper industry were established before 1900, but they were of little importance compared to the industries previously mentioned. From the latest complete report on Middletown prior to 1900 made by

9 A History and Biographical Cyclopaedia of Butler County, Ohio, op. cit., p. 664.
10Crout, op. cit., p. 88.
the Ohio State Division of Factory and Workshop Inspection, it may be seen that industries not already mentioned in Middletown included two buggy and carriage factories employing 23 people, a flour mill employing seven people, and a wood working mill with 31 employees. 11

The Industrial Pattern

Prior to 1865 the industrial pattern of Middletown was very much the same as it was in 1802. The area between Water Street and the river had remained the industrial section of the town since Vail had operated his flour mill there when the village was first laid out. The hydraulic which furnished the power for the new industries of Middletown added to the value of this location. In addition to furnishing power to the mills, the hydraulic also connected them with the Miami and Erie Canal. The location was also in close proximity to the bridge crossing the Miami at the west end of Third Street, and therefore the distance to the railroad was short. For these reasons a hydraulic location was better than one along the canal which could have been the only alternative at that time.

Between 1865 and 1870 two paper mills and a tobacco factory were built on the canal. This marked

11 Sixteenth Annual Report of the Department of Inspection of Workshops, Factories and Public Buildings for the Year 1892, Columbus, 1900, p. 189.
a change in the industrial pattern of Middletown. These new enterprises were not built close to one another as were the mills along the hydraulic. One of the paper mills was completely out of Middletown and can not be considered a part of the industrial pattern of the city. It was actually a suburban factory and has maintained that position down to the present time. Map IV illustrates the two industrial sections of Middletown in 1875. One is along the hydraulic and one is along the west bank of the canal.

When the P. J. Sorg tobacco factory was built on Third Street next to the Dayton Short Line Railroad in 1877, a third industrial section was begun. It was to be several years, however, before this section was to develop further.

The Formation of the Political City

Many of Middletown's industries developed during the time the town retained the status of a village. In 1886 the village legally became a city, and new public utilities were established and older ones were improved and enlarged.

The first public utility was the village water works established in 1873. An ample supply of ground
water was available and the system was reliable. Ten years later a private company called the Middletown Gas Company established gas service to the homes and factories. In 1882 the streets of the town were lighted by Brush electric lights, which beamed from a tower 210 feet high located near the center of the village.\textsuperscript{12}

Public transportation in Middletown had to wait until the village grew large enough to warrant it, and it was 1879 before it was thought necessary. In that year a horse car track was constructed which connected the station of the Dayton Short Line Railroad and the Cincinnati, Hamilton, and Dayton station on the opposite side of the river.\textsuperscript{13}

At the turn of the century Middletown was still a small manufacturing town and there was lots of space and plenty of ground water available for new industries. The people were aware that their city possessed desirable features that would interest new manufacturing concerns. With this in mind they formed a committee whose duty it was to further industrial expansion in the city. The importance of capital

\textsuperscript{12}Bartlow, op. cit., p. 304.

\textsuperscript{13}Ibid., p. 305.
was realized and the committee was furnished the sum of $100,000.00 to be used to induce manufacturers to come to Middletown.\(^{14}\)

The work of this committee showed significant results within a short period of time. It obtained the steel mill which was to become the leading industry of the city. The removal of the American Rolling Mill Company from Cincinnati to Middletown in 1900 may well be taken as marking the emergence of the modern industrial city.\(^{15}\) The presence of the steel mill in Middletown helped to strengthen the bonds between the city and the other manufacturing centers in the Valley. The manufacture of iron and steel in Middletown has undoubtedly contributed more to the strengthening of intra-valley relationship than any other industry.

\(^{14}\)Ibid., p.303.

\(^{15}\)In April of 1948 the title of the American Rolling Mill Company was changed to Armco Steel Corporation. Armco, the trade mark which has been used for many years by the organization will be used at times in the remainder of this paper when referring to the company under either title.
IV. THE STRUCTURE OF THE INDUSTRIAL CITY

The Rail and Industrial Pattern

After 1900 the industrial pattern of Middletown soon evolved into its present form. The Dayton Short Line Railroad became the property of the New York Central Lines, the Pennsylvania Railroad extended a branch line from near King's Mills to Middletown, and a branch of the Cincinnati, Hamilton, and Dayton road was constructed from Hamilton to Middletown along the east side of the Miami River. The Pennsylvania branch entered Middletown from the southeast, crossed the New York Central tracks, and terminated just north of the Curtis Street plant of the American Rolling Mills. A spur line was built across the northern part of the city from the New York Central line in order to connect it with the industrial area along the hydraulic.

The railroad pattern of Middletown began to determine the industrial pattern. Factories were built along the main lines, the branch lines, and the spur lines. All the branch lines made connections with the New York Central road; each factory could be served by any of the three roads which entered the

51
city. (See Maps V and VI)

The Cincinnati and Dayton Electric Railroad, which was built through Middletown in 1897-1898, did not affect any aspect of the town pattern. The line entered the town from the south on Main Street and continued north on that street through the city. Its chief use was as a passenger and express carrier, although upon occasion it moved carload lots of freight. It was abandoned about 1937.

The Changing Structure Of Industry, 1900-1920

Table II illustrates the change that took place in certain aspects of the structure of Middletown industry during the 1900-1920 period.

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Table II

A Comparison of Industrial Middletown for 1900, 1909 and 1919

<table>
<thead>
<tr>
<th>Item</th>
<th>1900</th>
<th>1909</th>
<th>1919</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>9,250</td>
<td>13,152</td>
<td>23,594</td>
</tr>
<tr>
<td>Capitalization</td>
<td>$4,207,731</td>
<td>10,564,000</td>
<td>*</td>
</tr>
<tr>
<td>Total salaries</td>
<td>$1,090,481</td>
<td>1,862,000</td>
<td>*</td>
</tr>
<tr>
<td>Value of products</td>
<td>$6,665,226</td>
<td>16,519,000</td>
<td>62,838,289</td>
</tr>
<tr>
<td>Material cost, fuel, rent</td>
<td>$3,056,601</td>
<td>7,950,000</td>
<td>*</td>
</tr>
<tr>
<td>Value added</td>
<td>$3,608,625</td>
<td>8,567,000</td>
<td>*</td>
</tr>
<tr>
<td>Establishments</td>
<td>92</td>
<td>41</td>
<td>56</td>
</tr>
</tbody>
</table>

*figures not given

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Map V

Railroads of the Miami Valley

The locations of the railroads have been modified somewhat in order to minimize congestion on the drawing.
Map VI

Industrial and Commercial Areas in Middletown in 1950
It can be seen that the industries were becoming fewer in number but larger in size. While the total payroll of the city increased, it is evident that it did not increase at the same rate that the value of products increased or that the value added by manufacturing increased. Modernization of industrial plants reduced proportionately the number of wage earners per unit of product.

The steel industry.--- By far the most significant event in Middletown industrial history was the founding of the American Rolling Mill Company there in 1900. The selection of Middletown by this small concern was hardly based on economic planning, because the site was selected before the final nature of the operation was decided upon. Actually, Middletown was selected in preference to Zanesville, another city seriously considered as a site, because the Miami and Erie Canal could furnish an efficient means of transportation between the Middletown mill and a fabricating plant in Cincinnati. Before the Middletown plant was built, however, it had been decided to move the fabricating plant to Middletown and thus form a semi-integrated mill.2

2 Crout, op. cit., p.63.
Another factor which led to the choosing of Middletown as the steel mill site was the $75,000.00 which was offered the firm by the industrial committee of Middletown. Had there been any intention of building a steel industry such as is Armco today, present officials doubt that Middletown would have been chosen. The directors of the American Rolling Mill Company in 1900 could not have envisioned all the advantages which Middletown would offer a large steel mill.

The American Rolling Mill when first organized was producing sheet steel for use in the manufacture of roofing. Since the company was semi-integrated it was its own customer. For this reason the steel makers realized the necessity for certain qualities of steel and for the improvement of steel in order to satisfy the demands of the customer. This attitude of the American Rolling Mill towards its customers was especially valuable at a time when new inventions and new technics in manufacturing were making unusual demands upon the quality of steel being used.

Within ten years after the rolling mill was established the automotive industry began to grow rapidly. This served as a stimulus for the Middletown steel mills.

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3Christy Borth, True Steel; The Story of George Matthew Verity, New York, 1941, p. 86.
Not only did the auto industry use steel itself, but it created an indirect demand by calling for improvements in road construction.

One of the chief products of the American Rolling Mill was steel for use in fabricating culverts. Contractors were not satisfied with the lasting quality of the culvert steel they were using and began to look for a material of greater durability. George Verity, president and general manager of the American Rolling Mill Company, did not want to lose the culvert steel business; so he informed the road builders that his company would develop a rust resisting steel for their specialized need.

Dr. Albert Seward Cushman, who was a research chemist, did much work toward the development of what was to be called Armco Ingot Iron. Finally, Verity's own production men, Charles Carnahan and Orley Moles, discovered how it could be made in large quantities in the steel mill.4

Much of this culvert steel was used locally; southwestern Ohio was growing, and the farmers were demanding better roads.

Events which allowed the American Rolling Mill to expand into the huge steel concern it is today came about before 1920. One action which may have saved the

4Ibid., p. 225.
company from being forced out of business during the
difficult times prior to World War I was the decision
to build a new plant east and south of the city rather
than expand the original Curtis Street plant.

Shortly after the East Works had been built it
looked as if the decision to expand had been a mistake.
At the old Curtis Street Mill monthly production in
the decade of 1900-1910 had increased from 900 tons per
month to 4500 tons. Employment had risen from 350 to
1500 and annual sales from $325,000.00 to $3,500,000.00.
The new mill began operation at a time when the nation
experienced one of its worst periods of business
depression. The first month's production with both
plants in operation was less than half of a normal
month's production before the new mill had been built.
The reason for this situation had nothing to do with the
ability of the mills to turn out steel. It was simply
a matter of no orders to fill. 5

A change in methods of manufacturing surmounted
the difficulties for the American Rolling Mill.
Automobile manufacturers were beginning to cover the
wooden frames of their auto bodies with steel. Fenders,
and especially radiators, were offering challenging
problems to the steel manufacturers.

5Ibid., p. 225.
It was just this sort of challenge that Armco was prepared to meet. In 1910 the research department, the clearing house for the steel mill's troubles, had been organized. Already special steel for the electrical industry and for the culvert manufacturers had been developed by Armco, but now permanent facilities for continued research were to be made available.6

To satisfy the demand of automobile manufacturers Armco developed a special steel for their use which was called Silver Finish Steel. In 1911 Armco made sheets for the Case and the Kissel automobiles, by 1912 Cadillac was a steady customer, and in 1913 it was thought that about half of all the Ford bodies were made from Armco steel.7

The value of the East Works was realized in a different way in 1913. That year the great flood which ravaged the Miami Valley all but destroyed the plant on Curtis Street. The East Works area escaped damage. Borth suggests that had all of Armco's facilities been concentrated at the Curtis Street plant during the time of the flood, that the loss to Armco would have ruined the company.8

6Ibid., p. 208.
7Ibid., p. 227.
8Ibid., p. 225.
Had Armco failed, there is little likelihood that another steel concern would have located in Middletown. This is significant because of the importance of the industry to the city.

World War I affected steel more than any of the other industries in Middletown. The East Works rolling mills were run at full capacity, and steel forging equipment was installed. Shell casings, crankshafts and other types of machinery forgings were made.\(^9\)

In 1917 the American Rolling Mill Company made an important step toward complete integration when the Columbus Iron and Steel Company was acquired. This concern was operating two blast furnaces.\(^{10}\) The action assured the Middletown mills a source of raw material, but it could hardly reduce the costs of raw material transportation.

With the research department in full operation, blast furnaces producing pig iron, and a steadily increasing market in the Miami Valley, Armco seemed prepared to face future development in the technology of manufacturing which would call for more and more sheet steel of special quality.

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\(^{10}\)Ibid., p. 67.
The paper industry.-- The structure of the paper industry in Middletown did not change as much in the 1900-1920 period as did that of the steel industry. Most of the mills remained small and continued to manufacture about the same type of paper. There was one important exception to this; the development of the folding box business. Paper board manufacturing was nothing new for Middletown, but the addition of box manufacturing to the board mill was a new step. It was important because it marked the successful attempt of these paper mills to compensate for their inability to integrate backward by integrating forward.

The situation of Middletown and timing both aided the rise of the folding box industry. Scrap paper served as raw material for the box mills, and there was a fairly good supply of it in the densely populated industrial region of the Miami Valley. Nearby Cincinnati with its large soap manufacturing plants was one of the best markets in the country for folding boxes.

The Tytus-Gardner Paper Company, located on the hydraulic, was the first to turn to box manufacturing. This company has grown steadily and has maintained its position as the largest paper mill in Middletown.

The industrial section of Middletown along the hydraulic, which was mostly occupied by paper mills,
was in a position to suffer a great deal of damage from the flood of 1913. Although the buildings were strong enough to withstand the surge of the flood waters, damage to stock and machinery was great.

The general effect of the flood in the Miami Valley was so disastrous that it aroused the people of the entire region to cooperate on a project designed to control the flow of water in the Miami so as to make another flood impossible. The completion of this project in the early twenties was of special benefit to the industrial section along the hydraulic in Middletown. It meant that the area would never again be subject to flooding. Flood control work in Middletown was confined to the building of levees along the river and deepening of the channel. The greatest protection for Middletown is afforded by the Germantown Dam which was constructed on Twin Creek, a tributary flowing into the Miami a few miles above Middletown.\textsuperscript{11}

The tobacco industry.-- Before 1920 the tobacco industry began to lose its position as the employer of the greatest number of people to the steel industry. Although tobacco remains a part of industrial Middletown today, it is the one large industry that has fallen off in relative importance since 1900. Possibly the greatest

\textsuperscript{11}\textit{The Story of the Miami Conservancy District}, Dayton, 1944, p. 25.
reason for this has been the introduction of labor saving machinery into the tobacco factory.

In 1900 the American Cigar Company entered Middletown, built a new building, and leased the old Wilson and McCallay building which was located on the canal. The city then had three tobacco manufacturers. The other two concerns were located in the old Sorg building on Third Street at the railroad. In 1903 Luhrman, Wilburn, and Sorg employed about 1000 people and shipped 17,000,000 pounds of manufactured tobacco. Cullum Brothers, a warehousing concern, and the American Cigar Company together employed 550 people and purchased from the nearby farmers 14,500,000 pounds of cigar leaf. 12

In 1911 the P. Lorillard Company came to Middletown and remains today the only tobacco manufacturer in the city. In addition to the factory which remains at the old Sorg location, the company maintains warehousing facilities in the southern part of town.

The large number of unskilled people employed by the tobacco industry encouraged people from the poorer farming regions of Kentucky to migrate to Middletown. The brand name of a chewing tobacco, Polar Bear, which was made in Middletown, was well known throughout the country.

12Bartlow, op. cit., p. 301.
To many of these people the name, Polar Bear, was much more familiar than the name, Middletown. It is thought that the popularity of this brand of chewing tobacco was responsible for bringing many of the Kentucky people to Middletown.

Plug and scrap chewing tobacco have been produced in Middletown since the tobacco industry first came there from Cincinnati. Cigars later became an important product of the industry, but despite the fact that the Miami Valley is a large producer of cigar filler today, cigars are no longer made in Middletown.

Other industries.-- Other industries were attracted to Middletown at the turn of the century and played their part in the changing structure of the city's industry by adding a great deal of diversity to its character. This was a natural development and was typical of the entire Miami Valley. Where machine users are localized, machine manufacturers are likely to be found.

In many instances farm machinery manufacturers changed to the manufacture of machinery for industry. In Middletown this had been done, as was noted, by the La Tourrette Company. Other companies often were established for the specific purpose of making some kind of machinery that might be used in Middletown or elsewhere in the Valley. A typical development was from
the repair shop to the job shop to the machinery manufacturing plant.

The leading industries in Middletown whose product was of a mechanical nature in 1907 are listed in table III.

Table III.13

<table>
<thead>
<tr>
<th>Concern</th>
<th>Product</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barkelew Electric Manufacturing Co.</td>
<td>switches</td>
<td>16</td>
</tr>
<tr>
<td>Bevis and Shartle Machine Co.</td>
<td>paper machinery</td>
<td>21</td>
</tr>
<tr>
<td>William Fetzer &amp; Co.</td>
<td>agricultural implements</td>
<td>96</td>
</tr>
<tr>
<td>Miami Cycle &amp; Manufacturing Co.</td>
<td>bicycles</td>
<td>200</td>
</tr>
<tr>
<td>Middletown Machine Co.</td>
<td>gas engines</td>
<td>50</td>
</tr>
<tr>
<td>New Decatur Buggy Co.</td>
<td>vehicles</td>
<td>44</td>
</tr>
<tr>
<td>Shartle Brothers Machine Co.</td>
<td>machinery</td>
<td>37</td>
</tr>
</tbody>
</table>

13Annual Reports for 1907 to the Seventy-Seventh General Assembly of the State of Ohio, Part II, Columbus, 1908, p. 601.
Industrial Selection, 1920-1940

The economic situation in Middletown was rather unusual throughout the 1920-1940 period because of the relative amount of prosperity which the city was able to maintain. Middletown did not increase its industry to the extent that did Cincinnati, Hamilton, and Dayton in the twenties, but neither did it experience the decrease of industrial activity so common in the thirties. Bonn discovered in his study of Butler County during this period that in the year 1929 Middletown began to gain a larger percentage of the industrial activity of the county. Up until 1929 Middletown's percentage of that activity had been decreasing. The result of this, since the whole county's industries rose in the twenties and declined in the thirties, was that Middletown maintained a fairly even amount of industrial activity throughout the twenties and the thirties. Table IV illustrates the course of industry in Middletown during the 1920-1940 period.

An analysis of the period should help to explain the reasons for Middletown's ability to hold its position during these times.

14George S. Bonn, Concentration and Decentralization of Manufacturing Industries in the State of Ohio, Columbus, 1936, p. 31.
Table IV. \textsuperscript{15}

A Comparison of Industrial Middletown for 1919, 1929, and 1939

<table>
<thead>
<tr>
<th>Item</th>
<th>1919</th>
<th>1929</th>
<th>1939</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>23,594</td>
<td>29,992</td>
<td>31,220</td>
</tr>
<tr>
<td>Industrial wages</td>
<td>*</td>
<td>$9,978,983</td>
<td>11,259,397</td>
</tr>
<tr>
<td>Wage earners</td>
<td>6,442</td>
<td>6,752</td>
<td>6,856</td>
</tr>
<tr>
<td>Value of material</td>
<td>*</td>
<td>$36,218,692</td>
<td>40,853,041</td>
</tr>
<tr>
<td>Value added</td>
<td>*</td>
<td>$31,988,871</td>
<td>22,225,073</td>
</tr>
<tr>
<td>Value of products</td>
<td>$62,838,289</td>
<td>68,207,563</td>
<td>63,078,114</td>
</tr>
<tr>
<td>Establishments</td>
<td>56</td>
<td>50</td>
<td>31</td>
</tr>
</tbody>
</table>

*figures not given

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The steel industry.-- In 1920 the American Rolling Mill Company began the second critical decade in its history. The second ten years of operation had been very successful and the risks taken in order to develop new types of steel had turned out well. During the twenties Armco was to risk its entire future on an idea which was to effect more of a change in the steel industry than had anything since the introduction of the open hearth furnace.

The development of the continuous strip rolling mill by Armco during the twenties, and the final success of it toward the close of the decade was probably the

primary reason for Middletown’s industrial prosperity in spite of the depression of 1929.

John Tytus, who developed the continuous strip mill, was a Middletown man who had been associated with the paper industry there. He was fascinated by the idea that it might be possible to manufacture sheet steel in the same continuous way that paper was made. He was a Yale graduate and had six years experience in the paper manufacturing business and three years experience in the construction business, when he went to work in the steel mill at Middletown. In a few years he attained the position of superintendent of Armco’s plant at Zanesville.

In the early twenties Armco was supplying its rolling mills in Middletown with pig iron produced at the Columbus and Zanesville plants. Expansion in Middletown when the East Works was built had warranted backward integration toward pig iron production.

Armco’s ability to produce pig iron and sheet steel was pretty well balanced before the Ashland plant was acquired. The only reason that Armco had for buying the Ashland plant was that it was for sale at a very cheap price, and Armco was in a financial position to purchase it. With the acquisition of the
Ashland plant, Armco's production became unbalanced. More pig iron and steel could be produced than could be rolled into sheets. Armco would either have to market pig iron and ingot steel, build another rolling mill, or discover a way to roll steel faster. The latter course was decided upon.

The president of Armco had always been sympathetic toward Tytus' desire to perfect a continuous strip mill, and he decided to back him with men, supplies, and money so that the work necessary to perfect such an apparatus might go forward. Tytus was transferred from the Zanesville plant to Ashland and was given the go-ahead signal.

It took Tytus until 1923 to get the first mill in operation and about four more years to perfect it. The importance of the development of the continuous strip mill by a Middletown concern as a force aiding the industrial growth of the city cannot easily be overemphasized. The timing was perfect. In 1919 Americans bought 1,591,000 automobiles of which 90 per cent were open cars. In 1929 they bought 4,140,000 cars and 90 per cent of them were closed. Prior to

the advent of the continuous strip mill, sheets were usually made by small steel concerns. The market for sheets was not particularly desired by the large steel companies who were busy making heavy steel plates, construction steel, and steel rails. In 1929 with the depression came a drastic decline in the kind of activity which used that type of steel. But at the same time that heavy steel began to be used in lesser quantities, sheets were used in greater amounts.19

At about the same time that the Middletown mill made plans to locate a continuous rolling mill there, another significant development occurred which was to affect Middletown greatly. Twelve miles southwest of Middletown in the village of New Miami, just north of Hamilton, was located a blast furnace and a by-product coke plant. The owners of this concern had long wanted to get together with the Middletown mill, but Verity had opposed the idea because he was looking forward to placing a blast furnace in even closer proximity to his open hearth furnaces so that the molten metal could be transferred directly from the blast furnace to the open hearth. In 1928 the Koppers Company, who controlled the Coke and Iron Works at New Miami, got together with Armco and the Baltimore and Ohio Railroad, who had a

19Ibid., p. 267.
little used rail line connecting the two plants. The three designed an insulated rail car, which could transport metal in a molten state between the blast furnaces at New Miami and the open hearth furnaces at Middletown.

This arrangement apparently has been quite satisfactory. The Columbus operations were moved to New Miami, and the connection between the Middletown and New Miami mills has remained continuously in effect.

One of the reasons for having the coke plant and blast furnaces outside of Middletown is reflected in the appearance of the city. As far as dirt and sprawling unsightliness are concerned, the coke plant and the blast furnace are the least desirable components of an integrated steel mill. It is also true that Middletown would be quite crowded if a coke plant and blast furnace were located near the rolling mill. As the situation stands today, both the Middletown mill and the coke and iron plant have ample room for expansion, and Middletown is able to remain a clean steel mill town.

The greatest advantage of the New Miami-Middletown arrangement, however, lies in the fact that iron does

---

20Ibid., p. 279.
not have to be remelted before it is charged into the open hearth furnace. This reduces costs by saving both time and fuel.

Table V.21
Furnace Type and Capacity of the American Rolling Mill in Middletown in 1930

<table>
<thead>
<tr>
<th>Central Works Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Furnace</strong></td>
</tr>
<tr>
<td>Basic open hearth</td>
</tr>
<tr>
<td>Moore Electric</td>
</tr>
</tbody>
</table>

Annual capacity of plant:
8,705 tons of steel ingots
8,590 tons of steel castings

<table>
<thead>
<tr>
<th>East Works Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Furnace</strong></td>
</tr>
<tr>
<td>Basic open hearth</td>
</tr>
<tr>
<td>Basic open hearth</td>
</tr>
</tbody>
</table>

Annual capacity of plant:
500,000 tons of steel ingots
266,000 tons of billets, slabs, sheet bars, and black sheets
54,000 tons of galvanized sheets
27,000 tons of long terne plates and blue annealed sheets

Table V illustrates the type and the capacity of production in the American Rolling Mill plants in

Middletown in 1930. The fact that all of the furnaces are basic open hearth, with the exception of the small electric furnace, has some significance. High quality steel in quantities is usually produced in the open hearth furnace. This type of furnace permits the steel maker to control the quality of the steel as it is being made. The open hearth can use either scrap or pig iron or a combination of the two. Since Middletown is located in a relatively high-cost area in regards to securing iron ore with which to make pig iron, the fact that the open hearth furnace can utilize scrap is important. The value of this utilization of scrap is enhanced because Armco is the only steel manufacturer located near the large scrap supply made available by the industries of the Miami Valley.

With the market for sheet steel growing and the integrated mills working at capacity through the processes from blast furnace to terne plating and galvanizing, Armco became concerned about the desirability of its location in Middletown. The unit was not close to any other mills in Ohio or Indiana. Ore had a rather long rail haul from the lakes, and coal had to be transhipped from boat to rail at Cincinnati for the 25 mile haul to New Miami. The president of Armco, however, maintained that the location in Middletown was entirely
satisfactory. He declared that it was an outworn argument that steel mills should be located in crowded industrial centers.

According to Verity the advantages of a small town location far outweigh its disadvantages. It is the employer-employee relationship which can be maintained where living conditions are good that is the advantage offered in a small town. In short, Verity believes that good labor relations can keep costs down, and that there is a better chance to have good labor relations in a small town. The record of Armco in Middletown seems to bear out his contention.

The paper industry.-- By 1940 the paper industry in Middletown was almost, if not altogether, a mature industry. Raw materials were no longer available in the Valley for those mills using wood pulp exclusively, but rags, waste paper, and industrial materials were easily obtainable due to the general industrial activity in the area. The Middletown paper mills were able to adjust to their situation by specializing.

Paper board could be made from used paper, and the board mill could integrate forward by printing and converting the board into folding boxes. The Gardner mill, which was the largest in the city, adjusted in this manner.

22Bonn, op. cit., p. 32.
The Frank Smith Paper Company was incorporated in 1923 as a wholly-owned subsidiary of the Paul A. Sorg Paper Company and was a manufacturer of manila papers. In 1931 The Frank Smith Paper Company, The Paul A. Sorg Paper Company, and the Paul A. Sorg Reality Company were merged to form the Sorg Paper Company. This made the Sorg company the second largest paper mill operator in Middletown.23

The two paper mills under one management manufacture a wide variety of specialty papers. Despite the fact that much of their raw material must be imported from outside the United States, these mills have succeeded by adjusting their product to meet the demands of a market to which they are oriented.

In 1920 the Crystal Paper Company was reorganized and renamed the Crystal Tissue Company. The mill has a suburban site south of Middletown at Amanda. A saw mill was the first industry to locate on this site in 1827, when the canal made water power available there. When the demand for lumber decreased, and farms had taken the place of the surrounding woodlands, a flour mill was built which utilized the grain from those farms. In 1886 the flour mill was replaced by a straw board paper mill, which, like the flour mill,

used the product of the nearby farms as its principal raw material.

The straw board mill was not successful on the site and soon gave way to a tissue paper mill. This development meant that the raw material, wood pulp, would no longer be supplied by the local farmers. Evidently tissue paper was the right product introduced at the right time, for the mill has continued to produce that product.

Another factor which has aided the tissue mill in attaining success is one typical of Middletown. The inventiveness and managerial ability displayed by D. E. Harlan of the Crystal Paper Company was an important factor enabling Crystal to keep up with or surpass its competitors. In 1906 Harlan had a paper machine built which considerably increased the width that tissue paper could be made. By 1912, improvements on this machine made it possible, from what had been learned, to build a 120 inch machine. Crystal installed this machine in their plant and at that time it was the widest light weight cylinder tissue paper machine in the world.\(^2\text{4}\)

The Crystal company formed a subsidiary concern

\(^{24}\) Twenty-five Years of Progress and the Men and Women Who Made It Possible, Middletown, 1950.
in 1923 known as the Crystal Waxing Company. This was forward integration for the paper mill. It is recognized in the paper industry that backward integration to pulp production is desirable. Because of distance from raw material and the nature of pulp production, such a procedure has not been attempted in Middletown. However, forward integration is quite possible and practical because Middletown is oriented to the market. The waxing company is located in the same building as the paper company and is operated by the same management. Only the financial structures of the two companies are maintained separately.

The products of the Crystal Waxing Company include butter wraps, lard wraps, delicatessen papers, household rolls in cutter boxes, florists' waxed paper, and shredded waxed paper. The nature of these products, which are gaining wider use every day, illustrate the large market area of such a unit as the combination paper mill and waxing factory.25

The problem of adjusting to the changing situation was not so great for the Wrenn and the Harding-Jones mills. The former began to concentrate on one of its products, blotting paper, and finally specialized in

that type. In the instance of the Harding-Jones Paper Company, it was more of the situation adjusting to the mill rather than of the mill adjusting to the situation. Harding-Jones has always produced quality writing paper. As the Miami Valley became more densely populated and industrialized the demand for that type of paper increased. Today the company manufactures a higher quality of writing paper than it did in the past, but the basic product of the mill has remained unchanged since 1865.

Other industries.-- Industries, other than steel and paper, continued in evidence during this period, but there was little change in their general structure. The machinery industries were almost completely associated by their type of product with either the steel or the paper business.

Flour milling, which at one time had been Middletown's principal industry, was discontinued in the early thirties. The time had long passed since the Miami Valley was an ideal flour mill location. The industry had been concentrating in larger centers where vast amounts of wheat are handled. In Middletown the industry was running on the momentum which it had acquired from its many years of operation, but the business depression of the thirties was a force which that momentum could
not override.

The brewing industry, which had discontinued operations due to prohibition, did not resume production in 1933 because of the excellent transportation connections with nearby brewing centers such as Cincinnati and Dayton.

Manufacturers who fabricate items such as envelopes, bags or boxes from paper are known as converters in the paper trade. Converters in Middletown include the Interstate Folding Box Company, the Raymond Bag Company and the Inland Container Corporation. These concerns have found Middletown a good location both from the standpoint of market and raw material supply. The fact that market might be more of an impelling location factor than raw material supply is attested to by the Inland Container Corporation. Although the other converters use Middletown paper, Inland is part of an integrated company that manufactures its own paper near the source of raw materials at Macon, Georgia.26

The Miami Cabinet Company was formed in 1923, and was the successor to the Miami Cycle and Manufacturing Company which had already added the

26 Inland Container Corporation, Middletown, 1950.
manufacture of sheet metal products to its line of bicycles. The new company discontinued the bicycle line and concentrated on cabinets. In 1933 the Philip Carey Manufacturing Company of Cincinnati purchased the Miami Cabinet Company and began operating it as the Miami Cabinet Division.27

The rise of this company came about during a time when the use of sheet steel for cabinet manufacturing was increasing. When the company began operations in 1923, 87 per cent of cabinets in use were estimated to be made of wood. By the outbreak of World War II it was thought that about 91 per cent of cabinets in use were of sheet steel.28

The Relationship of Middletown to the Middle Miami Valley

Middletown is closely associated with the Middle Miami Valley Industrial Region. As a part of an industrial whole the city manages to maintain its identity, but the ties with the Valley are strong.

The three most important industrial centers in Middle Miami Valley are Hamilton, Middletown and Dayton. From Dayton south to Middletown and then slightly

28 Ibid.
southwest to Hamilton the economy is complex. Many types and sizes of industries are represented. Old paper mills in the towns and modern factories between them offer outstanding contrasts. The old mills in the towns are compact, two or three stories high, and made of red brick. They were built when line shafts and leather belts mechanically distributed power from a centralized steam engine or water wheel. The modern factories may be built of brick or cement blocks, but they are back from the road and are one story high. They utilize the ample space available because of their rural location and are permitted to do so because power is easily distributed throughout the plant by means of electric wires.

A difference in the homes may be noticed too. The contrast is similar to the one mentioned above, for the houses in the villages are old while many of the dwellings in the country are new and modern in design. The small one-storied new houses contrast with the large two-storied old farm houses.

New industries found the cities and towns relatively crowded, and so they built their factories between them. New workers found the housing situation much the same, and their solution to the problem was
similar. Modern transportation is such that it encourages industry to build where space is cheap and taxes are low. Much the same may be said for the individual.

The landscape in this predominately industrial region, however, is not all industrial and residential. Agriculture remains important because the soil is good and there are concentrated markets for agricultural products in the industrial cities and residential villages. The agricultural area is a zone of transition on the edge of the corn belt leading into a more diversified region where corn, hay, tobacco, greenhouse crops, and dairy products are all important.

In such a region there are many commuters among the people. Public transportation from Hamilton through Middletown to Dayton is carried on much as it would be in a large attenuated city. Side roads as well as main roads are hard-surfaced and the privately owned automobile carries thousands of workers back and forth each day.

The place of Middletown in this region is much the same as that of one of the smaller villages, but only on a larger scale. That is, Middletown is a residential, commercial, and a manufacturing city. Commuters from the small villages in and out of the Valley work in Middletown and many people from the
latter commute to Dayton or to factories between the main cities of the region.

The Commercial City

Trade.-- Although Middletown is primarily an industrial city, it also functions as a wholesale and retail trade center. Retail stores are needed to serve the people of Middletown as well as to serve those who commute from the smaller surrounding centers to work in the city's factories. The Editors and Publishers Market Guide lists the villages of Franklin, Trenton, Excello, Germantown, Gratis, Carlisle, Seven Mile, and Springboro as being within the trade area of Middletown. To this list might be added Miltonville, West Middletown, Amanda, and Blueball, all of which lie within five miles of the city.

Transportation.-- Transportation within Middletown for passengers is provided by a privately owned company which operates motor busses on the city streets.

The city street pattern is such that all of the factories are easily reached by motor truck. (Map VI) All of the industries that once were located on the canal now have access to Verity Parkway which has

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replaced the canal within the city. This street, in spite of the fact that it is termed a parkway, is highly commercial in character. It is a wide roadway and serves both intracity and through traffic.

Most of the passenger and freight business that was once handled by the electric railroad is now taken care of by motor busses and trucks. Frequently scheduled bus service is available over approximately the same route that the electric cars once traveled. In addition to carrying passengers the busses also transport small packages which contain such items as drugs, cut flowers, or small machinery parts. This is largely a special service, and the packages are usually consigned from one of the larger centers, such as Middletown, Hamilton, Cincinnati, or Dayton to one of the small villages between them.

Motor trucks now carry much of the heavy and regular packaged freight that was once moved by the electric railroad. This type of transportation is especially suitable for less than carload lots; therefore industries which ship small quantities to a variety of customers rely upon it heavily.

In addition to the motor trucks which run on schedule, there are trucks which do contract hauling. Many of these confine most of their services to one
type of industry. That is, certain trucking concerns carry steel almost exclusively, and others limit most of their services to the paper industry. This type of transportation has come to be very important to the steel industry. Prior to World War II, about 80 per cent of the output of the steel mill was shipped out by rail and the other 20 per cent by truck. Since the war a complete reversal of this has come about, and now (1950) nearly 80 per cent of the output goes by truck. The trend that brought about this situation was started during the war when truck service became more reliable and easier to obtain in Middletown than rail service.  

The Miami Valley Paper Shippers' Association.-- The Miami Valley Paper Shippers' Association is a good example of regional cooperation. Headquarters of the Association are located in the Civic Association Building in Middletown. The secretary and committees which are made up of executives from the various member manufacturers take care of the business of the organization.

Membership in the association is not limited to paper manufacturers; converters fabricating bags and boxes from paper are members. The association now

30 The Armco Steel Corporation, Middletown, 1950
comprises 29 firms. Carload and truckload lots of goods made up of shipments from the various plants move on schedule to 37 cities in the United States. The fact that Baltimore, Boston, and Seattle are among the cities receiving regular consignments illustrates the wide market of the Miami Valley mills. During the first three months of 1950 the association handled 42,001,000 pounds of paper.\textsuperscript{31}

Most shipments go by rail, but many that can be delivered overnight are made by truck. Cities receiving overnight deliveries are Pittsburgh, Buffalo, Detroit, Chicago, and St. Louis.

The fact that the association is able to reduce shipping costs enough to somewhat compensate for the unfavorable location of the valley in regards to wood pulp procurement is highly significant.\textsuperscript{32}

\textbf{Scrap iron procurement.---} The increasing proportion of scrap used in the manufacture of steel is a significant factor in Middletown. The process used by Armco in Middletown permits them to use scrap in almost any proportion desired. For this reason the amount of scrap

\begin{itemize}
\item \textsuperscript{32}The Miami Valley Paper Shippers' Association, Middletown, 1950.
\end{itemize}
used there is governed by its current price.

Although Armco operates its own scrap iron processing yard in conjunction with the East Works, the commercial side of scrap procurement is handled by the David J. Joseph Company. This is a Cincinnati concern, but it has established an office in Middletown for the express purpose of handling scrap for Armco.

Since freight costs are the determining factor in the price of scrap iron, Middletown is somewhat at a disadvantage as a procurement center because there is no waterway for barge shipments. However, the fact that three railroads, rather than one or two, enter Middletown is advantageous. The greatest advantage that Middletown has in regards to scrap procurement, however, lies in the fact that the city is located in a scrap surplus area. That this is so is demonstrated by the list of cities to which the Joseph company ships scrap from Cincinnati. In addition to Middletown and Newport, Kentucky, which may be considered within the area, the list includes: Ashland, Kentucky; Butler, Pennsylvania; Alabama City and Birmingham, Alabama; Houston, Texas; and Federal, Illinois.33

The Community

The Middletown Civic Association is an organization of citizens of the city that attends to all the community needs which are not taken care of by the city government. The activities of this organization are not confined to charity, although charity is one of its functions.34

The specific functions of the Association are established under the following sub departments: Commercial and Industrial Development, Employment Bureau, Agriculture Extension, Home Service, Public Health, Ex-Service Relief, Celebrations and Conventions, Recreation Bureau, and Municipal Music. Their titles illustrate their purpose.35

The people of Middletown are about 90 per cent American born. Of the remaining 10 per cent the majority are naturalized citizens of German, Italian, or Slavic origin. Of all the people about 9 per cent are Negroes. Nearly 72 per cent of the homes are owned by the people who live in them, and the banks

34Greater Middletown; A Dream Come True, Middletown, 1926, p. 1.

and building associations have resources totaling $19,000,000.00.36

When the industries of Middletown first began to require an excess of workers over the population of the village, it was still possible for the new workers to acquire homes near the original industrial center along the hydraulic. The owners of the mills and the more prosperous professional people built their homes along South Main Street in Ward 2. (Map VII) As the industries grew and required more workers, houses were built eastward in Wards 1 and 3. When the first steel mill was built in 1900 on Curtis Street (Armco Central Works on Map VII), there was no need to build a new residential section because the homes of the workers of the town were within easy walking distance of the new mill. Instead of a new residential district being built, the old one simply grew larger and finally surrounded the steel mill property. The property that had been acquired by the steel mill, however, was more than was needed for the plant. For that reason there are no houses crowded near the Central Works. (See Armco Field, Map VII) Later, when Armco built the East Works, the same sort of growth again began to take place, but before a residential district

Map VII

The City of Middletown, 1949
of worker's homes could surround the East Works property, the automobile came into general use, and it was no longer necessary for the workers to live within walking distance of the mills. Today, steel mill workers not only live in all parts of the city, but they commute from surrounding villages such as Trenton, West Middletown, Excello, and Blueball.

Because of modern transportation and the policy of Armco to acquire an excess of space, which is utilized for recreational purposes until it is needed for industrial expansion, Middletown does not present the usual crowded condition so typical of many industrial cities.
V. INDUSTRY DURING THE WORLD WAR II AND POST WAR PERIOD

The Effect of the War Upon Middletown's Industries

Although the Miami Valley received a substantial share of Ohio's government money for new industrial facilities during World War II, there was none of it allocated to Middletown. War contracts called for increased production of those factory goods normally produced in the city.

Aeronca Aircraft Corporation located in Middletown shortly before the war. The demand for light aircraft remained high during the war and for a period of about two years after the war. Aeronca weathered the eventual post war decline in demand for light aircraft by diversifying the line to include rocket launchers, gun chargers, aircraft boarding stairs, and maintenance stands. In July of 1948 unfilled orders amounted to $83,170.00, but in April of 1949, after the line had been diversified, they amounted to $1,234,802.00.1

The machinery industry in Middletown is largely

oriented toward the paper and the steel business. However, the wartime demand that every available machine tool be utilized to its greatest capacity, caused the industry to increase production. Extra shifts were added and the payrolls were increased. Some of the output was sub-contract work, such as was done by the Mokry-Tesmer Company for the General Machinery Corporation in Hamilton. Since the increased capacity was on a relatively small scale, it did not draw a great many workers into the city. The increased demand for workers could be met with women who were not normally on the labor market and men from unessential industries. This sort of expansion caused few problems of adjustment at the close of the war.

Although Armco increased its open hearth and electric furnace capacity by 615,000 tons, 348,000 of which was government financed, and its blast furnace capacity by 878,000 tons, of which 274,000 was government financed; none of this capacity was added at Middletown. But the East Works, despite added capacity elsewhere, remained Armco's largest producer. This year (1950)


3Armco; Facts and Figures, Middletown, 1945, p. 5.
Armco is increasing the ingot capacity of the East Works in Middletown by 400,000 tons. 4

Although Armco ranks in size sixth among the nation's steel producers, it is a company with complete vertical integration. Coal is shipped on Armco barges from Armco mines down the Ohio River to Cincinnati. It is then transferred by rail to New Miami where it meets Armco mined ore, which is smelted there. The molten iron is then hauled by rail to Middletown, where it is made into sheet steel by Armco and galvanized or terne plated by them. Finally the Armco Drainage and Metal Products, Incorporated, in Middletown, which is a subsidiary of Armco, fabricates part of the steel mill's output into usable products. 5

During the decade of 1940-1950 the population of Middletown increased by 7.2 per cent; this was a numerical gain of 2414 people. 6 Although it is not known how many of these people came to Middletown

4Armco Steel Corporation, Middletown, 1950.
5Armco; Facts and Figures, op. cit., p. 6.
6The 1940 figure was obtained from the Sixteenth Census of the United States, Washington, 1940; the 1950 figure was obtained from the Middletown Civic Association and is the figure arrived at by the 1950 census takers
during the war, it is reasonable to assume that a great many of them did.

Five new industries were established in Middletown near the close of the war. By absorbing part of the additional labor force which resulted from the city's population growth during the 1940-1950 decade, they reduced Middletown's problem of post war adjustment.

The Clayton and Lambert Manufacturing Company is a new industry to Middletown, but it is a manufacturing concern with a long history. Originally it was located in Michigan where it was founded in 1888. The products of the company have been automobiles (the Regal motor car), auto frames and bodies, blow torches, and fire pots. Today, the company operates two plants. One, which is located in Louisville Kentucky, manufacturers blow torches, fire pots, hardware used in building construction, and heating equipment for buildings. The plant in Middletown fabricates steel silos, corn cribs, and furnace pipes from Armco steel.7

The Prior Products Company came to Middletown near the end of the war. It is a small concern manufacturing gasoline tanks for trucks. The company uses Armco sheet steel and markets its products.

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7Crout, op. cit., p. 93.
chiefly in Detroit, Indianapolis, and St. Louis.  

Eversharp, Incorporated came to Middletown in 1947. The company employes about 50 men and 200 women. With the exception of the Raymond Bag Company it is the only concern in Middletown that employs more women than men. The predominance of male employees in Middletown makes Eversharp an especially suitable new industry for the city.

Eversharp's Middletown works concentrates on production, service, and assembly of writing instruments. The plant has been designated to take over all the domestic production of the writing instrument division of the company; it is replacing a plant located in Chicago. Eversharp's other factories in Los Angeles, California and Bridgeport, Connecticut manufacture razors and razor blades. Raw materials used by Eversharp are easily obtained at most any location in the United States. The company states that Middletown was chosen as a new location for its writing instrument division because of the central location for distribution and the adequate supply of suitable labor.  

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8Prior Products, Incorporated, Middletown, 1950.
9Eversharp, Incorporated, Middletown, 1950.
The General Chemical Company supplies the paper mills in the immediate area with liquid alum. This is clearly a market oriented industry attracted to Middletown by the city's favorable location near the center of a large group of paper mills. Although the majority of the shipments go by rail, rarely are they consigned to a mill beyond a distance of 25 miles. 10

The Riverside Concrete Company is a small concern manufacturing concrete building blocks. The increased use of this material for construction purposes and the fact that the product is bulky and relatively cheap would account for such a concern locating where a local market is available. 11

The Industrial Pattern in 1950

Most of the Middletown industries today are closely associated with either the paper or the steel industry. Table VI classifies them as to this association. It is noticeable that the machinery concerns are largely paper mill machinery manufacturers. There are only eight companies employing a total

10 Crout, op. cit., p. 91.

11 The Riverside Concrete Company, Middletown, 1950.
Table VI.

A Classification of the Industries of Middletown
According to their Association
with the Steel or the Paper Industries

<table>
<thead>
<tr>
<th>Name</th>
<th>product</th>
<th>employees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industries associated with the steel industry:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armco Steel Corp.</td>
<td>steel</td>
<td>5253 men 412 women</td>
</tr>
<tr>
<td>Armco Drainage and</td>
<td>steel bldgs. &amp;</td>
<td></td>
</tr>
<tr>
<td>Metal Products, Inc.</td>
<td>corrugated pipe</td>
<td>81 men 26 women</td>
</tr>
<tr>
<td>Clayton &amp; Lambert Mfg. Co.</td>
<td>steel corn cribs,</td>
<td></td>
</tr>
<tr>
<td>Miami Cabinet Division</td>
<td>silos, furnace pipe</td>
<td>108 men 11 women</td>
</tr>
<tr>
<td>United Welding Co.</td>
<td>steel cabinets</td>
<td>161 men 64 women</td>
</tr>
<tr>
<td>Prior Products, Inc.</td>
<td>welded steel items</td>
<td>160 men 7 women</td>
</tr>
<tr>
<td></td>
<td>gasoline tanks</td>
<td>50 men 5 women</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>5813 men 525 women</td>
</tr>
</tbody>
</table>

| **Industries associated with the paper industry:** | | |
| American Coating Mills           | colored paper board       | 75 men 1 woman |
| Crystal Tissue Co.               | tissue paper              | 250 men 100 women |
| Crystal Waxing Co.               | waxed paper               | 22 men 19 women |
| Fairbanks Fiber Box Co.          | boxes                     | 74 men 20 women |
| Gardner Board & Carton Co.       | boxboard & cartons        | 685 men 165 women |
| General Chemical Co.             | liquid alum               | 3 men       |
| Harding-Jones Paper Co.          | writing paper             | 65 men 25 women |
| Inland Container Corp.           | boxes                     | 225 men 50 women |
| Interstate Folding Box Co.       | boxes                     | 151 men 58 women |
| Keuthan Foundry                  | castings for paper machinery | 35 men 3 women |
| Pollock Paper Co.                | waxed paper               | 20 men 15 women |
| Shartle Brothers Machine Co.     | machinery for paper mills | 315 men 30 women |
| Sorg Paper Co.                   | speciality paper          | 448 men 75 women |
| Wrenn Paper Co.                  | blotting paper            | 72 men 17 women |
| Raymond Bag Co.                  | paper bags                | 213 men 329 women |
| **Total**                        |                           | 2653 men 907 women |

101
Table VI. continued

Industries not associated with either the steel or the paper industry:

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P. Lorillard Co.</td>
<td>tobacco</td>
<td>293</td>
<td>261</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aeronca Aircraft Corp.</td>
<td>airplanes</td>
<td>281</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barkelew Electric Mfg. Co.</td>
<td>switches</td>
<td>65</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolidge Corp.</td>
<td>ball bearings</td>
<td>50</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eversharp, Inc.</td>
<td>pens &amp; pencils</td>
<td>54</td>
<td>208</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middletown Ice and Coal Co.</td>
<td>ice</td>
<td>34</td>
<td>6</td>
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Total: 802 575

Total for all industries: 9351 2007

of 1377 workers that cannot be classified with the above two classifications.

The new manufacturers have not changed the industrial pattern of the city. (Map VI) Most of them occupy buildings that were used by concerns that went out of business during the twenties and the thirties. For this reason the industrial pattern remains about the same as it has been for over 50 years, and there are no derelict areas with old, rundown factory buildings. No new rail spurs have been built because there has been ample space along the old spurs and the main line tracks for industrial expansion. Since a rail spur had been built to
accommodate the industries along the old canal, that industrial area has remained in use although the canal has passed from the scene.

The locations of the Aeronca plant and the Riverside Concrete Company are similar to those of the Harding-Jones and Crystal Tissue mills. That is, they are outside the city but near enough to take advantage of the transportation and trade facilities offered.

The fact that Middletown remained a small city until after the invention of the automobile has affected both the industrial and the residential pattern. It was never a necessity for the workers of the Middletown mills to be crowded in uniform type houses built in close proximity to the factories. The larger industries which employ enough people to make employee parking a problem were able to see the problem approaching in time to make provisions for it.
VI. CONCLUSION

What are the vital statistics of Middletown after 150 years of industrial selection? What forces appear to have effected the changes that have been brought about? What seems to be the present vitality of these forces?

Today, Middletown is the largest industrial and residential center between Hamilton and Dayton in the Miami Valley. As a manufacturer of primary steel and paper, the city furnishes raw materials to metal fabricators and paper converters in Middletown and throughout the Valley.

As an industrial center the city furnishes employment to people who live in Middletown, in the surrounding country, and in the nearby villages. As a residential city it has people who work in other industrial centers in the area as well as in the city itself. Modern transportation and relatively high wages have made commuting possible. This has strengthen the ties between Middletown and the remainder of the region by facilitating the movement of people as well as of materials.

For 150 years Middletown has done some type of
manufacturing, but the products of the city have changed as transportation and techniques of manufacturing have improved and brought about economic development. The industrial development chart of Middletown from 1850 to 1950 illustrates the type of industry prominent at any one time during the period. (Chart I) From the chart it may be seen which industries were able to adjust, which were forced out, and which were able to begin operations because of the changing situation of the city. The chart is based upon the information gathered from the several sources used in the preceding chapters. It covers only the last 100 years of the city's growth because it was in that period that marked changes began to occur.

Several forces have been responsible for the changing situation of Middletown. Some tended to uproot old industries and others attracted new ones. In certain instances the same force which attracted a new industry might change the situation to such an extent that older industries would decline or be forced out of business.

As transportation improved in the Valley there was a gradual decline of the self-sufficient type
Chart I

Industrial Development of Middletown, 1850-1950
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1850 - 1950 1850 - pre 1950 post 1850 - pre 1950 post 1850 - 1950
industry which used local raw materials to make products that were sold locally. As these industries declined, larger ones, which obtained their raw materials from distant sources and sold their products to a wider market, increased. In later years improved transportation within the Valley furthered its economic unity.

As the Valley grew and became more industrialized, Middletown grew with it both as an industrial and residential city. Dayton and Hamilton, as large users of primary steel, strengthened Middletown's steel industry; and, as Dayton increased in size, with much of its industry expanding down the Valley toward Middletown, it began to attract commuters from Middletown as well as from rural areas.

For nearly a half century industrial Middletown has grown because of the increase of leading industries already located in the city. The number of establishments has declined, but the ones that have remained have grown in size. Only since World War II have there been many new industries. These have been relatively small, and they are of the type, with the exception of the Eversharp Company, that is generally associated in some way with either the steel or the paper industry. Increased freight rates have forced them to
seek a location near their source of raw material, but which is still not too-far distant from their markets.

The new industries, plus the increased capacity of the old ones, have served to balance the industrial growth of the city with the growth of its population.

There is little space remaining on the valley floor where ground water is easily obtained, and the heavy drain on the water supply by the paper and steel mills tends to discourage new large industries from entering the city.

In 1950 the leading industries of Middletown are old established manufacturers. The steel industry, which is the youngest of them, has been in business for over 50 years, and the tobacco and paper industries are nearly 100 years old. They are mature industries, but they are producers of speciality products, and as such must be constantly on the alert to recognize a changing situation so that they may adjust themselves to it as they have done in the past.

It is significant that Middletown's larger industrial concerns, with the exception of the P. Lorillard, are primarily Middletown owned. Although Armco has many plants throughout the United States, its home office is in Middletown. The paper mills, with the
exception of the Gardner Board and Carton Company, have no interests outside Middletown, and the Gardner concern has recently reduced their outside interests. This means that the managements of these companies are unlikely to reduce their facilities in Middletown in order to increase them elsewhere.

Because of lack of space there is little likelihood that a large manufacturing concern would choose Middletown as a location today. Of the established industries in the city, the one most likely to expand is the Armco Steel Corporation. Armco not only has the space available, but the recent arrival of new industries in the Valley such as the Fisher Body Division of General Motors at Hamilton, has increased the local market for Armco's product.
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