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MUSEUMS OF INDUSTRY

Role of the Company Museum as Regards Its Presentation of Technology, for Use in Industrial Arts Education

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By
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* * * * * * *

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1957

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PREFACE AND ACKNOWLEDGMENT

Focused on museums that are company owned and operated, "museums of industry," this study developed from a concern that many industrial processes conceal themselves within modern factories. Recognizing that museums created by industries have a potential for revealing the characteristics of both industry and technology, this study was directed toward exploring the nature of these museums and determining their effectiveness in reflecting industrial characteristics.

The text describes the methods whereby "museums of industry" are studied and charts their growth and demise. Examination is made of museum contents, display techniques, publications and other elements. Representations of industry are detailed and related to their applications in the curriculum of industrial arts education.

Acknowledgment is gratefully made to all participating companies, curators, and directors of museums and especially to the personnel in "museums of industry" who were extremely cooperative in furnishing opportunities from which interviews, literature, photographs, and written
reports were gathered. Professor William E. Warner generously supported the study from its beginnings and gave recognition to it at a presentation in a 1966 "Summer Forum" (one of more than 500 that Dr. Warner has presented since 1929). Immense help was given by the members of the advisory committee, Professors Edgar Dale, Robert M. Reese, and Robert Haws and patient encouragement was supplied by my wife, Mary Ann.

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Skyrocketing technological advancements have generated an economic and industrial explosion far greater than that of the Industrial Revolution (1750-1850). This heritage from American industry must be recognized by the school. In order to develop meaningful curricula, it must be translated into useable instruments for the classroom and laboratory by educators who search for experiences that effectively enrich and stimulate learning.

At the turn of the century, it was possible to watch a craftsman fashion the tools or products of his trade. Neighbors were able to view the blacksmith making horseshoes, the carpenter building a house or barn, the cabinetmaker styling furniture, and the potter forming dishes or bowls. Such processes were out in the open for all to see; however, with the emergence of large scale industry and mass production and automation, such work was of necessity performed behind the walls of buildings. The technological advances brought about by automation limit even further one's ability to see actual
operations. Modern factories or other production systems use gigantic automated machines that often hide entire processes. The onlooker sees only the raw material enter the "black box" and the final product emerge. But what happens in the machine? The existence of such industrial methods does not preclude one's being able to comprehend the manufacture of a product. Books, films, and displays are just a few of the many avenues by which actual processes can be seen and understood.

If there are certain fundamental concepts which represent industry, then these can be identified and subsequently taught in the laboratories of industry or the industrial arts classroom. Presently, in Ohio, one third of the industrial arts teachers have had less than one year of industrial experience. (72). This fact is contained in an unpublished survey of the Bureau of Educational Research and Service, in which this writer participated. Without an understanding of the composition of today's industrial world, the industrial arts teacher, like so many others, will become only a user of materials and products. Lest the teacher become a stranger to the technological advancements and cultural heritage he wishes to represent, he must not only become acquainted with their existence but also be able to integrate those technical advancements with the educational
process. Contact with the many production techniques and materials of industry can be provided through pictographic and verbal symbols. But form, size, finish, and texture are frequently as important to appreciation and understanding as the configuration and operational details found in pictures and descriptions. These qualities manifested in man's past and current material accomplishments can be found stored and displayed in the institution called a museum.

This study aims to evaluate the representation of industry as it is housed in museums because it is thought that the museum setting can effectively depict industry. A particular kind of museum, one owned and operated by an industry, provides this information. This study will be limited to selected museums of industry.

Background

As the volume of knowledge doubles and redoubles, it becomes imperative for man to develop effective storage and retrieval systems to make such knowledge available and useful. Theory and practice are easily translated into the verbal or pictorial symbols used in computers and books, but the actual application of man's material achievements can be found in museums. Because the production of material objects is the result of systematic
labor or an industry, it is only right that industrial progress should be displayed in a museum devoted to industry. The editors of the Encyclopedia Britannica (53, p. 1049) contend that the comprehensiveness of any one industry cannot be illustrated in an institution such as the museum or center of science and industry. They proceed to say that the task of illustrating industry has been conducted by the company museums or museums of industry as they are designated in this study. The history of products is recorded in these museums. Such museums were created by an inventor, owner, collector, community, or government. This study will be limited to those museums that have been developed, operated, and subsidized by specific industries. The proximity of the museum to an industry should enable it accurately to represent the past, present, and future developments involved.

The museum of industry is an institution of specialized collection and display which should be able to interpret that particular industry of which it is part. Like other museums, it fulfills the functions of collecting, preserving, presenting, and interpreting and bears witness to the interests, ambitions, and attitudes of an individual or group.

If a picture is worth a thousand words, a good exhibit is worth an entire story. A period room or an
outdoor reconstruction of an entire village transports the spectator into the past. Activity by figures that move or real men in costumes enriches the presentation and allows the visitor to become part of an experience.

The museum of industry, in contrast to the industrial museum, encompasses one industry with its single or multiple operations. This study will deal with the unique involvement of display endeavors by industry as related to the museum and specific educational pursuits of the company.

Industrial arts is a study of industry. The decision to develop curricula for industrial arts based upon the study of industry originated at the beginning of this century. In order to resolve the dichotomy between disciplinary practice and stated objectives, Charles R. Richards, in 1904, proposed changing the name of "manual training" to "industrial arts." This change prompted men such as James E. Russell and Frederick G. Bonser to expound upon and define "Richard's industrial arts." Since then, the problem has changed from what to teach to how to teach.

Industrial arts is concerned with reflecting industry and technology and is thus affected by the ever-changing nature of industry. American industry has grown effectively and rapidly under the free (competitive)
enterprise system. This very system requires, if not dictates, the need for day to day, week to week evolution. In fact, its very existence depends upon an updated and constantly improved product.

This study will examine the contributions of museums of industry as they interpret past, present, and future developments within selected industries. It is not a question of justification for the existence of the museum but a question of how effectively the museum of industry can as an institution perform an instructional function.

**Literature**

Research directed toward the contributions of museums of industry is limited essentially to one document. In 1943, Lawrence Vail Coleman (21) wrote a book entitled, *Company Museums*. This publication is based upon a study of eighty company museums which cover the industries of manufacturing, transportation, and communication. The greater portion of this work relates only to the existence and nature of the museums. The author comments on the usefulness of the museums as institutions containing historic and current company records valuable as references to both the company and persons interested in the industry.
Also of importance to the present study is a book written in 1925 by Charles R. Richards (61), The Industrial Museum, which is concerned with public museums around the world. Emphasis is given to such museums as the Science Museum of London, the Deutsches Museum of Munich, and the Technical Museum of Vienna. Only passing reference is made to two company museums, the Industrial Museum of Steel and Wire Company at Worcester, Massachusetts, and the Bethlehem Steel Company in Bethlehem, Pennsylvania.

In addition to the two books just cited, The Museum Directory of the United States and Canada (18), and Herbert and Marjorie Katz's book, Museums, U.S.A. (40), provided the sources by which the writer has been able to secure a list of museums to study. Many museums mentioned in Coleman's book are not listed in the Directory (18), perhaps because only "paid up" members of the association are listed. The Directory (18) shows a great deal of overlapping with regard to entries. Some museums are listed two or three times while others, as would be expected, appear only once.

The following is the categorical listing of museum types found in the Directory:

Art(1); Children's and Junior Museums; and College and University Museums;
Company Museums (2); Exhibit Areas; Historical Museums; Libraries having collections other than books; National and State Agencies; Councils and Commissions; Nature Centers; Park Museums and Visitor Centers; Science Museums; and Specialized Museums (3).

After checking each of the categories and comparing this writer's findings with Coleman's list, it was found that three major breakdowns (as indicated) contain the kinds of museums applicable to the study being undertaken as they are controlled and subsidized by a company. Interviews with museum directors and assistance from professors and friends have unveiled the existence of several more of the types of museums under investigation.

Statement of the Problem

This study is being undertaken to determine the nature of the museum of industry and what aspects of it are important and will provide a better understanding of the industrial way of life as this relates to industrial arts education. The kinds of activity or media used to create this unique setting will be evaluated to determine the effectiveness or ineffectiveness of these museums as educational instruments.
In order to understand industry, what must be known? What is industry? If the museum can effectively represent industry, it can provide answers to these and other questions, answers prohibited when safety regulations or company policy forbids tours.

This study will attempt to answer two basic questions. (1) Does the museum, in proximity to an industry, effectively interpret and reflect it? (2) What is the nature of the presentation and how effective are the means used to present ideas, concepts, products, and processes?

Closely related to these two basic questions are many additional questions:

1. At what point in company growth was the museum established?
2. Who developed the museum? (designer, humanist, etc.).
3. What purposes or objectives was the museum of industry set up to achieve and how effective has it been in realizing them?
4. Have the purposes or objectives changed over the years? What precipitated this change?
5. Who is responsible for seeing that the goals are met? Formulates new goals?
6. What is the museum's frame of reference? (the company, similar industry, or all industry?)

7. Upon what does present or future existence depend?

8. What is the extent of the museum's resources?

9. Is the museum affected in any way by its setting? What characterizes the community? Are such characteristics reflected in the museum? Does the community use the museum for classes, meetings, or other type activity? Is the museum patronized by members of the community?

10. How many and what kinds of people visit the museum? Why do they come?

11. To whom are the museum displays geared?

12. What is the educational role performed?

13. What applications can be made to the classroom?

14. How does the museum attempt to depict industry? How successful are they?

15. What kinds of displays are used?

16. Is the display emphasis on depth or breadth or a combination of both?

17. Is miscellaneous material displayed?

18. Do specialized exhibits show complete evolution or entire processes?
19. What critical concepts of this industry or company are displayed?

20. What aspects of the company are omitted and why?

21. Does the company develop its own displays?

22. Is central emphasis placed on widely known or glamorous products or processes?

23. Is an attempt made to depict all aspects of the company? (Social, economic, and political implications?)

24. Does the museum attempt to propagandize or advertise? If so, in what areas is this reflected — display, literature, etc.?

Since, as has been discussed, the privilege of revealing the ongoing processes of industry is almost exclusively reserved for museums of industry, such museums are seen to deserve special investigation. Basic to the questions formulated in this chapter is the intention to discover the means by which museums depict industry and to measure the effectiveness of their presentations. However, only by retrieving the knowledge contained in museums can the possibilities for education be explored. Some methods of extracting information from museum visits will be presented in the next chapter which also will provide the fundamental assumptions and terminology employed in the study.
CHAPTER II

DEVELOPMENT OF THE STUDY

The technological nature of civilization has been commendably recorded. Present emphasis upon technology does not mean that man previously lacked a technology but that he has never been so aware of its existence as he is in contemporary society. Man has always existed with a technology, one replete with possibilities usually beyond comprehension. The successful attempts at recording thoughts by chipping characters into stone were as much a technology as the act of transcribing them to the shining keys of an electric typewriter is today; the destructive force wrought by the bow and arrow was comparable, in its time, to the destructive capabilities of the present day hydrogen bomb. From a twentieth century vantage point, one achievement merely represents a higher, more advanced technology than does the other.

**Purposes**

The nature of technology in the realm of industry is the subject of this paper; thus, the first of many questions to be resolved will quite naturally seek to
uncover the nature of technology as it is represented by the museums of selected industries. In examining these museums, an evaluation will be made of how effectively they depict past and present technology. Therefore, the study will delve into technological changes manifested in industry and recorded by these museums.

Another intention is to up-date past research on museums of industry, to compile a list of museum additions and deletions, and to broach gaps of these rich depositories with the aim of enhancing their worth. Museums deal with the very nature of industry as told by industry itself, and their quantity and quality should indicate possibilities as important and growing resources. Valuable today and in the future as collections multiply and increasingly furnish a unique tool by which American industry can be studied, museums offer material for the profit of teachers and students of industrial arts as well as other persons interested in and affected by technology and industry, in fact, even by companies themselves.

Museum visits can be likened to a retrieval system in which the raw materials found become knowledge only when applied. The effectiveness of this knowledge is dependent upon both the quantity and the quality of information taken from the source. When a museum visitor
leaves, what does he take with him? In order for the obtained material to be useful, individual storing systems must be able to organize what has been presented.

Museum literature accompanied by personal notes and photographs will result in accurate evaluation of what a particular industry is to itself and to man as he lives in society. Besides compiling a list of publications directly related to each industry as depicted by a museum, the writer will construct a visual picture of a sampling of American industry as displayed in museums of industry by collecting color slides and photographs.

The procedures described also should enable the present study to achieve a comprehensive view of museums and determine whether or not similar or kindred industries might be studied from any one museum. Museum curators or directors will be contacted in this study and a determination of what kinds of people are charged with the responsibility of these museums will be undertaken in order to aid prediction of further developments and future expansion as they relate to the state of the museum structure as a whole.

The educational perspective underlying this study will necessitate the distillation of museum purposes and values for persons of varying age and learning levels. Specifically, the use of the museum for the industrial
arts curriculum is an adjunct to the study of industry. If the museum displays material pertinent to the study, characteristics of technology and industry, it becomes crucial that treatment of such material emphasize educational values.

In regard to present educational endeavors, the study will determine the current extent of museum use. Surveyed also will be the provisions for educational institutions that have been proffered by museums. Also, investigation will establish if, as a cooperative effort, museums have given sufficient care to accommodate visitors, diverse in educational and social background, who come with or without structuring their trip. Since, as an effective educational tool, museums should contribute to the progress and amelioration of society as well as retain permanent records of the past, some measure of this element also will be derived.

Assumptions

This study proceeds on the assumptions that:

1. As a twentieth century development, museums of industry are virtually an untapped source of applicable information about industry and its utilization of technology.
2. In an age of specialization, a resultant increase in the number of museums of industry will heighten the necessity to become acquainted with their potentialities.

3. As a representative sample, the museums comprising this study will reflect the characteristics and status of all museums of industry in the United States.

4. The resources of museums of industry contain recreational and educational aspects which can contribute to the enrichment of persons of diverse ages.

5. The curriculum of industrial arts is a proper vehicle for the transmission of much of the educational material available in museums of industry.

Terminology

The following terms are defined to clarify their use in the context of the study:

**Industrial Arts Education**

... (The) content deals with the principles and concepts of industry. It concerns itself with industrial production and servicing, including a study of such principles as application of mechanism, influence of ideas and
products, implications for consumer literacy, wise applications of leisure time and respect for quality workmanship (5).

Museum

A museum is a professionally-staffed, specialized, non-profit institution concerned primarily with the collection and interpretation of original or significant objects. (86, p. 2).

Industry

. . . business, which employs much labor and capital (82, p. 427).

Museums of Industry

(Definition derived for this study) The resultant efforts in the field of collecting and display of a nature that approaches (even slightly) the characteristics of a museum as developed, operated, and subsidized by a specific corporation or company. (Throughout the study, the term museum of industry will appear underlined to designate its assigned meaning).

Close examination of the research and educational purposes toward which this study is directed indicates that material in museums of industry may be relevant for teachers, students, industrialists, and many other persons and groups. Assuming that the present age of specialization will yield an increased number of museums of industry, the necessity to become familiar with the usefulness of these museums also will multiply. With consideration of
media to bear the responsibility for transmitting knowledge to the classroom, industrial arts education comes into focus. Therefore, it will be the function of the following chapter to investigate the nature of industrial arts education and to elucidate its relationship to the characteristics of industry.
CHAPTER III

NATURE OF INDUSTRIAL ARTS EDUCATION

Industrial arts, as a well established and intensively important curriculum, is indebted to the thought and action provoking A Curriculum to Reflect Technology (78). The renewed vitality that has permeated industrial arts emanates from the directives initiated twenty years ago when a leadership group guided by Professor William E. Warner revolutionized the field with the presentation of this curriculum. This innovation lifted industrial arts from the basements and boiler rooms of schools around the country where exercises and skills were the prominent objectives to its place in education today.

This curriculum as developed in 1947 by Professor Warner (78) contains the following elements:

Content in the new Industrial Arts curriculum is derived via a socio-economic analysis of the technology . . .

Derivation:
- Economic Origin
- Human Postulate

Now the subject matter classifications are conceived as including:
Power
Transportation
Manufacture
Construction
Communication

. . . plus several human or organizational and administrative factors referred to as:

Management
Educational Functions

Orientational
Technical
Consumer-Cultural
Recreational

This structure is expanded upon in the following portions of this chapter and utilized in Chapters IX and X as the matrix for the nature of industry and the curriculum implications for industrial arts education resulting from the museums of industry.

**Human Postulate**

Human resources include more than the power to make and use tools, to understand and master the forces of nature. Beyond this, man has taken infinite pains to contemplate and record his experiences, to relate himself to his environment and to other men. The individual is tantalized not only by a knowledge of the materials and technological processes of his time, but also by the prevalent theories concerning man and the world in which he interacts. In a time and place, man must survive with and within the technological nature of his environment.
What he has been, what he is, and what he is becoming concerns man, and the more effective use he makes of the resources provided by technological tools, books, machines, and the whole world of things, the more adaptable a resource he himself becomes.

As an instrument for experience, industrial arts serves to foster technological skills which will promote a penetration into the symbolic, theoretical world of yesterday, today, and tomorrow. Enabling man not only to scrutinize, but to acquire answers to "why" and "how," fulfilling his need to understand the conditions and variables, such as interest, incentive, and imagination, which affect his life, industrial arts directly contributes to man's ennobling.

Man is compelled today to reach beyond the bounds of his immediate environment for technology itself extends beyond the limits of this planet. Industrial arts is a historic expression of civilization, from handicrafts and primitive tools to the most sophisticated forms of mass production and the frontiers of the future. The entire gamut of man's creative and inventive genius is but a fabulous adventure of human accomplishment.

**Economic Origin**

As a contribution to education, the many programs of industrial arts, from manual to industrial to
technological have reflected the economy. The early years of industrial arts were concerned with those aspects of the economy which involved tariffs, monopolies, and business cycles. Capital accumulation was the prime factor in economic development.

Today, however, the addition of intellectual capital is apparent and creates another dimension, technological capacity. Thus, the economy embraces far more than is evidenced by the Gross National Product which now exceeds $700 billion. The magnitude of knowledge available to man grows in geometric proportions, thus making the economic base more meaningful as well as more complex. It is, therefore, based both upon a material and an intellectual wealth.

The affinity to an exploding economy depends upon the rate that the new technology is produced and the old is disseminated, a rate of technological progress and replication. Industrial arts education has a responsibility, consequently, to encourage discovery and invention as a corollary to transmitting a technological heritage.

**Derived Functions**

The functions of industrial arts are ascribed to the aforementioned socioeconomic base. Reducing the multiplicity of derived functions to include the following:
Orientation, Technical, Consumer-Cultural, and Recreational provides the foundations for diverse programs of industrial arts.

The orientational function focuses on the changes man has made, is making, and will make in the forms of materials and related problems. It is an alliance of science and technology as applied not only to materials, tools, processes and products, but also to the opportunity for man to educe his potential and adequacy and find his own niche in an industrial society.

The substance of the technical function enables man to effectively and efficiently manipulate materials, tools, and machines to fulfill his grandest wishes and his slightest exigencies in a technological environment. Opportunities for identifying and developing basic technical skills can be fostered through general, special and terminal educational programs for persons of every age level.

A consumer-cultural function provides for purchasing, using, and maintaining the accouterments of man's desires and requisites. In this function is recognized the relationship of human needs, the attempts to fulfill them, and the creation of additional needs, all against the backdrop of past inheritance.

An emphasis on enjoyment and relaxation for the individual characterizes the recreational function which
can add variety and make leisure hours more pleasant. This function is elastic and unites aesthetics to scientific experimentation in practical expression.

Professional Purposes

The essence of industrial arts is contingent upon a curriculum track that culminates in technological literacy as reflected by the nature of the industrial world. Communication, clarification, understanding, direction, and leadership as achieved by Richards, Bonser, Snedden, Warner, and other eminent leaders have stimulated and inspired a broader and deeper penetration of the technology than was possible under the attenuate approaches exemplified in manual training and manual arts by the areas of wood, metal, and drawing.

Ably assisted by dedicated men and the professional associations they have formed, the exigency and importance of manipulative activities have resulted in a marriage of concrete and theoretical elements in individual and group experiences. Programs at all levels—normal, atypical, service, recreational, and professional—have been initiated to affect the totality of man's environment. Witness: *A Curriculum to Reflect Technology* by Warner *et al.* This breakthrough directed at the technological nature of our industrial society gives direction to numerous creative and exciting approaches
for new curricula in industrial arts at all levels.

Industrial arts education, as reviewed in this chapter, explores human, economic base and the derived functions of orientational, technical, consumer-cultural, and recreational aspects. Possibilities emerge for utilizing industrial arts education as a media in transmitting the information expected to be revealed in the study of museums. If the general aspects of industrial arts can be applied to the investigation of industry as found in museums then perhaps complementary functions can be established. Before closer examination occurs, however, a history of the development of museums and emergence of the museums of industry will be presented in the next chapter.
CHAPTER IV

MUSEUMS AND TECHNOLOGY

As an institution, the museum has a lengthy and intriguing history which is intimately linked with the society and era it reflects and influences. Throughout most of man's civilized history the museum has been known in some form, even if only by individual collections. For one reason or another, some objects acquire particular value and man attempts to preserve them. The choice of objects reveals something about the man and the culture of which he is part.

History of the Museum

Tracing the development of museums from ancient times through the Renaissance, general characteristics become apparent. It is not, however, until the nineteenth century that industrial museums come into existence. Characteristics of these museums and of fairs, exhibits, and open air museums related to their evolution are of primary concern in this chapter in that these developments most directly contributed to the twentieth century museums of industry, the subject of present research.
Origins in Ancient Times

As introduced in Greece, the term "museum" was applied to the temples of the Muses, the Greek gods of the arts and sciences. Besides being places dedicated to the gods, the museums were centers for study. Considered the most important museum of antiquity, the institution founded at Alexandria by Ptolemy Philadelphus in the third century B.C. promoted learning and supported students (52, p. 1).

Although the Romans also practiced the habit of collecting statues and paintings, they were interested in their decorative value rather than their educational possibilities. Rarity and peculiarity of objects instead of scientific interest dictated what was to be preserved in the Roman temples. With the invasion of northern barbaric tribes, the consequent decline of the arts, and the descent of the "Dark Ages," however, both the word and institution, "museum," disappeared.

Renaissance Contributions

Despite man's age-old habit of collecting objects, the museum as it is now known did not appear until the Renaissance. Collections of coins, medals, natural curiosities, artistic and scientific objects were kept in the homes of wealthy Renaissance men. These collections,
or cabinets, grew as articles of antiquity were unearthed near Rome and as explorers to India and the New World returned with samples from their travels. These private collections as well as collections from monasteries and churches provided the material for museums which arose during the seventeenth and eighteenth centuries. (Examples of museums with such a history include the Ashmolean Museum at Oxford University, inaugurated by Elias Ashmole in 1682, with a collection of curiosities known as Tradescant's Ark (75, p. 565), and the famous British Museum of London, founded in 1753 from the merger of two collections containing articles from the New World (42, p. 5).

Nineteenth Century Industrial Museums

A civilian collector of industrial art, M. Alexandre du Sommerand, who had gathered large collections of wood carvings, ceramics, textiles, and metal work of the Medieval and early Renaissance periods, had his treasures installed in the Hotel de Cluny in Paris in 1832 (61, p. 4).

In London, the Victoria and Albert Museum was initiated as a result of the 1851 Crystal Palace Exposition, which will be described later, and attained great distinction in the area of industrial arts. Primarily, the museum was aimed to assist the student, the designer,
and the craftsman rather than the layman. The founders of the museum set as objectives the provision of models which would contribute to the development of manufactures and crafts associated with decorative design.

During the period from 1860 to 1900, industrial museums were governed particularly by the policy of technical classification. Arrangements within the Museum fur Kunst und Industrie, founded at Vienna in 1863, exemplified conformity to the material and technique classification which had been set forth by Semper in 1860 (61, p. 9).

Museums at this time began to recognize the worth of yearly exhibitions and developed this practice. Particularly well known for their annual exhibits were two museums in Paris, the Musee des Arts Decoratifs founded in 1863 and the Musee Galliera built in 1894 (61, p. 41).

As the nineteenth century drew to a close, the changed conditions of life resulted in a revised conception regarding the primary purpose of the museum of industrial arts. Since books and other sources of instruction had become more available to craftsmen, this group depended less on museums for their learning. Museum directors then envisioned the museum in a larger framework and perceived their institutions as instruments
of general education. Instead of concentrating on the
service their collections would give to workers in the
craft, they proposed to develop general feelings for
style and art. As a result of this alteration in
orientation, policies of museum arrangements began to
emphasize the development of history rather than technical
classification. The Bavarian National Museum, erected
in 1900, is an excellent example of the historical
cultural system of display. (61, p. 13).

In the United States during this period, separate
museums of industrial art were absent and collections
of industrial art had become included in the scope of
art museums. The Metropolitan Museum of Art in New York
City established the model for many other museums in this
country by creating a special staff to work in the areas
of industrial arts and by presenting annual exhibitions
in this sphere.

**Indirect Influences on Museums**

Before pursuing the further development of museums
as related to industrial arts and industry in the United
States, this study focuses on the contributions made by
exhibitions, fairs, and open air museums.

**Exhibitions**

While the primary purpose of an exhibition is
to display items, exhibitions also serve to foster
communication among exhibitors, promoters, and visitors. Reasons given for the origin of exhibitions include the wish to "show off," the desire to advance the interests of promoters, and the intention to provide a stimulus for exhibitors by creating comparisons.

Records of the first industrial exhibition reveal that the Society of Arts in England, which had purchased machines and machine models and had received prizes for them in competition, placed the articles in a warehouse and hired William Bailey, in April, 1761, to care for the collection and to explain the models to visitors (46, p. 63). Although the contents of this first industrial exhibit were few, they were representative of the mechanical developments at that time. Minutes and engravings of the exhibit demonstrate that the traditional sources of power -- wind, water, and horse -- were applied to new purposes.

Exhibitions by the French date from 1797 when the Marquis d'Aveze sponsored an exhibition of products of industry which were primarily goods of luxury. After the French minister of the interior incorporated exhibit plans into national policy, a series of ten additional exhibitions followed. The last of this French series which was held in 1849, included more than four thousand exhibitors and remained open for six months (46, p. 73).
The first international exhibition, a product of the efforts of the Society of Arts in England, opened at Hyde Park, London on May 1, 1851 and continued until October of that year. Housed in the Crystal Palace, this exhibition, which became known as the Great Exhibition, attracted more than six million persons and contributed greatly to the future of museums containing products of industrial arts (46, p. 112).

In the United States, the Philadelphia Centennial Exposition of 1876, left in its wake a permanent museum of industrial arts. (Although the collection has been transferred to the Philadelphia Museum of Art, the original building of the exposition, Memorial Hall, remains in Fairmount Park in Philadelphia, thus making it the oldest public art museum building standing in this country today.) From the Columbian Exposition held in Chicago in 1893, were provided the foundations and buildings for the Chicago Natural History Museum and the Museum of Science and Industry.

Fairs, dating back to the Middle Ages, differ from exhibitions in that their primary purpose was to sell the items displayed. Daniel Defoe wrote in 1723 of the Sturbridge Fair on the outskirts of Cambridge and described the tradesmen and representatives of English manufactures found there (46, p. 11).

Open Air Museums: The Museum of Skansen, Sweden was created in 1891 as a section of the Northern Museum. Buildings illustrating the peasant and agricultural life in Sweden were brought from various parts of the country and particular attention was given to the demonstration of different methods of construction which had been employed in various provinces at diverse times. (61, p. 90.)

The Norwegian Folk Museum, besides being an open air museum with approximately 150 buildings, is also a museum of the more traditional type. It contains conventional museum buildings housing permanent exhibitions and has the necessary facilities for research work. Constructed in 1894, the Norwegian Folk Museum surveys the life of the people from 1500 to the present (43, p. 18).

In this country, several open air museums have attained fame. Old Sturbridge Village began in the 1920's when Albert B. and J. Cheney Wells of Southbridge, Massachusetts began acquiring American antiques. After purchasing, in 1936, a 250 acre tract at Sturbridge,
Massachusetts, they began reconstruction of thirty-eight antique buildings moved from various parts of the country and assembled a New England country town of 150 years ago. Opened to the public in 1946, the Village depicts crafts of the blacksmith, tinsmith, potter, weaver, printer, and cabinetmaker among others, and recreates the activities of an entire community (15, passim).

Greenfield Village in Dearborn, Michigan, consists of a village green and nearly 100 buildings, including a hall of mechanical arts. Dedicated in 1929, Greenfield Village also depicts the crafts of early Americana. In addition, Williamsburg, in Virginia, and Cooperstown in New York, are open air museums in the United States which duplicate past periods of American development.

**Museums of Science and Industry**

The United States National Museum, a branch of the Smithsonian, took shape shortly after the 1876 Centennial. The Smithsonian had been initiated by an Act of Congress in 1846 to "found at Washington, D.C., an establishment for the increase and diffusion of knowledge among men" (36, p. i). James Smithson, who left an estate of half a million dollars for the founding of the Smithsonian Institution, was an Englishman who had never visited the United States. As part of the Smithsonian, the Arts and Industries Building was
constructed in 1876. Material from sixty-six freight car loads of exhibits that had been on display at the Centennial Exposition in Philadelphia were contributed. Eventually, the Arts and Industries Building came to house collections and exhibits in the fields of engineering, crafts and industries, medicine, photography, history, and aeronautics. Present plans are to use the Arts and Industries Building for offices as the new Museum of History and Technology dedicated in 1964 contains fifty exhibit halls which will illustrate the historical advances that have been made in science and their applications in industry and engineering (36, passim).

The Chicago Museum of Science and Industry was founded by Julius Rosenwald in 1926 and is housed in the Fine Arts Building of the World's Columbian Exposition in 1893. The fundamental approach to all exhibits involves a story-telling emphasis and each section of the total floor area of approximately fourteen acres is grouped into sequences, often tracing an idea from its invention to its mass production. The museum's express purpose is "to picture the experimental beginnings and the fully developed processes which fill the needs of a modern civilization and to show how these represent our American way of life" (76, p. 2.). In recent years, the annual attendance has been that of more than two and a half million persons.
Among other museums of science and industry founded in the United States during the nineteenth century, the Franklin Institute in Philadelphia, Pennsylvania (70, p. 24), was formed in 1824 in order to aid the study and progress of the mechanical arts and applied science. The Franklin Institute exhibits both the basic physical science principles and their applications in industry. Featured among its numerous offerings on the railroad, the telephone, electricity, paper-making, and many other areas are several observer-participant types of displays.

Company Museums

Early attempts to create a company museum might be perceived in the medieval apothecary collections or in some eighteenth century collections made in conjunction with day to day business activities such as the collection of Count Detlev von Einsiedel, the proprietor of a German ironworks who gathered minerals and samples of products of furnaces and forges (61, p. 25). However, the company museum is largely a product of the twentieth century, and while some company museums have developed from remnants of expositions or fairs, most have had their nucleus in the collections of one man with a special interest in the arts and crafts related to his business.

Company museums range in size from small, locally known exhibits to large professional museums. There
are hundreds of company exhibits and museums in this country according to Snow (66, p. 303). Coleman (21, p. 3), in listing known company museums in the United States in 1943 set the number at eighty. Some museums have commemorated the past with a minimum amount of identification and organization; others explain meaningful interrelationships of exhibits and have traced significant themes through a firm's history. Still others have presented the purposes of the company's founders in a historical context and have emphasized the firm's role in the economy.

According to Coleman. more than half of all the company museums belong to manufacturers (21, p. 4). Museums of railroads and utility corporations also contribute to the industrial picture. Although museums of banks and insurance companies cannot illustrate production processes as do other organizations, many have interrelated social and economic history in their displays of coins, firemarks, and similar objects.

Besides preserving company records, several companies have also preserved their original buildings. The Old Red Shop in Brockton, Massachusetts, which was built in 1843, stands today, depicting a typical shoe shop of the middle nineteenth century (21, p. 109). The shop was not established as a museum until 1910.
Distinguishing the point at which a collection becomes a museum causes difficulty in establishing when the first company museum appeared in this country. While Katz (42, p. 22) credits the United Shoe Machinery of Boston with furnishing the first company museum in 1901, Coleman (21, p. 108) notes that this collection did not comprise a museum until 1930. Though the Covill Manufacturing Company at Waterbury, Connecticut began their button collections in 1831, only in the 1940's did they establish a museum.

The Baltimore and Ohio Historical Collection which resulted from the Chicago World Fair of 1893 is the oldest company collection of considerable size which was created deliberately for public display and has since attained fame as Bailey's Roundhouse railroad collection in Baltimore, Maryland (21, p. 100). Among Coleman's listing, the Burroughs Wellcome and Company founded in New York in 1907, the American Steel and Wire Company in Worcester, and the Studebaker Corporation in South Bend, both established in 1908 are credited with being the earliest company museums (21, p. 15).

The growth of small museums in the United States during the twentieth century is largely accounted for by the increased development of company museums. That this should be so, with industry so important a part of
contemporary culture, is stated by Coleman in his *Manual for Small Museums* (23, p. 149). "If treated from the standpoint of technical principles and processes, rather than of human behavior, industry is a special subject that is hardly within the field of a small museum -- unless it be a special museum of industry."

As the world about him grew, so did man's habit of collecting. Only after the emergence of routes to India and the New World did the museum as we know it appear. The development of many great national museums occurred and various methods of display were utilized. Initially, museums included materials related to industrial arts with their other collections, but with the growth of science and industry, museums completely devoted to these fields came into existence. The increase in the number of small museums which occurred during the twentieth century is marked by the appearance of company museums or *museums of industry*. In order to investigate these institutions, guidelines taken from similar museums will be developed. By exploring characteristics and methods of a number of contemporary museums, questions relative to the study of *museums of industry* will be compiled in the next chapter.
CHAPTER V

PRELIMINARY INVESTIGATION

The historic perspective of the museum in the previous chapter is drawn from resource literature whereas, the emphasis in this chapter is derived from a field study of seven museums. Such an approach was chosen to determine what objectives and principles might be most advantageously employed to develop specific guide lines for the study of museums of industry. This concentration involved visiting technologically oriented museums, conferring with individual curators, and studying the publications of these museums. Thus, the importance of the sections to follow is based upon their usefulness as a foundation for further investigation and the informational potential for elucidating operations of museums of industry.

The Ohio Historical Museum

The proximity of the Ohio Historical Museum facilitated contact with the museum world. Though this museum devotes itself to the presentation of Ohioana, three display areas are particularly relevant to the study.
One room contains farm machines and tools which are on loan from the Durell Farm Museum, a museum which will be reviewed in subsequent chapters. The Ohio Bell Telephone Company, the parent display of which will also be detailed later in the study, has a room in the Ohio Historical Museum which contains the curiosities of the communications industry and depicts the historical development of the telephone. In the basement of this museum, there are additional displays relevant to the study of industry. These include an early cobbler shop, a grist mill, and some locksmith and firearms displays.

A detailed study of this museum and its displays, provided an excellent orientation. Most valuable was the extensive library that has been developed concurrently with the museum and which served as a source for many books, publications, and other literature, not located elsewhere. Besides its superior facilities, the library boasts a staff of persons who were most helpful in uncovering pertinent material.

Dr. Keener (94), curator of the Ohio Historical Museum, directed attention to some problems which confront museums and suggested additional museums to visit and persons to contact. "A prime problem is that of design," Dr. Keener said. "The design of museums across the board is poor. Little has been done regarding the comfort
of the museum visitor." Attacking an ancillary problem, that of setting standards for museums, Dr. Keener stated, "Talk with Dr. Still at the Ford Museum. He has done some work on standards and definitions for the museums world." Dr. Keener next suggested the addition of the following museums for further study:

**Eighteenth and Nineteenth-Century Museums:**
- Hagley Museum; Wilmington, Delaware
- Ford Museum; Dearborn, Michigan
- Greenfield Village; Dearborn, Michigan
- Cooperstown; Cooperstown, New York
- Sturbridge Village; Sturbridge, Massachusetts

**Company Museums:**
- Winchester Arms Museum; Winchester, Massachusetts
- Science and Industry Museum; Canton, Ohio
- Corning Glass Center; Corning, New York

Following Dr. Keener's suggestion, the attention of the study of museums was next directed toward the investigation of early craft museums.

**Early Craft Museums**

Craft museums stand as nostalgic reminders of the past and its influence upon our present industrial, economic, social, and political way of life. Greenfield Village, Michigan, and Sturbridge Village, Massachusetts,
both situated outdoors, are among the best known craft museums in the United States. Sturbridge Village is more intrinsically coherent in that it is a re-creation of a nineteenth century New England village while Greenfield Village, Michigan, along with retaining a distinctive village aspect, displays a wide expanse of style and activity reflective of many areas of the United States and, in some instances, also of other countries during the nineteenth and early twentieth centuries.

The outdoor museum is unique in that it allows the visitor an opportunity to immerse himself in each inherent characteristic of the historic atmosphere depicted. Most traditional displays, no matter how well constructed, only weakly approximate the actual environment and the viewer's participation is limited to that of an onlooker. The outdoor museum accomplishes far more; the visitor may become part of a reconstructed environment. Space, which is at a premium in the conventional museum, can be used generously to help create the desired effects in the outdoor museum.

The secret of success for the outdoor museum in America begins to unfold itself when these museums are visited. The possible contributions of these museums to the present study can best be explored by focusing on two of them, Old Sturbridge Village and Greenfield
Old Sturbridge Village

The Village Patriot, a four page newspaper distributed at the Toll House entrance to the village, provides this orientation:

Old Sturbridge Village is a regional museum of rural New England life. Its purposes are historical and educational, to preserve and present the story of New England farm and village life of yesterday, and to impart a knowledge and understanding of that heritage to the citizens of today (11, p. 1).

Spread over a 250 acre tract, this panoramic village entices over half a million visitors to its year-round operation. Having the appeal of "off to grandmother's house we go," here the curiosity of children of all ages is aroused through man's every sense perception. The "footmobile" is the euphemism given to the popular method for conveying visitors through the village and its thirty-eight buildings. However, a visitor might take a short ride around the mill pond and over the authentic covered bridge in an oxen-pulled cart. The rewarding realization that one has been transported to an "Olde World" comes to the visitor who can witness the changing of dark soil into a carpet of wheat, clay into drinking vessels, straw into brooms, bar iron into horse-shoes, blank paper into a broadside, molten glass into
bottles, wheat into flour and cookies, liquid pewter into buttons, or spoons, and wood into cabinets or chairs.

But this is not all! The visitor can not only see objects, but he can smell the printer's ink and the aroma of freshly baked bread, feel heat from the forge, taste homemade rock candy and maple syrup, and hear the sounds that accompanied the activities of the village in the nineteenth century.

Greenfield Village.

The technology of the eighteenth and early nineteenth centuries as experienced by the people of England and of various parts of the United States can be personally inspected at Greenfield Village, a two hundred acre tract to which over a million visitors come annually. The guidebook for the village quotes Henry Ford's expression of its development with the following aims:

> When we are through, we shall have reproduced American life as lived; and that, I think is the best way of preserving at least a part of our history and tradition. For by looking at things people used and that show the way they lived, a better and truer impression can be gained than could be had in a month of reading — even if there were books whose authors had the facilities to discover the minute details of the older life (35, p. 1).

Entwined with the early Americana are tributes to the persons Mr. Ford held in high esteem and for whom he felt sincere sentiment. His outlook is reflected in
the inclusion of such buildings as: The Noah Webster House, Luther Burbank's Birthplace, the Heinz"House Where We Began," William H. McGuffey's Birthplace, Lincoln's Logan County Courthouse, George Washington Carver's Memorial, and Robert Frost's Ann Arbor House.

One hundred historic buildings dot the confines of the village. Most of these can be entered and, in some, the artistic expression of an era of handicrafts is still carried on for the visitors. Such crafts include candle making, flour grinding, glass blowing, pewter making, pottery molding, weaving, ironworking, and tin-typing, with items produced in each of the shops, as in Sturbridge Village, Massachusetts, sold on the premises.

Though the village in itself furnishes an educational experience for the visitor, it also maintains an educational institution which from September to June provides for 150 children in grades Kindergarten through six.

The primary areas of agriculture, manufacture, and transportation which are portrayed in the village are also presented in the adjoining Ford Museum. Thus it was logical to leave the outdoor museums and to pursue the investigation with a museum bearing the name of a great American industrialist.
The Ford Museum

In the shadows of a full size reproduction of Independence Hall lies a museum complex that is a credit to the wisdom of a man who said: "I am collecting the history of our people as written into things their hands made and used. . . . A piece of machinery or anything that is made is like a book, if you can read it" (47, p. 2).

Mr. Ford had not wished to place the museum on two floors, but since his death, the second floor above the entrance has been utilized to display his Personal History Exhibit. Here, Independence Hall, Congress Hall, and the Old City Hall are joined and house fine art galleries and American decorative arts. The attached Mechanics Arts Hall covers more than eight acres and consists of seven major areas of exhibits (Agriculture, Crafts, Industrial Machinery, Steam and Electric Power, Communications, Illumination, and Transportation), as well as a street of Early American Shops.

Displayed in the shops are the finished products of another age, a technology of the past. The twenty-two shops include: a Blacksmith Shop, Gun and Locksmith Shop, Barber Shop, Leather Shop, Tailor Shop, Cabinetmaker Shop, General Carpenter Shop, Turning and Carving Shop, Wrought Iron Craftsman Shop, Corner Drug Store, Comb Shop, Boot and Shoemaker Shop, Millinery and Fancy Goods Shop,
Toy Shop, Candle Shop, Tinsmith Shop, Pewter Shop, East India Merchant Shop, Wheelwright Shop, The Camera Shop, and the Print Shop.

A curator at the Ford Museum, Dr. John S. Still (100), discussed the museum's display techniques and explained that officials at the museum were attempting to improve the how and the why of their collections along with solving specific problems which periodically presented themselves. While Dr. Still provided much information which could be useful for the study, he also revealed the startling news that the Ford Museum was not a company museum and thus the possibility for its inclusion in the sample was eliminated.

Having reviewed museums dealing with early crafts, attention was drawn toward those dealing with a more extensive industrial complex. In the famous Smithsonian Institution, particularly its Arts and Industries and New History and Technology buildings, the search for museum characteristics was expanded.

The Smithsonian Institution

Since 1864, just over a century ago, when the Smithsonian Institution was opened, it has become not only a mecca for tourists, buildings with hallowed halls wherein learning is stimulated, but also an institution which, although granting no degrees, draws scientists and
scholars from around the world. Included in this study were four buildings of such a museum complex; the Smithsonian Building, The Arts and Industries Building, the Air and Space Building, and the Museum of History and Technology.

Had it not been for the dedication and foresight of the renowned parade of competent secretaries (head curators) of the Smithsonian, what was once called "the nation's attic" would never have developed into the world's largest museum complex. Today eighteen million visitors annually flock to see one-half million items which represent less than one per cent of the more than sixty million items included in this repository of man's accomplishments.

The humble beginnings and numerous setbacks since the bequest of one-half million dollars was made by James Smithson with the vague stipulation "to found at Washington, D.C., under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men" (36, p. i) have developed into not merely a collection of "learned curiosities" as Samuel Johnson once described the museum, but into meaningful components making up a rich, vibrant environment reaching into a living past both for visitors and scholars.

The broad expanse of such a museum vividly points out a salient aspect of the large museum complex. The
resources, as in large industry, of monies and people have permitted phenomenal growth of this institution. A museum's success, to a large extent, depends upon an abundance of funds and persons, and the failure of many small museums is often due to the dearth of these two essentials. (At present, the Smithsonian plans to distribute its wealth and to establish a store-type small museum for people who cannot easily reach the major buildings. This project will be supported by funds from a Carnegie grant.)

Even more important than the growth of the entire institution has been the development within the various subdivisions of the Smithsonian. A new museum, the Museum of History and Technology, corrected many deficiencies of crowding and improper arrangement in massive collections previously displayed elsewhere. The general museum complex had until 1963 displayed the what and the how, but had neglected the why. The History and Technology Museum has made enormous steps forward into delving deeply into the why and structuring this aspect. Included in this pursuit has been examination of the human element in technological developments, a step difficult to make because the attempts at clarification must not lead the visitor astray from the primary point of interest.

The scope of the Smithsonian Institution's activities are covered by the two stipulations of James
Smithson's will which are depicted in an exhibit in the main hall of the Smithsonian Building. These are:

1. The Increase of Knowledge (in the fields of): astronomy, geology, biology, radiation and organisms, history, anthropology, engineering and industries, and art.

2. The Diffusion of Knowledge (using the following media): publication, radio programs (television), science news releases, correspondence, lectures, exchange service, library, and exhibits.

Insofar as the complete complex of the Smithsonian Institution is not directly related to the proposed study, a close look only at the newest of the buildings, the Museum of History and Technology will be undertaken. The result of extensive thinking, planning, and the most up-to-date technology, this museum is particularly valuable for its contributions in the use of classification and actual display techniques. The prevailing concept in this museum is one of the growth of the United States as viewed from the four departments of the museum (Armed Forces History, Civil History, Science and Technology, and Arts and Manufactures), which demonstrate the development of this nation, first, by century, and then, by numerous self contained displays. The specific developments of history and
technology by century are for the benefit of the visitor with limited time at the museum or the person who would not be especially interested in any one display area.

The growth and development of the Museum of History and Technology which emanated from its four departments composes the headings for the following outline. Subheading classifications were extracted during the present study from the displays at the museum and form the bases for the delineations which appear in the sub-titles.

I. **Armed Forces History:**
   History of the armed forces, decoration and insignia, ordnance.

II. **Civil History:**
    Flag hall, discovery of America, colonization of North America, national growth, seventeenth century furnishings, eighteenth and nineteenth century furnishings, gowns of first ladies, history of America, American dress, and underwater history.

III. **Science and Technology:**
    Physical sciences such as, physics, nuclear energy, chemistry, age of science.
    Mechanical and civil engineering such as, bridges and tunnels.
    Transportation such as, watercraft, road
vehicles, railroads.

Electricity

Medical sciences such as, medicine, dentistry, pharmacy, health.

IV. Arts and Manufactures:

Textiles such as, machines and fibers, processing.

Graphic arts such as, photography, motion picture history.

Ceramics and glass.

Manufacture and heavy industries such as, power machinery, tools, light machinery, machine fabrication, petroleum, coal, iron, and steel, industrial growth.

Agriculture and forest products such as, farm machinery, lumber and wood products.

The vast collections of the Smithsonian afforded a spectacular sampling of the nation's industries and provided foundations for comparisons of methods and techniques for display, all of which could be applied to the investigation at hand. In order to extract additional concepts for the examination of the museum world, a famous museum of science and industry was subsequently visited.
The Chicago Museum of Science and Industry

The embryonic stages of this gargantuan museum, covering fourteen acres, which is known today as the The Chicago Museum of Science and Industry, were not unlike the developments that transpired during a similar endeavor in Philadelphia's Fairmount Park, but the outcome of each pursuit differs considerably. One of the few buildings left from the Centennial Exposition of 1876 held in Philadelphia, Pennsylvania, is Memorial Hall. Plans had been made for this edifice to develop into an industrial arts museum, but the erection of the Philadelphia Museum of Art affected the abandonment of this attempt. What remains of Memorial Hall is but a shadowy memory of a "Great Exposition," and the building is shorn of its many windows, not from the ravages of time, but from the thoughtlessness of "people who throw rocks." Crude weathered plywood replaces the once gleaming windows while only part of the building is used for a gymnasium and locker room for an outdoor swimming pool situated just a hundred yards away.

The stories of origin are very similar and the struggles to preserve and utilize the Exposition Building at the World's Columbian Exposition tend to reflect what happened to Memorial Hall in Philadelphia with the important exception that in Chicago the plans for a permanent museum
were successfully completed. The results are a tribute to the men who had the courage and strength to realize their dreams and to utilize a valuable structure for future generations.

The Exposition Building for the Fine Arts at the World's Columbian Exposition was constructed in Chicago in 1893. With the nucleus of what was collected for the Exposition, the building became the Field Museum. Some twenty-five years later, this endeavor was abandoned and the exhibition materials in the museum were moved to new quarters in Grant Park.

A total of eight million dollars was collected in 1926, $5,000,000 through bonds and $3,000,000 as a gift of Julius Rosenwald, the founder, to develop an industrial museum from the abandoned Field Museum (32, passim). The museum was opened in time for "Chicago's Century of Progress" in 1933, first, comprising a small part of the building, then, five years later expanding into another portion, and finally, in 1940, completely filling the structure. Since that time, this museum has become almost another wonder of the new world, and more than three million visitors are drawn to it annually.

The Museum of Science and Industry, as an educational institution, strives to realize for its enormously diverse visitors at least an acquaintance with science
and its application to industrial processes. Storytelling is the fundamental approach to all the exhibits that translate the utilization of science by industry. Here are found historic as well as contemporary developments as they affect living, particularly living of "the American way of life."

The simplicity, the comprehensiveness, and the coherence toward which the exhibits are aimed depend for their fulfillment upon the visitor. Audience participation is emphasized by: push button devices, cranks to turn, levers to move, life-size displays in which the visitor becomes a part, and a guide who periodically operates as well as explains displays. The aim of this total endeavor is to develop a deep understanding of the inscription on the central rotunda of the museum which reads, "Science discerns the laws of nature; industry applies them to the needs of man."

The format for this museum was inspired by the Deutsches Museum of Munich. The founder of The Chicago Museum of Science and Industry, Julius Rosenwald, was enamoured with the numerous moving displays in the German Museum, but did not wish that his museum should become a "technical Coney Island." As time has passed, however, much of the Chicago Museum's popularity has resulted from this sort of appeal (33, p. 42).
The subject arrangement as delineated in the guide book is based upon a progressive treatment of: (1) Basic science, (2) Discovery and invention, (3) Development, (4) Manufacture and use, and (5) Potential future and social implications.

An alternative categorization discerned during this museum's visitation might take the following form: (1) Science and medicine, (2) Curiosities and, (3) Industry: power, transportation, construction, and communication.

Without a doubt, the contents of the Chicago Museum of Science and Industry are encyclopedic and their presentation to an enormous number of visitors is a mass educational effort. Further study of this museum could easily be added but attention to a smaller museum of science and industry should more quickly progress the study and provide meaningful contrast.

**The Columbus Ohio Center of Science and Industry**

Because the Columbus Center of Science and Industry, at the time the present study was undertaken, still was struggling through its early stages of development, an investigation of this museum provided more valuable questions than definitive answers. In representations of the history and achievements of a state, county, city, and the men who lived in each, this center celebrates not only its promoted "investment in the future" but the
investments of the past and present as well.

The center reveals the application and utilization of science and technology as they affect the operations and products of industry. With the help of Mr. William Schmitt, the museum's educational director, a decision was made to meet with representatives of companies which had contributed displays to the museum. It was hoped that by uncovering the rationale behind the contributions, the study of museums of industry would be enhanced.

Representatives of the companies contacted included engineers, public relations directors, and vice presidents. In interviews averaging forty minutes, each company representative was queried with the following schedule:

1. What initiated your company's interest in the Columbus Center of Science and Industry and resulted in your contribution of a display there?
2. What were the bases for determining what your company would display?
3. Who designed and built your company's exhibit?
4. How effectively and completely do you think the display represents your company?
5. Has your company considered developing a company museum?
6. If the company needs to locate items pertinent to a company anniversary, be it 25th or 100th, to what sources would you turn?

The following companies and individuals involved in industrial displays at the Columbus Center of Science and Industry were contacted and interviewed:

1. North American Aviation  
   Mr. Denton Williams,  
   Public Relations Director

2. Columbia Gas of Ohio  
   Mr. William F. Smiley,  
   Public Relations Director

3. Industrial Nucleonics  
   Mr. Donald Williams, Engineer

4. The Hanna Paint Manufacturing Company  
   Mr. Ross Snodgrass,  
   Advertising Director

5. The F. J. Heer Printing Company  
   Mr. Harlan Toby, Consultant

6. Columbus and Southern Ohio Electric Company  
   Mr. Lawrence McNealey,  
   Vice President

A compilation of answers to the questions posed to each company representative is presented below.

1. In answer to what initiated company interest in COSI, each representative indicated that the company had responded to a request from the Center. (The Industrial Nucleonics Company which was preparing to set up a display of an atomic measuring device could not answer questions beyond this first one.)
2. When the representatives were asked the bases for determining what the company would display, North American replied that their contribution had to be directed toward community service since their funds, a large part of which came from the federal government, were primarily designated for research or other specific purposes. Also, since much work is of a confidential nature, only miniature display models were used.

Columbia Gas of Ohio is involved in processing, delivery, and storage and, therefore, decided to reflect the public service aspect in its display. Hanna Paint Manufacturing Company chose the historic approach of paint manufacturing and the utilization of the principles of color as the bases for displays. Heer Printing Company stressed elements of contrast in its depiction of the contemporary letter press and offset printing. Columbus and Southern Ohio Electric Company concentrated on attempts at illustrating the historical development of electricity through displays of both discoveries and discoverers.

3. As per who designed and built the company's exhibit, with only one exception, commercial display builders were responsible. The Columbus and Southern Ohio Electric Company constructed its own display.

4. In evaluating how effectively and completely the COSI display represented the company, the representative from the Columbus and Southern Ohio Electric Company
noted that since they are involved in service, it was difficult to state an answer here. He mentioned, however, that he felt their display was among the few in COSI that was almost entirely educational. Comments by other companies' representatives reflected a fair degree of satisfaction with the displays although they did point out that there was a heavy advertising aspect to the displays which was questionable and subject to improvement.

5. No company representative expressed the belief that his company had ever considered developing a company museum.

6. In response to what sources they would turn if it were necessary for their company to obtain items for an anniversary celebration, all company representatives indicated that they had given little thought to this matter and hoped that their archives would furnish material useful in such an endeavor.

In summary, it seems evident that the companies that were reviewed demonstrate little interest or concern in preserving their past and are rather inexperienced in portraying themselves to the public in a museum setting. They are, however, involved in providing literature and services such as tours and lectures for the benefit of the public.
The only qualification, though not absolute, that COSI had made with regard to displays was that they should not be strictly of an advertising nature. Lack of additional stipulations reflected the youth and inexperience of the Center. Its primary aims were sometimes put aside in order to fill the floor space of Memorial Hall. Since its opening, though, the Center's personnel has grown in experience and knowledge and has developed more definite goals and a clearer concept of what is desirable and best contributes to the total structure. Intentions that the entire context be educational pervade the present operational patterns.

The variety and complexity of the museums reviewed made it progressively difficult to formulate standards and consistent operational patterns applicable to all museums. It became apparent that there is a crucial need for a workable set of standards. Attention to this point was given and is described in the following section.

**Museum Standards**

Implicit in the concept of a museum is the belief that there are items worth preserving and that preservation and interpretation are best achieved within the museum structure. In addition, the realization that items do not always speak for themselves makes it imperative to interpret their inherent value if full utilization is to
result.

Debate in the museum world is not directed at the validity of the museum as an institution or at its existence as the guardian and interpreter of the past. Rather, debate centers around the means by which the functions of collecting, preserving, interpreting, and presenting are carried out. The necessity arises to delve into the disputed arena and to probe with the questions: What are the criteria by which museums are judged? Who determines if a museum is effective? Where can this information be found? With these questions in mind, Dr. John Still (100), curator of the Ford Museum in Dearborn, Michigan, was contacted. He remarked:

There are too many museums; too many museums going their own way, too many museums that exist in name only, museums that do not have the staff or finances to perform an efficient operation; too many museums showing what has been collected but not making the critical step toward telling the visitor the why or how of the collected material. There is a definite need for a set of standards for all museums.

Dr. Still explained that the curators of the Ford Museum were attempting to improve the presented material in this museum by going beyond just naming the items. He explained that his interest in standards had led him to give a number of speeches on this topic and stated:

The problem is not being solved. Everyone (in the museum field) talks about it, but few are doing anything. Everyone thinks it would
be a good idea to have a set of standards, but the people associated with any particular museum are unwilling to believe that the standards should really apply to them (100).

Dr. Still was unable to provide any material he had presented; however, he did direct attention to the work of The Southeastern Museum Conference on standards for museums.

Communication with Mrs. Mae Woods Bell, Secretary-Treasurer of The Southeastern Museum Conference, resulted in procuring a copy of "Standards for Museum Practice" (86, p. 7), the product of three years' work by this group. This set of standards is the only set that has been published and they are used to regulate the museum practices for the member museums. Publication of the standards solicited the help and attention of other museum personnel across the land, but there seems to have been no additions or clarifications to date. It appears, then, that the work of this group was well done, or as Dr. Still suggested, the question of standards remains rather sticky and others are reluctant to attempt a solution.

The "Standards for Museum Practice" are divided into nine parts: definition, museum objectives, collections, the museum board, the director, staff, personnel policies, budget, and physical facilities.

The endeavors of the standards committee entails definition of the museum as well as recommendations and
general guides that facilitate the advantageous operational pattern of the museum as an educationally and professionally oriented institution.

Over and above requiring a charter, this group advocates the written statement of broad objectives that should include: (1) primary subject matter of the museum, (2) field covered, and (3) scope encompassed by a particular museum. The details of the objectives should be revised periodically as they are affected by new accessions.

As collections compose the actual core of the museum, it is upon this basis that its worth depends. The museum as the guardian of collections bears not only the responsibility for accurate documentation but the duty then to see that items are preserved for utilization. As the museum grows, effective and efficient record keeping must be developed to furnish a categorization and cataloging which contain the history and source of each item so that this information can be located easily.

Most early and many contemporary museums have been developed and controlled by people who were librarians first and museum people second. This development has been beneficial though not completely advantageous. These people with a background in the library sciences have contributed much to the orderly nature of the museums
though they lacked the overall skills needed to run the total museum structure. It has been only within the past few decades that people have been specifically trained to enter the museum field.

It seems almost too obvious that the committee on standards (86, p. 43) should define the structure of a museum board as:

.. consisting of citizens of outstanding achievement in diverse fields with a sincere and active interest in the welfare and progress of the museum who should insure that the objectives of the museum are being obtained with success and integrity . . . and that they formulate general policy and obtain sufficient funds for operation of the museum.

When specifying the qualifications of the director the committee (86, p. 43) definitely states that the museum is an educational institution: "The director should be a person of recognized ability in one or more of the specialized fields of the museum and should have skill in the administration of an educational institution." Finding such a director often is difficult since the increase in the number of museums has not been paralleled by a sufficient increase in properly trained and qualified persons to fill new positions. Dr. Still at the Ford Museum has alluded to this problem, "... there are too many museums" (100). Certainly, there are too many museums that cannot obtain personnel with the desired qualifications and so
there results poorly staffed museums.

The committee on standards seems to direct its attention, and rightfully so, to the so-called professional museums, such as the Smithsonian, State, and other well developed museums. The committee suggests that a line and staff structure be developed, a structure not unlike that of a university or college with parallels similar to those shown in Figure 1. The actual working plan of the line and staff structure should be specified in the manner of job classifications for possible future expansion. The committee stipulated that the personnel structure should be enumerated and provision made for the professional growth of the staff through further study, in-service training, staff meetings, professional conferences, visits to other museums, and readings in current literature, activities which should be encouraged through grants and leaves of absence.

The committee notes "that facilities should be adequate for the total program, that equipment and facilities should be maintained in good operating condition, and that the general atmosphere should be adequate for both visitor and staff comfort." (85, p. 47).

The applicability of these standards does not touch upon the body of this study, since they are peripheral in nature and deal with broad operational patterns,
Fig. 1.—Line and staff structure (museum vs. education).
definitions, and guides. Specificity and conclusiveness in the matter of standards depends upon the interpretation given by specific museums which endeavor to present what has been collected and preserved in a manner that is most effective for the particular kinds of visitors they attract.

Seven distinct and characteristically unique museums have provided a foundation for reaching an initial understanding of museology. Each of the museums has shortcomings, but each also is worth emulating. The search for conclusive answers was not always fruitful, but the reward of partial answers and additional questions lends direction to the search. Presentations in each museum differ widely as does the extent to which visitors can participate.

The Ohio Historical Museum, its curators, and other personnel provided initial counsel in conjunction with the utilization of their extensive museum library. The Early Craft Museums contributed the realization of their chief contributions, an atmosphere in which the visitor easily becomes a part, the opportunity to be more than an observer in a re-created situation closely approaching the actual environment, and acquaintance with the technology of another age as seen in its simplest operable form. The Ford Museum depicts technology
extensively in the finished products of industry and boasts an abundance of inventions displayed along with their applicability and evolution. The Smithsonian Institution's History and Technology Museum is one of the first museums to place the entire contents of a museum into a meaningful whole which relates the technology to the people who used or were affected by its use. The Chicago Museum of Science and Industry, though criticized as a "Technical Coney Island," fascinates its visitors with the opportunity to operate its wide array of gadgetry.

It is difficult, at this time, to assess the prominence of Columbus' COSI as it is still in its early development. Contact with the contributors to this museum seems to indicate that those companies represented are not completely sure as to how to tell their history through the museum structure. The omission of the human element is strikingly noticeable as is a lack of distinction between advertising and story telling and a confusion between the peripheral and control concepts in their displays.

The conflicting characteristics of museum presentations appear to reflect an expanse of bewilderment regarding general standards for museums. Attempts to define a set of standards and to provide for their implementation have been exclusively confined to the work of one group,
The Southeastern Museum Conference, whose recommendations were described in the section on standards. Primed with the information derived from a preliminary survey of museology, attention next will shift to determining the universe and sample for the study and then to utilizing the information from this chapter to develop the methods of instrumentation through which the purposes of the study can be fulfilled.
CHAPTER VI

RESEARCH TECHNIQUES

Industry, exhibited in characteristically diverse patterns within the comprehensive museum structure, adopts a specialized perspective as it relates itself to the company museums. Having reviewed in the previous chapter the broad backdrop provided by industrial museums and museums of science and industry, the major focus is now directed to constructing a comprehensive survey of museums which depict specific industries. Not only is it necessary to establish the total population of such museums in order to derive an appropriate sample, but, in addition, it becomes extremely important to develop accurate methods of instrumentation which will function to reveal the elements and patterns of each museum to advance the investigation.

Pilot Project

The pilot project was segmented into four distinct but necessarily related entities. First, a survey of eighty-three museums, as delineated in Laurence Vail Coleman's Company Museums (21)(See Appendix A), was made to ascertain the existence and growth of those museums.
Since many of the museums were not listed in recent directories, a compilation of museums which had been discontinued or had changed control was gathered. Next, a search was conducted to determine if the specialized area of company collecting has grown as have the numbers of other museums. In the third stage, material obtained from the foregoing surveys was combined to provide a universe from which the final portion of the project could be derived. Subsequently, the sample for the study was selected.

Survey of Eighty-Three Museums

As of 1943, Coleman had compiled and published a list of eighty company museums in the United States and three such museums in Canada. Examination of the 1965 Museum Directory (21), however, reveals that very few, only ten, of Coleman's museums are cited. Whether returns on the investigation to compile the Museum Directory were incomplete, the museums no longer exist, or institutions not members of the American Association of Museums were omitted from the listing, it was impossible to promptly establish. Thus, it became important to verify the current status of all museums listed in Coleman's work.

The instrument for the survey of Laurence Vail Coleman's eighty-three museums was a double postal card.
(See Appendix B.) This instrument was designed with a format considered sufficient to determine the existence of the museums and compact enough to encourage a high percentage of response. The instrument was sent to twenty states and Canada which were listed by Coleman as having one or more company museums. The following, Table 1, illustrates the frequency with which museums occur in the states cited.

The inquiry sent to each company museum provided an explanation of the study and a request for available literature included with the following questions:

1. Your museum exists today? ( ) Yes ( ) No
2. Name and Address of Company:
3. Company Head:
4. Museum Head or Curator
5. Nature of growth and development since 1942: -- or, when and why was it discontinued?

The first inquiry which was sent to each of the eighty-three museums resulted in a return of nearly fifty-one per cent. A follow-up inquiry was made one month later of the companies which had not replied to the first survey. Indications of the response to the first and second inquiries, individually and combined, are presented in Table 2.
### TABLE 1

**FREQUENCY OF COMPANY MUSEUMS BY STATES AND CANADA**

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Company Museums</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>2</td>
</tr>
<tr>
<td>Colorado</td>
<td>1</td>
</tr>
<tr>
<td>Connecticut</td>
<td>4</td>
</tr>
<tr>
<td>Delaware</td>
<td>1</td>
</tr>
<tr>
<td>Illinois</td>
<td>4</td>
</tr>
<tr>
<td>Indiana</td>
<td>2</td>
</tr>
<tr>
<td>Maryland</td>
<td>2</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>10</td>
</tr>
<tr>
<td>Michigan</td>
<td>4</td>
</tr>
<tr>
<td>Missouri</td>
<td>1</td>
</tr>
<tr>
<td>Nebraska</td>
<td>1</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2</td>
</tr>
<tr>
<td>New York</td>
<td>23</td>
</tr>
<tr>
<td>Ohio</td>
<td>7</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>9</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>2</td>
</tr>
<tr>
<td>Vermont</td>
<td>2</td>
</tr>
<tr>
<td>Virginia</td>
<td>1</td>
</tr>
<tr>
<td>Washington (state)</td>
<td>1</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>3</td>
</tr>
<tr>
<td>Twenty states and Canada</td>
<td>83 museums</td>
</tr>
</tbody>
</table>

Note: It is interesting to note that fifty-six of the eighty-three museums in Coleman's study are situated along the east coast in an area where this country and its traditions had their beginnings.
### TABLE 2
COMPANY MUSEUM SURVEY RETURNS

<table>
<thead>
<tr>
<th>Inquiries Made</th>
<th>Number of Museums Queried</th>
<th>Number of Cards Returned</th>
<th>Percentage Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Inquiry</td>
<td>83</td>
<td>42*</td>
<td>50.6</td>
</tr>
<tr>
<td>Second Inquiry</td>
<td>42</td>
<td>25*</td>
<td>59.5</td>
</tr>
<tr>
<td>Combined Inquiries</td>
<td>83</td>
<td>67*</td>
<td>80.7</td>
</tr>
</tbody>
</table>

* Included in these figures are eleven cards returned because of "no forwarding address," "address unknown," or "unclaimed."
The results of the 1966 survey, based upon Coleman's list of company museums compiled in 1943 (21), are depicted in Table 3.

Of the returns which were received from sixty-seven sources or 30.7 per cent of the population, only thirty returns or 36.1 per cent indicated that the museums were still in existence. One fourth of the museums listed by Coleman in 1943 had ceased to exist by 1966 according to replies received, and the existence of museums from which cards were returned unclaimed or from which no replies were received appears highly questionable. In addition six per cent of the museums were no longer under company control at the time of the present survey.

Discontinued Museums

Since a substantial number of company museums have been discontinued, it is appropriate to note why they are no longer in operation. The following twenty-one companies have discontinued their museums for various reasons. This list is presented below by state, city, and company and is annotated.

Waterbury, Connecticut -- Scovill Manufacturing Company: This company manufactures metal goods. Buttons, one of their products, provided the initial stimulus for a collection back in 1831. In 1942, a project was initiated which would include displays of their products: buttons,
### TABLE 3
RESPONSES REGARDING EXISTENCE OF MUSEUMS
LISTED BY COLEMAN

<table>
<thead>
<tr>
<th>Type of Response</th>
<th>Number of Responses</th>
<th>Percentage of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, the museums exists</td>
<td>30</td>
<td>36.1</td>
</tr>
<tr>
<td>No, the museum does not exist</td>
<td>21</td>
<td>25.3</td>
</tr>
<tr>
<td>Museum exists but not under company control</td>
<td>5</td>
<td>6.0</td>
</tr>
<tr>
<td>Card returned to sender</td>
<td>11</td>
<td>13.3</td>
</tr>
<tr>
<td>No reply</td>
<td>16</td>
<td>19.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
coinblanks, metals, and novelties. The project was abandoned and many of the items were added to the Industrial Museum in Waterbury at the city's local Mattatuck Historical Society.

Mr. E. H. Davis (88) provided this information in regard to the remainder of the collection:

We have retained at our plant a few significant historical items and have organized for our own reference an elaborate display of substantially all the buttons made by us since 1802, both for military and other insignia and for ladies' dress wear, in addition to work clothing buttons for overalls. Also, we have organized a display of our numismatic work which started as early as 1828 and continued for about a century and a quarter. This material will be stored but ought to be available for examination by interested people.

Chicago, Illinois:—The Felt and Tarrant Manufacturing Company: A museum was established by this company in 1912, "mainly to familiarize company salesmen and instructors with their product's historical background" (21, p. 101). They manufactured calculating machines and, under a merger in 1961, became The Victor Comptometer Corporation. (Under the Comptometer Corporation, this company museum was cited in the Directory of Museums in 1966.) However, Mr. R. H. Koch (96), secretary to the present corporation provided this information:

While we had maintained a museum consisting principally of our various models, both commercial and experimental, and also consisting of a number of other older machines, subsequent
to the merger we discontinued the museum and donated most of the collection to the Smithsonian Institute in Washington.

Chicago, Illinois — V. Mueller and Company: This company makes surgical instruments and established a company museum in 1920, "with the collection made by the company head while traveling abroad" (21, p. 102). Mr. Howard W. Coates (87) provided this information in response to the inquiry:

Sorry: Our historical display of instruments is now almost entirely in the possession of the International College of Surgeons, Hall of Fame, 1516 Lake Shore Drive, Chicago, 60610.

Elgin, Illinois — The Elgin National Watch Company: A museum consisting of "replicas of ancient time-measuring devices from 1400 B.C. as well as Elgin models from 1867 was established in 1922" (21, p. 102). In reply to the inquiry, Mr. R. H. Hall (91) sent this statement: "We no longer have a museum."

South Bend, Indiana — The Studebaker Corporation: This company, one of the first makers of automobiles in the United States, established a museum in 1908. "The exhibits included horse drawn vehicles made by the company before it made automobiles, early Studebaker automobiles, as well as specimens of war material made by the company" (21, p. 105). The response received was, "We have no museum" (unsigned).
Boston, Massachusetts -- First National Bank of Boston: "In commemoration of the First National Bank of Boston's 150th Anniversary, they established a museum which included documents and articles relating to the bank's early years" (21, p. 108). The unsigned answer received to the inquiry made here was, "discontinued several years ago . . . lack of space."

Boston, Massachusetts -- United Shoe Machinery Corporation: "Over 3,000 specimens of ancient and modern footwear made up the museum established by the United Shoe Machinery Corporation in 1930" (21, p. 108). A postal card was returned with this bit of information: "discontinued 1942; space occupied by U.S. Army."

Framingham, Massachusetts -- Dennison Manufacturing Company: The Dennison manufacturers of boxes began a collection in 1904 that established a museum in 1920 which was discontinued thirty years later. Another unsigned return relayed this information: "Discontinued about 1950. We needed the space and felt that the space required and the time spent could be more productive on other projects."

Waltham, Massachusetts -- Waltham Watch Company: Another watch company, the Waltham Watch Company, "through the lifetime hobby of the son of the company's founder established a collection in 1937 showing the development
by craftsmen of the principles of modern time measuring devices" (21, p. 112). The only marks on the returned postal card were an "X" before "No museum exists today" and the name of the company.

Worcester, Massachusetts -- Crompton and Knowles Loom Works: "In 1922 the U. S. Patent Office disbanded its collection of models. The Crompton and Knowles Loom Works collected 75 models relating to company patents and in 1927 established a museum" (21, p. 113). Albert Palmer (98) provides this information on the discontinued museum: "Discontinued to make space available for current business. Exhibits given to Worcester National History Society in about 1950."

Dearborn, Michigan -- Ford Motor Company: In 1962, the Ford Motor Company's Ford Rotunda burned to the ground in late December. There has been speculation on a new building but this has not yet become a reality.

Phillipsburg, New Jersey -- Ingersoll—Rand Company: The Ingersoll-Rand Company established a museum of rock drilling machines "illustrating principal steps in rock drill development from 1871 to the present" (21, p. 121). The unsigned remarks found on the returned card were: "lack of space ... some of the drills are on loan to the Colorado School of Mines, the balance to the
Smithsonian in Washington, D.C."

New York, New York -- American Telephone and Telegraph Company: The Bell System Historical Museum, established in 1913 "brought together small accumulations of the several associated companies of the telephone system" (21, p. 124). The reply to the survey contained this information: "Space required for current work."

Rochester, New York -- Taylor Instrument Company: Apparently, the Taylor Instrument Company no longer maintains a museum. The man who had been in charge of the museum, established in 1925, had left their employ as stated on the returned postal card (see Appendix D).

Cincinnati, Ohio -- The Rudolph Wurlitzer Company: A collection "was made by Rudolph Wurlitzer during travels in Europe. Includes Hyer collection purchased at Cologne, 1927 which was established in 1892" (21, p. 143). From the company president, R. C. Rolfing (99), came this reply: "We have no exhibit such as you mentioned in your letter. Many years ago, the company had an exhibit of old pianos but this was discontinued during the late '20s."

Tiffin, Ohio -- The Tiffin Glass Company: In 1942, the then existing United States Glass Company was completing a project, a collection of American made glass, but the war years and the post war period brought about
peculiar circumstances whereby the collection dwindled and was lost. In an interview with the chairman of the board of the present company, The Tiffin Glass Company Incorporated, this information was provided: "The Tiffin Glass Company, a subsidiary of The Continental Can Corporation, hopes to collect and reproduce the priceless pieces for another collection."

Toledo, Ohio -- The Toledo Scale Company -- "Replicas, showing man's interest in measuring the force of gravity and tracing the development of the modern scale, provided the basis for a museum established in 1941 by the Toledo Scale Company" (21, p. 145). No answer from this company was received by mail but a visit to Toledo resulted in the answer that: "Space costs $25.00 per square foot. The display was gradually removed from the main offices and is now stored in the engineering quarters awaiting final o.k. from the people at the Ford Museum in Dearborn and eventual shipment to this museum" (92).

Erie, Pennsylvania -- Hammermill Paper Company -- The Hammermill Paper Company "established a museum that contained mechanical dioramas of papermaking processes with motor driven units" (21, p. 147). The advertising and sales promotion director in the person of Robert D. DeVitt (90) sent this information:
We wish we could be of more assistance to you in your worthwhile project, the study of company museums; but I confess that we do not have a large or extensive company museum of our own.

Our efforts have been in the educational and institutional fields of endeavor, and through the medium of television, to bring the story of papermaking to the general public. Accordingly, I would deem your trip impractical since we have so little to offer. But, again, we wish we could have given you a more favorable answer.

Pittsburgh, Pennsylvania -- H. J. Heinz Company:
The house "Where We Began" was the heritage of the H. J. Heinz Company established as a sort of museum in 1904. "This is where the founder had a small residence in which he had started business at Sharpsburg, Pennsylvania" (21, p. 152). Mr. Thomas H. McIntosh (97), Director of Public Relations, sent this information:

I believe that you refer to the so-called Little House "Where We Began" which was once located at our Pittsburgh headquarters. This was our original Heinz homestead where our founder processed his first food products and from whose truck gardens he obtained his first raw products. This structure was moved, at least a decade ago, to the Henry Ford Museum and Greenfield Village Complex at Dearborn, Michigan, where it is open to the public today. I understand that there are a few artifacts on display at the new location, but nothing that would warrant serious research.

Seattle, Washington -- Northwestern Mutual Fire Association: The Northwestern Mutual Insurance Company established an historical exhibit in 1939. "It includes records and documents relating to the company's beginnings
in fire insurance business" (21, p. 155). Robert Hitchman (93) forwarded this information:

We were listed in Company Museums because we did maintain a display of historical material in the lobby of our executive floor. However, with remodeling some fifteen years ago, this display was eliminated and the material placed in storage. It is probable that eventually a number of display cases for historical items will be worked into our plans.

Winnipeg, Manitoba, Canada -- Hudson's Bay Company: A Hudson's Bay Historical Exhibit was created in 1922; however, a returned instrument carried this information: "Discontinued 1960, collection presented to Canadian Government for display at Lower Fort Garry National Historic Park near Winnipeg."

Among the reasons cited for discontinuing their museums, seven of the twenty-one companies which comprised this group noted the lack of space or a decision to use display space for another purpose. While six companies had donated their display material to large museums such as the Smithsonian and Henry Ford Museums, six others gave no explanation for discontinuing their museums. One museum was destroyed by fire and another had its collection dwindle through peculiar circumstances. Only a few of the companies that replied, expressed an intention to re-establish a museum in the future.
**Museums Under New Control**

Five of the responses received indicated that the museums no longer were controlled by the company. Listed below according to state are these museums accompanied by their former and present controlling body.

**Colt Museum, Connecticut -- Colt's Patent Fire Arms Manufacturing Company -- presently is:** (in)

Connecticut State Library  
Capitol Avenue  
Hartford, Connecticut

The Pratt and Whitney Company Foundation offered the Colt collection to the state in 1956 and it was accepted by the Connecticut State Legislature in 1957.

**DuPont Museum, Delaware -- E. I. DuPont de Nemours and Company -- presently is:**

The Hagley Museum  
Greenville  
Wilmington, Delaware

The Hagley Museum was chartered in 1952 under the name of Eleutherian Mills-Hagley Foundation but it still maintains strong ties to the DuPont Company.

**Old Edison Laboratory, New Jersey -- Thomas A. Edison, Incorporated -- presently is**

Edison National Historic Site  
Main Street and Lakeside Avenue  
West Orange, New Jersey
An initial change of control was made in 1948 to the Thomas Alva Edison Foundation. In 1955 the collection was presented to the National Park Service, United States Department of the Interior.

Eastman Kodak Company Collection, New York -- presently is:

George Eastman House, Inc.
900 East Avenue
Rochester, New York

In 1948, the collection was transferred to the control of an educational corporation chartered by the Regents of the State of New York.

Railway Historical Collection, Virginia -- Norfolk and Western Railway Company -- presently is:

Roanoke Transportation Museum
Roanoke, Virginia

The museum, formerly controlled by a company, is now operated by the city.

The theme behind the transfer of control and preservation of the museums described above emphasizes the belief that they contain a heritage which belongs to the people. The change from control by a private company to control by a foundation or public agency indicates an expressed desire to share the museum materials with a greater number of people.
Additional Museums

In order to determine the existence of company museums not included in Coleman's 1943 listing, examination was made of The Museum Directory of the United States and Canada (18), Museums U.S.A. (42), and miscellaneous literature. As a result of searching these sources and obtaining suggestions made by persons in the museum field, a list of an additional fifteen museums was obtained. Again, a postal card instrument (Appendix C) was used, this time with a letter of transmittal, to determine the present status of each museum. Returns for these fifteen museums indicate that only two no longer exist. Therefore, the population for the study was increased by thirteen museums. (A list of the additional museums investigated appears in Appendix D).

Thus, the progress of the study has meant many additions as well as subtractions in the number of museums under study. A discussion of the demise of the two museums eliminated from the list of additional museums is appropriate here.

Pewabic Pottery Company, Michigan --

Collection
10125 East Jefferson Street
Detroit, Michigan

Soon after its establishment in 1900, the Pewabic Pottery Company developed a collection which served to
display its artistic manufacture of ceramic wares. Examples of its work are found on and in many buildings in the metropolitan area of Detroit. An important development in this company's growth was the creation of a shimmering mother-of-pearl blue glaze not duplicated by any other potter. This glaze was used in the decorative tile in the crypt chapel of the National Shrine of the Immaculate Conception in Washington, D. C.

Early in 1956 the pottery collection was presented to Michigan State University. Shortly afterward, the entire complex, including the factory (a three story Swiss chalet), and the ground on which it stands was bequeathed to the University.

National Cash Register, Ohio --
Collection and Carillon Park
Main and "K" Streets
Dayton, Ohio

Some years ago (an exact date could not be obtained -- possibly in the late 1940's), National Cash Register maintained a few displays in their Engineering Building. Since this time, the displays have been placed in a basement storage area along with patented models and other inventions related to the company's products. Today, the only evidence of these displays can be found in one of the buildings in Carillon Park. A display there shows a layout of all the parts that compose a cash register. The
park contains memorabilia of Dayton including a full size model of the Wright Brothers' plane, an Ohio canal lock, Kettering's electric starter, and other items not directly related to National Cash Register.

Although the models are not on exhibit, the value of maintaining patent models is portrayed in the following anecdote: Mr. Richard P. Keys (95), curator of the Dayton Power and Light Museum, sought two cash registers of contrasting styles for his museum. Not awarded his first choices, Mr. Keys later could have seen them at the New York World's Fair of 1964-1965 since it seems that his interest in them made their value more apparent to NCR personnel.

Review of the Population

Combining the eighty-three museums from Coleman's (21) list with the list of fifteen additional museums which was compiled, the total number of museums investigated in the study is ninety-eight. The returns for the surveys conducted upon all these museums appears in Table 4.

A study was made of the five museums which had changed control and the twenty-three museums which had been discontinued. As was stated earlier, the five museums, formerly under company control had changed to control by a foundation or public agency. A compilation of reasons for discontinuing the twenty-three museums to which this
<table>
<thead>
<tr>
<th>Type of Response</th>
<th>Number of Responses</th>
<th>Percentage of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, the museum exists</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>No, the museum does not exist</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>Museum exists but not under company control</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Card returned to sender</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>No reply</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>98</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
occurred appears in Table 5.

The museums no longer in existence and museums which have changed from company control account for twenty-eight museums or twenty-nine per cent of the population of museums of industry reviewed.

Selection of the Sample

From the forty-three museums of industry whose existence had been established, a sample of seventeen museums or forty per cent of the population was drawn. Geographic factors influenced the availability for study; however, there is no reason to indicate that the seventeen museums investigated which are drawn from eight states, differ considerably from the remainder of the population.

Following is a list, by state, of museums of industry which are known to exist as a result of surveys made during this study. Museums which are used in the sample are marked by an asterisk.

California

Wells Fargo Bank and Union Trust Co.
Wells Fargo Historical Collection
Market and Montgomery Streets
San Francisco; 94120

Colorado

The Denver and Rio Grande Western Railroad Co.
Railroad Archives and Museum
Lewis Building, Denver
<table>
<thead>
<tr>
<th>Reasons Cited</th>
<th>Number Giving Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space problems</td>
<td>8</td>
</tr>
<tr>
<td>Material donated to larger museum</td>
<td>7</td>
</tr>
<tr>
<td>Peculiar circumstances</td>
<td>2</td>
</tr>
<tr>
<td>No explanation given</td>
<td>6</td>
</tr>
</tbody>
</table>

23
Connecticut

The Waterbury Button Co.
Museum
Waterbury

Illinois

Abbott Laboratories
Historical Collection
North Chicago; 60064

Kentucky

* Barton Distilling Co.
  Barton Museum of Whiskey
  Barton Road., Bardstown

Indiana

Lincoln National Life Insurance Co.
Lincoln National Life Foundation
Museum and Archives
1301 S. Harrison Street
Fort Wayne, 46801

Maryland

* The Baltimore and Ohio Railroad Co.
  The Baltimore and Ohio Historical Collection
  Mount Clare Station
  Pratt and Poppleton Streets
  Baltimore, 21201

McCormick and Co., Inc.
McCormick Tea Museum
Light and Conway Streets
Baltimore

Massachusetts

Crane and Co., Inc.
Crane Museum
30 South Street
Dalton, 01226
* Worcester Pressed Steel Co.
  John Woodman Higgins Steel Armory
  100 Barber Avenue
  Worcester, 01606

Michigan

National Bank of Detroit
 Collection
  Detroit

* Baker Furniture Inc.
  Baker Museum for Furniture Research
  East Sixth Street
  Holland 49423

* Baker Furniture Inc.
  Baker Museum and Craft Shop
  Exhibitor Building
  Grand Rapids

Nebraska

Union Pacific System
  Union Pacific Historical Museum
  Union Pacific Headquarters Building
  Omaha

New York

* Corning Glass Works
  Corning Glass Center
  Corning

The Home Insurance Co.
  The H. V. Smith Museum
  59 Maiden Lane, New York

International Business Machines Corporation
  Art Museum
  590 Maiden Lane, New York 10022

Metropolitan Life Insurance Co.
  Metropolitan Archives
  1 Madison Avenue, New York 10010
New York Life Insurance Co.
   Historical Exhibit
   51 Madison Avenue, New York 10010

The John H. Finley Memorial Museum
   of the Recorded Word
   229 West 43rd Street, New York 10036

The New Syndicate Co.
The News Lobby Exhibit
   220 East 42nd Street, New York 10017

Western Electric Company, Inc.
Collection
   195 Broadway, New York 10007

Western Union Telegraph Co.
   Western Union Engineering Museum
   60 North Hudson Street, New York 10013

The Arrow Division of Cluett, Peabody and Co., Inc.
   Collar Museum
   433 River Street
   Troy, 12180

Ohio

* Goodyear Rubber Co.
   Goodyear Rubber Exhibit
   1144 East Market
   Akron

* Chillicothe Newspapers Inc.
   Exhibit of Printing
   50 West Main Street
   Chillicothe 45601

Cincinnati Milling and Grinding Machine Co.
   Old Shop of 1884
   Marburg Avenue, Cincinnati

* General Electric Co.
   Nela Park, The University of Light
   Cleveland

The Sherwin-William Co.
The Sherwin-William Collection
   101 Prospect Avenue, N.W.
   Cleveland 44101
* Union Fork and Hoe  
Durell Farm Museum  
500 Dublin Avenue  
Columbus

* Dayton Power and Light Co.  
Museum  
1900 South Broad Street  
Dayton

* The Hoover Co.  
Models and Samples  
101 Maple East, North Canton

* Owens-Illinois  
Libbey Glass Display  
Ash and Buckeye Streets  
Toledo  43601

**Pennsylvania**

Swigart Associates Inc.  
Museum Park  
409 Penn Street, Huntingdon

* Insurance Company of North America  
Insurance Company of North America Collection  
1600 Arch Street, Philadelphia  19101

The Mutual Assurance Co.  
The Mutual Assurance Company Museum  
240 South Fourth Street, Philadelphia  19101

* The Philadelphia Contributionship for Insurance  
The Philadelphia Contributionship Museum  
212 South Fourth Street, Philadelphia  10101

Fisher Scientific Co.  
Fisher Collection of Alchemical and Historical Pictures  
711 Forbes Street, Pittsburgh  15219

**Vermont**

Vermont Marble Co.  
Marble Exhibit  
Proctor
Following the establishment of the population and the sample, attention is directed toward procedures for studying the museums to be visited. Development of this aim will occur in the subsequent section.

**Methods of Instrumentation**

In order not to "just visit" or "wander through" the numerous museums of industry, a structure that would provide a vantage point for critical evaluation was developed. It was deemed necessary to approach this aspect of the study in a manner that would facilitate an effective analysis of museums under study.

The culmination of the pilot project provided an understanding of museums of industry upon which the information gathered from the sample could be built. Based on the knowledge gained from the preliminary studies,
Guides for further study were constructed.

Guides

Guides were developed with the purpose of minimizing subjectivity in evaluation as well as establishing a totality of structure for museum comparisons. The following set of guides was developed: Structural, Environmental, Interview, Tour (observational), Photographic-photo grouping. (These guides are presented in Appendix E.)

The outline for the structural guide is based upon the presentational form used by Coleman, and attempts to compile general information about the museum. Besides requesting information on name, address, staff, quarters, hours and exhibits, this section investigates library and research facilities along with reviewing available literature and annual attendance at the museum.

Ancillary information touching on the physical setting of the museum and its location within a particular area are collected in the environmental guide. Aspects of the museum's accessibility to visitors and its physical attachment to an industry are also examined.

In order to supply an orientational framework before touring the museums, an interview guide was determined. Designed to reveal the salient characteristics
of the museum from the curatorial point of view, the interview questions deal with museum development, purposes and objectives, display techniques, educational endeavors, resources, community relationships, and visitor characteristics. The information requested is based upon questions formulated at the onset of the present study.

As a measure for evaluating the directives and classifications presented in each museum, the tour guide is devoted to analyzing content and display attributes. Underlying the points in this guide is a consideration of the educational experiences offered and the ramifications of a particular industry manifested by a museum.

Although, strictly speaking, no detailed photographic guide was developed, as an aid to recall specific museum visits and to diminish tedious note taking, both black and white and color photography was utilized. (A number of black and white photographs representing this technique comprise the later portion of Appendix E.)

Contact with the Sample

Preparatory to visits of museums composing the sample, a letter of transmittal (see Appendix F), was sent to each museum. The letter describes the study of museums of industry as a contribution to the study of industry in industrial arts education and emphasizes the
need to visit prime sources, the museums, for data. Additionally, the letter requests permission to interview the curator, visit the museum, review any literature pertaining to the museum, and take pictures.

A postal card, (Appendix F), was enclosed to facilitate prompt reply. The contents of the card include:

Name and address of the company.
Person to contact.
Day, time, and date suitable for visit.
Additional space for comments.

Upon receipt of the postal cards, a schedule for visitation of the selected museums of industry was derived.

Concentrating sharply on the specialized perspective of museums of industry, preparation for detailed study of a sample drawn from the verified museum population is related in this chapter. In the pilot project, investigation is aimed at determining the existence of museums appropriate to the study. A survey of Coleman's (21) 1943 list of eighty-three museums established the viability of thirty museums or thirty-six per cent of the original group. Twenty-one museums from Coleman's list were found to no longer exist and five others exist under control changed to other than that of a company.

Culling fifteen additional museums of industry from various sources, the existence of thirteen of these was verified. Therefore, the total number of museums
considered was brought to ninety-eight and the number
definitely known to exist became forty-three, or forty-
four per cent of the initial population.

After ascertaining the population, a sample of
seventeen museums was selected for further study and
guides to collect information via surveys, interviews,
tours, and photographs were devised. Objectives in con­
structing guides were drawn from the questions prompting
the study and were designed to reduce subjectivity.

Concluding the chapter with the standardization
of a form used to contact museums included in the sample,
the construction of the vehicles for revealing the con­
tents of museums to be examined was completed. When, in
the following chapter, museum operating methods are
described and compared so that the most advantageous
patterns become apparent, some of the results of the
procedural guides developed will be evidenced.
CHAPTER VII

DEVELOPMENTAL PATTERNS

Foundational aspects dealing with general characteristics of museums are treated in this chapter. Environmental and locational aspects, initial and developed collecting techniques, preservation of artifacts, attendance and admission policies, rather than the specificities of display which shall be detailed in the following chapters, are outlined here. The approach taken in this chapter is to search out the rationale for each museum's existence and to determine the utilization of the museums reviewed.

Location

Several decades ago the location of a museum might have been the determining factor as regards the number of its visitors. Today, accessibility by auto and ribbons of fine roads in the United States makes a trip to any museum hardly more hazardous than driving to the neighborhood shopping center. Indeed, as will be evidenced later in this chapter in the section on attendance, the Corning Museum which is located in a rather sparsely populated area of New York surpasses all other museums of industry in the number of persons it attracts annually.
Since our nation had its beginnings along the winding shores of the Atlantic Ocean, it is quite logical that the historic centers of many industries should be located along the East Coast. However, with the country's westward expansion, newly developed industries were established and, along with the people they attracted to them, contributed additional chapters for the heritage of future generations. For the most part, it is among the industries located in large metropolitan areas that museums of industry were developed. (On the map of the United States in Appendix G notations are made of the locations of all museums of industry which were contacted or visited in the course of this study.)

Twelve of the seventeen museums sampled are located in areas with a population above 100,000 and only one museum is located in an area of less than 10,000 persons. Within the areas, eight museums are located in an industrial district and six museums in a business district as shown in Table 5.

As is evidenced in Table 7, twelve of the museums studied are housed in a "section within" the company building. Two museums are located in buildings attached to the company building and three museums comprise separate buildings. Of the seventeen museums reviewed, only two are constructed of wood while the others primarily
### TABLE 6

**CHARACTERISTICS OF MUSEUM LOCATION**

<table>
<thead>
<tr>
<th>Museum</th>
<th>Population of Area (1950)</th>
<th>Business District</th>
<th>Industrial District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Museum &amp; Craft Shop</td>
<td>202,379</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Baker Museum for Furniture Research</td>
<td>24,777</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltimore &amp; Ohio Historical Collection</td>
<td>939,000</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Barton Museum of Whiskey History</td>
<td>5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chillicothe Printing Exhibit</td>
<td>25,000</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Corning Glass Center</td>
<td>17,085</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Dard Hunter Museum</td>
<td>48,411</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Dayton Power and Light</td>
<td>263,332</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Durell Farm Museum</td>
<td>471,316</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Goodyear Rubber Exhibit</td>
<td>290,351</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Higgins Armory (John Woodman)</td>
<td>186,000</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Hoover Models &amp; Samples Room</td>
<td>113,631</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Insurance Company of North America Collection</td>
<td>2,002,512</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Libbey Glass Display</td>
<td>318,003</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Nela Park Institute of Light</td>
<td>810,858</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohio Bell Pioneer Museum</td>
<td>810,858</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Philadelphia Contributionship Museum</td>
<td>2,002,512</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
## TABLE 7
MUSEUM BUILDING CHARACTERISTICS

<table>
<thead>
<tr>
<th>Museum</th>
<th>Physical Attachment with Company Type of Building</th>
<th>Type of Structure</th>
<th>Museum Floor Space (in sq. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Museum and Craft Shop</td>
<td>Section Within</td>
<td>Brick</td>
<td>6,100</td>
</tr>
<tr>
<td>Baker Museum for Furniture Research</td>
<td>Attached</td>
<td>Wood</td>
<td>6,500</td>
</tr>
<tr>
<td>Baltimore and Ohio Historical Collection</td>
<td>Separate Building</td>
<td>Brick and Steel</td>
<td>50,000</td>
</tr>
<tr>
<td>Barton Museum of Whiskey History</td>
<td>Attached</td>
<td>Wood</td>
<td>2,400</td>
</tr>
<tr>
<td>Chillicothe Printing Exhibit</td>
<td>Section Within</td>
<td>Brick</td>
<td>100</td>
</tr>
<tr>
<td>Corning Glass Center</td>
<td>Separate Building</td>
<td>Steel and Glass</td>
<td>7,000</td>
</tr>
<tr>
<td>Dard Hunter Museum</td>
<td>Section Within</td>
<td>Brick and Stone</td>
<td>1,500</td>
</tr>
<tr>
<td>Dayton Power and Light</td>
<td>Section Within</td>
<td>Brick</td>
<td>3,200</td>
</tr>
<tr>
<td>Durell Farm Museum</td>
<td>Section Within</td>
<td>Brick</td>
<td>600</td>
</tr>
<tr>
<td>Goodyear Rubber Exhibit</td>
<td>Section Within</td>
<td>Brick</td>
<td>960</td>
</tr>
<tr>
<td>Higgins Armory (John Woodman)</td>
<td>Section Within</td>
<td>Steel and Glass</td>
<td>16,600</td>
</tr>
<tr>
<td>Hoover Models and Sample Room</td>
<td>Section Within</td>
<td>Brick</td>
<td>900</td>
</tr>
<tr>
<td>Museum</td>
<td>Physical Attachment with Company Building</td>
<td>Type of Structure</td>
<td>Floor Space (in sq. ft.)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------------------------</td>
<td>------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Insurance Company of North America Collection</td>
<td>Section Within Brick and Stone</td>
<td>4,000</td>
<td></td>
</tr>
<tr>
<td>Libbey Glass Display</td>
<td>Section Within Brick</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Nela Park Institute of Light</td>
<td>Separate Building Brick</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Ohio Bell Pioneer Museum</td>
<td>Section Within Brick</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Philadelphia Contributionship Museum</td>
<td>Section Within Brick</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>
are built of brick or, in a few cases, of steel. Seven museums have a floor space between 100 and 1000 square feet, four museums consist of 1000 to 5000 square feet, and five museums contain more than 6000 square feet of floor space.

**Formation**

Business and industry's embarkation into the museum field is a twentieth century phenomenon. The inception of museums of industry resulted from a variety of interests. In many instances a museum was the fruit of a private search and investigation by the leaders of companies, the president, who collected company artifacts or nourished a curiosity in a specialized field. Within a company these museums often resulted from the "olde attic collection," examples of the company's products which were saved for reasons other than developing a formal museum. Sometimes the stimulus to initiate a display or museum was the need to celebrate a centennial or lesser anniversary, or to participate in a fair or exposition. The museums of industry, for the most part, are not momentary creations, but are systematic reference collections of instructive exhibits for both employees and visitors.

The youthfulness of the nation has permitted limited historic relevance for the development of museums
of all sorts, particularly museums of industry. Thus it is proper to point out that these specialized museums were not established until after the turn of the century. Table 8 chronicles the establishment of companies and museums developed under company auspices.

A review of Table 8 reveals that of the seventeen museums studied, only four were established before the company represented was twenty-five years old. Five museums were not established till the company represented was in existence one hundred years or longer. The collecting ambitions of the company president alone account for almost half (eight) of the museums established whereas public relations, advertising, and engineering departments were involved in forming seven of the museums. Only two companies requested aid from an authority not with the company. (In each case, Dard Hunter, an expert on paper and paper-making, was consulted.)

The distinction that must be made regarding the establishment of a museum complex centers around who really developed the museum. The control of a company lies in the hands of the leadership in a given enterprise. Consequently, the development of a museum, whatever the underlying reason, usually comes from the office of the president. The delegation of responsibility for completing the work, however, may be given to others.
### TABLE 8
**FORMATION OF MUSEUMS OF INDUSTRY**

<table>
<thead>
<tr>
<th>Company</th>
<th>Date Company was Established</th>
<th>Years Before Museum Established</th>
<th>Date Museum was Established</th>
<th>Developer of Museum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Museum and Craft Shop</td>
<td>1890</td>
<td>51</td>
<td>1941</td>
<td>President</td>
</tr>
<tr>
<td>Baker Museum for Furniture Research</td>
<td>1890</td>
<td>63</td>
<td>1953</td>
<td>President</td>
</tr>
<tr>
<td>Baltimore and Ohio Historical Collection</td>
<td>1827</td>
<td>108</td>
<td>1935</td>
<td>Advertising Manager</td>
</tr>
<tr>
<td>Barton Museum of Whiskey History</td>
<td>1889</td>
<td>68</td>
<td>1957</td>
<td>President</td>
</tr>
<tr>
<td>Chillicothe Printing Exhibit</td>
<td>1800</td>
<td>142</td>
<td>1942</td>
<td>Former Editor</td>
</tr>
<tr>
<td>Corning Glass Center</td>
<td>1851</td>
<td>100</td>
<td>1951</td>
<td>Public Relations Dept.</td>
</tr>
<tr>
<td>Dard Hunter Museum</td>
<td>1929</td>
<td>25</td>
<td>1954</td>
<td>Authority</td>
</tr>
<tr>
<td>Dayton Power and Light</td>
<td>1907</td>
<td>51</td>
<td>1958</td>
<td>President</td>
</tr>
<tr>
<td>Durell Farm Museum</td>
<td>1910</td>
<td>45</td>
<td>1956</td>
<td>President</td>
</tr>
<tr>
<td>Goodyear Rubber Exhibit</td>
<td>1898</td>
<td>44</td>
<td>1942</td>
<td>Public Relations Dept.</td>
</tr>
<tr>
<td>Company</td>
<td>Date Company was Established</td>
<td>Years Before Museum Established</td>
<td>Date Museum was Established</td>
<td>Developer of Museum</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Higgins Armory (John Woodman)</td>
<td>1907</td>
<td>14</td>
<td>1928</td>
<td>President</td>
</tr>
<tr>
<td>Hoover Models and Sample Room</td>
<td>1908</td>
<td>16</td>
<td>1924</td>
<td>Engineer Department</td>
</tr>
<tr>
<td>Insurance Company of North America Collection</td>
<td>1792</td>
<td>134</td>
<td>1926</td>
<td>Public Relations Dept.</td>
</tr>
<tr>
<td>Libbey Glass Display</td>
<td>1880</td>
<td>58</td>
<td>1938</td>
<td>President</td>
</tr>
<tr>
<td>Nela Park Institute of Light</td>
<td>1892</td>
<td>21</td>
<td>1913</td>
<td>Public Relations Dept.</td>
</tr>
<tr>
<td>Ohio Bell Pioneer Museum</td>
<td>1921</td>
<td>37</td>
<td>1958</td>
<td>Public Relations Dept.</td>
</tr>
<tr>
<td>Philadelphia Contributionship Museum</td>
<td>1752</td>
<td>174</td>
<td>1926</td>
<td>President</td>
</tr>
</tbody>
</table>
The origins of museums of industry are fortified by the lives and interests of the founders. Encounters with curators or others in charge of museums facilitated the compilation of warm and sometimes lambent accounts of museum formation.

The two Baker Museums are the results of efforts by the president and founder of the company. The late Mr. Hollis Baker, Sr. originated his collection shortly after he completed his apprenticeship under the watchful eye of a master cabinetmaker, his father. Mr. Baker's initial start in the furniture field came with his purchase of a sash and door factory in 1890. His well learned skills not only enabled him to produce masterpieces of design, but endowed him with the ability to recognize skill and beauty in period furniture pieces. His first purchase of an antique led him to a lifetime pursuit which resulted in the accumulation of over one thousand additional pieces. The first antique piece that caught his eye was discovered in a chicken house on the farm of a friend. It had been covered with dirt and nests and was the first in a life-long, world-wide search for pieces that would become the inspiration for design and reproduction. This "chicken house" piece is now a dominant element of the Georgian room in the Holland Museum.
The Barton Museum of Whiskey History results from the efforts of Mr. Oscar Getz, president, who has spent his lifetime gathering pieces to make up the collection. Display techniques for the collection of artifacts were drawn up by a consultant, Mr. Lester Bridaham, Museum Director of the Chicago Historical Society, and carried out by the company's maintenance staff.

As with the Baker museum, a museum was developed primarily for company use in Dayton, Ohio, by the Dayton Power and Light Company. Wanting to give his fellow employees an opportunity to understand the operation and structure of the company, its president set up a week long orientation program. In order to teach the employees about the company, Mr. R. Keyes (95) director of the orientation and curator, developed a number of instructional materials. As the materials multiplied, he suggested that the company establish a museum or display area for company artifacts. When the new service building was constructed, a large room was set aside in the basement for the museum. Presently, any employee can spend one week in this orientation program where group size is limited to sixteen persons for any given week.

Both the Durell Farm Museum and the Higgins Armory are the results of specialized collecting by
their presidents. Mr. Durell, president of the Union Fork and Hoe Company, is a member of the Early American Industries Association devoted to the study and collection of hand craft tools used in America prior to the 1820's. This period in America was dominated by agricultural and survival tools used in and around the farm of yesteryear and these are reflected in Mr. Durell's collection.

John Woodman Higgins' fascination, as a boy, with the "knights of olde" takes on adult expression in his collection of protective armor and related weapons depicting three thousand years of metal craftsmanship. The setting for his museum in Massachusetts might well be similar to, if not a replica of, a Gothic castle of an era long past.

For reasons other than amassing a collection and presenting it to employees or visitors, a number of museums of industry came into being. The Corning Glass Center was one such development. On the one hundredth anniversary of the company's birth, the company officials set out to erect a monument to their developments and achievements in glass and drew together their separate entities -- a museum, the Corning Museum of Glass, which is under the Board of Regents of New York State, the Hall of Science, and the Steuben Factory where work in glass is carried on by skilled craftsmen. The Insurance
Company of North America and The Philadelphia Contributionship are two museums that were created at the insistence of their presidents to commemorate the Sesquicentennial celebration of the founding of our country in Philadelphia in 1776.

The Ohio Bell Telephone Company's museum was established at the time of a National Telephone Conference. The Chillicothe Printing exhibit was erected when new quarters for the company were built after the merger of the two existing newspapers. Pride in the new building, a replica of the first Ohio State House, was coupled with the eminence of one of the newspaper owners, Dard Hunter, a man renown for his knowledge of printing and paper-making, and the exhibit was formed.

The Libby Display (now Owens-Illinois), as well as the Baltimore and Ohio Transportation Museum were developed and eventually given permanent quarters after they had been displayed at the Chicago and St. Louis World Fairs respectively. The Libby Display was developed by the president of the company while the B & O display was developed by the company's advertising manager. Both the Nela Park collection and the Goodyear Rubber exhibit were established by the Public Relations Departments of their respective companies. The Hoover Samples and Models Display shows, in their engineering building,
a variety of items leading up to the development of the first vacuum cleaner and covers nearly four and a quarter centuries of cleaning developments. The collection was made to investigate patents and their impact upon the design of vacuum cleaners.

Formation of a museum is not complete until the enterprise has a name assigned. Some companies are reluctant to use the term "museum," in designating their materials and prefer the less awesome titles of "collection" or "exhibit." Whatever choice is made in this regard, the important factor for consideration is that the label applied gives indication of the contents that are displayed. While the Baker Museum for Furniture Research's very name conveys to the potential visitor an idea of what it offers, the Baker Museum and Craft Shop does not. Of course, supplemental verbiage could become unwieldy but the addition of a word or two which would clarify the contents of a museum deserves consideration. The Baltimore and Ohio Transportation Museum, strictly dedicated to rail transportation, might add rail or railroad to its title. The Chillicothe Printing Exhibit which does not include any item more recent than that of a 1700 vintage might refer to this fact in their name since their present operation, that of the newspaper business, is not depicted in their displays. The Durell
Farm Museum which is concerned only with the time span between 1790 and 1820 might well call their museum the Durell Early American Farm Museum.

Whatever the details in the formation of a museum or the name assigned to it, the next concerns become those of increasing and preserving the collection.

Accession

The collection of materials for a museum, in many instances, is a corollary to the "fox and the hunt" tale. The directive to collect, as followed by many company leaders in their travels, was perhaps a more enjoyable pursuit than the establishment of permanent quarters for their quarry. Seven of the museums studied were developed as a result of extensive travels. They are: (1) Baker Museum and Craft Shop, (2) Baker Museum for Furniture Research, (3) Barton Museum of Whiskey History, (4) Chillicothe Printing Exhibit, (5) Dard Hunter Collection at the Institute of Paper Chemistry, (6) Durell Farm Museum, and (7) John Woodman Higgins Armory.

In the act of gathering materials for a collection, there often is a story of finding just one more piece, a never ending quest for the Holy Grail. Sometimes this zest is transmitted from one generation to another; often, and sadly so, it is terminated by a new generation.
or a change in command. The continued accession of pieces is dependent upon not only the use of the museum but the outlay of monies and space by the company concerned. Continuance also is dependent upon a historic awareness and utilization of the materials possessed.

There are, at present, four museums among those studied whose exhibits are rather static. Included here are: Baltimore and Ohio Transportation Museum, Libbey Glass Display, Insurance Company of North America Collection, and Philadelphia Contributionship Museum. The very nature of the displays at these museums limits the accession of additional artifacts and for their consideration, only a few, if any, additional pieces exist. The Baltimore and Ohio Transportation Museum is rather complete at present although innovations in rail transportation may contribute to the obsolescence of present products and necessitate an increase in breadth among materials displayed there. That Libbey Glass Display lacks space is much to the dismay of Mrs. Denny (89), archivist, who remarked: "These pieces are so beautiful... I have already spent hours removing the dust that collects on them... I am sorry they cannot be stored where they can be seen." Once or twice a year she replaces pieces on exhibit with some of the pieces in storage. The more historic pieces have been given to
the Toledo Art Museum where they are on permanent display. Most notable of the exquisite pieces is the Libbey Punch Bowl of cut lead glass. Made for the St. Louis Exposition of 1904, it is a ten gallon, one hundred ten pound masterpiece of craftsmanship.

The Insurance Company of North America has collected materials of the early nineteenth century that are primarily oriented to marine and fire insurance. Theirs is the largest collection of fire marks in the world. Two or three times as many items as displayed are in storage and some of these items are used in traveling exhibits to agencies and museums. The Philadelphia Contributionship Museum now contains only a score of items, all of which are directly related to the early years of the company. Interest in this collection has dwindled as attendance records indicate.

The importance of what accessions are made depends upon what use is to be made of the museum. The first collection must be conceptualized as a beginning and not a finished product. The following museums fall into this realm: (1) Corning Glass Center, (2) Dayton Power and Light Museum, (3) Goodyear Rubber Exhibit, (4) Hoover Models and Samples Room, (5) Nela Park Institute of Light, and (6) Ohio Bell Pioneer Museum.
The Corning Glass Center (Hall of Science), portrays the basic characteristics of glass as part of their display, but as new adaptations for glass and glass products are developed, they place these on display. A similar situation exists at Goodyear where new applications of rubber will make their display grow. Probably, in the not too distant future, rubber will be totally obsolete as synthetics replace it. Nela Park's display of lamps has been radically changed by the new fluorescent fixtures available. With new products, their demonstrated applications will also change. Ohio Bell's display has changed and will be altered further with the anticipated tele-talk vision and additional safety devices for their employees.

Dayton Power and Light Museum acquires ten to twenty-five additions a year from wreckers, employees, and even visitors. Hoover's Models and Samples Room forms a display which is essential to the engineering department which utilizes comparison of all makes of cleaning apparatus to control checks on patents.

The Barton Museum, both Baker museums, and the Dard Hunter Museum are continually used by the companies and consequently must expand. The Durell Farm Museum continues to be infused with the vitality of Mr. Durell, its founder, who remains an active collector.
Preservation

The preservation of items in each of the museums under study is modified by a minimal staff often limited in professional training. When a museum of industry is compared to a "professional museum," the differences in available personnel are particularly noticeable.

Utmost care in the area of preservation has been taken by the Baker museums whose business is finishing and actually reproducing the items in their collections. The Baltimore and Ohio Railroad Company also have given much attention to maintenance of their pieces. Several clubcars and a locomotive which are displayed outside the roundhouse and are subject to the weather and jettisoned steam which is realistically directed through their operational systems require special repairs periodically.

Temperature and humidity control are essential to the preservation of many museum collections. Materials greatly affected by the catalytic action with air include paper and metal. The ancient piece of papyrus in the Chillicothe Printing Exhibit shows evidence of disintegration. (It probably should be imbedded in plastic or glass.) Signs of deterioration are obvious also in the yellowing and crumbling documents at the museum of The Insurance Company of North America and The Philadelphia Contributionship.
Coating the iron and steel pieces at the Higgins Armory seems to preserve those articles quite adequately. In the Hoover Models and Samples Room, an enamel coating has been successful in protecting the products displayed.

Since the "art of preserving" is intimately involved with the "art of collecting," special concern with the former area is necessary if present museums of industry are to flourish in the future. It is hoped that growth in both staff and knowledge of techniques for preservation will ward against the decline of company collections.

**Attendance and Admission**

The mobility of people has not only taken them away from the front porch swing, beyond the city limits, across the county line, to a neighboring state, but also it has taken them across the length and breadth of this country, around the world, and even toward the stars. For reasons often undiscerned, the city dwellers rush to the country and the country folk rush to the city, each in search of something to see. They seek not only something to see but something to learn, to acquire "culture." Man, it is said, is a rationalizer. Culture and an imagined or real learning experience allows man to more easily spend his time and money, to take a vacation, to relax for a week or two. As traveling has
increased, tourism has become a great business, and we now have thousands of tour agents who delight in providing a "full" package deal. The agents are well aware of company tours and free museums that pad a tour and give the appearance of furnishing additional monies worth. How many people really visit museums of industry? Table 9 provides the annual attendance for each of the museums studied.

By far the most visited museum of industry is the Corning Glass Center which comprises nine-tenths or 900,000 of the total attendance listed, whereas the least visited museum is that of the Philadelphia Contributionship which receives less than ten visitors per year. Apart from these two extremes, there is still an enormous difference noted in the attendance at Corning as compared with other museums of industry. Other than Corning, only four museums can boast an annual attendance of over 10,000 persons while four others fall in the 1,000 to 10,000 category. Five of the seventeen museums studied are visited by 100 to 500 persons yearly and two museums, including the Contributionship which has been mentioned previously, see less than 100 visitors annually.

Among the museums listed in Table 9 only two charge for admission. A small charge is made in both
### TABLE 9

ANNUAL ATTENDANCE AT MUSEUMS OF INDUSTRY

<table>
<thead>
<tr>
<th>Museum</th>
<th>Annual Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Museum and Craft Shop</td>
<td>4,000</td>
</tr>
<tr>
<td>Baker Museum for Furniture Research</td>
<td>5,000</td>
</tr>
<tr>
<td>Baltimore and Ohio Transportation Museum</td>
<td>30,000</td>
</tr>
<tr>
<td>Barton Museum of Whiskey History</td>
<td>25,000</td>
</tr>
<tr>
<td>Chillicothe Printing Exhibit</td>
<td>200</td>
</tr>
<tr>
<td>Corning Glass Center</td>
<td>900,000</td>
</tr>
<tr>
<td>Dard Hunter Paper Museum</td>
<td>1,500</td>
</tr>
<tr>
<td>Dayton Power and Light Museum</td>
<td>3,000</td>
</tr>
<tr>
<td>Durell Farm Museum</td>
<td>300</td>
</tr>
<tr>
<td>Goodyear Rubber Exhibit</td>
<td>12,000</td>
</tr>
<tr>
<td>Higgins Armory (John Woodman)</td>
<td>8,000</td>
</tr>
<tr>
<td>Hoover Models and Samples Room</td>
<td>50</td>
</tr>
<tr>
<td>Insurance Company of North America Collection</td>
<td>500</td>
</tr>
<tr>
<td>Libbey Glass Exhibit</td>
<td>100</td>
</tr>
<tr>
<td>Nela Park Institute of Light</td>
<td>25,000</td>
</tr>
<tr>
<td>Ohio Bell Album or Pioneer Museum</td>
<td>100</td>
</tr>
<tr>
<td>Philadelphia Contributionship Museum</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,014,760</strong></td>
</tr>
</tbody>
</table>
museums operated by the Baker Furniture Company because Mr. Hollis Baker Sr. felt that a charge would make visitors more appreciative of what he had collected. He noted that museums are not the sort of places that should be used "to come out of the rain."

Other museums provide additional explanations for the reasoning behind charging admission. The Science and Industry Museum in Seattle, Washington, began operations with an admission fee which they continued until their financial situation allowed its removal. In a two week period following dissolution of the fee, damage to both exhibits and rest rooms was sufficient to warrant reinstituting the admission charge. Since the return of the charge, they report no damage and have not been further plagued with vandalism. A point of consideration here is that both the Seattle Museum and the Center of Science and Industry in Columbus, Ohio have waived admission fees for school children who visit in supervised groups.

The Chicago Museum of Science and Industry charges no admission, but because of the financial assistance received from their concession stand where books and other articles are sold, they can continue to provide free admission. (They do, however, charge admission to several special exhibits in the museum.)
It must be realized that museums need money to heat, cool, and maintain their buildings, funds to preserve and add to their collections, and money to pay their curators and attendants. Many companies rent their museum quarters and estimate that floor space costs approximately $25.00 a square foot. As has been noted earlier, the expense of floor space along with the need to use museum space for other pursuits accounts for the demise of many museums of industry.

Museums have been established for a variety of unique and special reasons, ranging from the idealistic to the pragmatic. The founders, besides creating a monument to their work, shared a common objective of preserving valuable objects for subsequent generations to use in assessing their own progress or decline. In general, the appearance of a museum was initiated by leaders of stamina and foresight who pursued their goals while receiving little support.

Reflection reveals that some museums were begun with only one item. The first treasure might have been something particularly old or amazingly new, an object of sentiment or an article significant in a company's development. While the comparable size and value of one museum to another may appear to be disproportionate, the contribution of each museum to society cannot be easily
weighed and each seems to fulfill special needs.

Despite the simplicity of its beginnings, selective accession based upon a well developed plan of procedure can provide a firm ground for any museum. Many companies realized too late that they should have taken more care to save products they once manufactured or to preserve artifacts that can no longer be replaced. Operating a museum is a rather costly venture and in order for many of the museums examined to continue in their development the possibility of charging admission fees will probably need to be considered.

Thus, having considered elements of the foundation and growth of the museums under investigation, direction can now be pointed toward examination of the contents of each museum. A discussion of the display materials and media utilized will take place in the following chapter.
CHAPTER VIII

PROCEDURES OF PRESENTATION

Rather than its magnitude, the extent to which a museum communicates its aims truly determines whether it achieves or falls short of expectations. A visitor's dialogue with the museums' contents constitutes an excellent measure of its success or failure. This chapter delves into the contents, the media of presentation, that either inhibit or enhance the communication process for the museum visitor.

Content

The substance or body of knowledge preserved and displayed by company museums may distribute itself at almost any point on a continuum from specific to general. Such content may adopt a single point of view in an evolutionary, historical, or procedural approach, or it may combine these elements. Orientational aspects often are designed to intrigue rather than satiate a visitor's desire for knowledge in a particular area and the extensiveness and emphasis assigned to a collection may provide the vehicle whereby study is begun or fulfilled.
Orientation

In the amalgamation of a museum's collection, division into meaningful entities determines the influence and utility of a company's presentational efforts. As books are not read solely because of the attractiveness of their titles or covers, so, too, museums should not be visited because of incidental paraphernalia. The introduction to a book provides an orientation to its contents and allows the reader to develop his own relationship to the story; an introduction to a museum can establish the plot and permit the visitor to find his place in its setting.

Many specialized exhibits graphically depict history through the evolutionary development of products. Exceptions which demonstrate only limited evolution or completely omit this aspect are: the Baker Museum for Furniture Research, the Durell Farm Museum, the Libbey Glass Exhibit, the Insurance Company of North America, and the Philadelphia Contributionship Museum Room.

The historic evolution of rail transportation in the Baltimore and Ohio Museum proceeds from the 1829 Pioneer Horse Car and Tom Thumb, the first American built locomotive to operate on a commercial railroad, through Number 51, the first streamlined diesel locomotive (1937), and other full size models of both American and foreign
vintage. Lighting and rail displays parallel the time span of the rail car exhibits.

The Barton Museum not only displays representative distillation apparatus, both legal and bootleg, used in the 170 some years of spirit distillation in the United States, but also contains an extensive collection of unusual whiskey containers (in the shapes of bananas, fish, pretzels, baby bottles, etc.). Materials in the Chilli-cothe Printing Exhibit and the Dard Hunter Paper Museum at The Institute of Paper Chemistry illustrate important developments in paper making from beginnings in China during ancient times through early American printing in the 1800's.

The Corning Glass Center is composed of the Hall of Science under company auspices, the Glass Museum operated by the State of New York and the Steuben Factory managed by the Steuben division of Corning. Though the Glass Museum offers a chronologically arranged display of 3,500 years of glass making, the Hall of Science concentrates primarily on contemporary glass pieces.

Also taking an evolutionary approach is the Dayton Power and Light Museum whose display of products -- not their own as they deal only with services -- covers the improvement of energy-using devices and contrasts simultaneous developments of various products. Goodyear,
in its exhibit, portrays the evolutionary development of the tire, and while other products are shown, these are secondary to the history of the rubber and synthetic tire. By numerous examples of suits of armor, the Higgins Armory fully demonstrates modifications in dress and weapons during a period of three thousand years.

With objects extending from the twig broom of 2,300 B.C. to the first electric vacuum cleaners of the early twentieth century, the Hoover Models and Samples Display reviews nearly 4,200 years of cleaning devices. The Institute of Light, Nela Park, operated by the Bulb Division of General Electric, has two displays which depict the development of lighting from Edison's carbon filament to the fluorescent panels of today. Highlights of communication by telephone are captured in the exhibits of the Ohio Bell Pioneer Museum which also records the changing nature of services its workers have performed in this industry.

One of the contentions at the outset of this paper was that contemporary industry because of its highly automated nature does not allow the actual inspection of production processes. Also, many production procedures within a factory are not sequentially arranged. Thus, a graphic depiction of processes could aid the understanding of what occurs when raw materials are
transformed into consumer products.

The Baker Museum and Craft Shop illustrates the development of antique reproductions in detail since many processes of years ago are still used today in the extensive handwork that goes into their products. Additionally, a gallery display depicts all the pieces and procedures used in the construction of an Italian commode.

Because of limitations placed by government regulations on the use of models to portray processes in the whiskey industry, the Barton Museum has utilized diagrammatic charts to fulfill the explanation of whiskey production. The Goodyear Exhibit also pictorially demonstrates the tire production process but supplements this with material production using two plastic working models.

The entire process of glass making from the glass blowing stage to a completed product is included in the Libbey Glass Display. Upon request, plant tours are available at Libbey as they are at many of the companies that have museums. At the Corning Glass Center, processes of glass making are demonstrated in the-adjoint Steuben factory rather than in the Museum's Hall of Science.
Extensiveness

The extent to which the breadth of an exhibit portrays the relevancies of a company's contribution to society depends upon the availability of display material, the forms of presentation, and the selective nature of a museum. As would be expected, the collection of products or realia constitutes the substance of most museums. But the product -- an auto for example -- does not easily endow the visitor with insight into economic, scientific, technical, sociological, or cultural developments that led to or follow from its manufacture. A concern with relationships bestows perspective to a collection and provides matrices for unifying its objects. Therefore, additional interpretive material must be made available if the visitor is to transcend limitations of time, space, and materials.

To better describe the breadth of each collection as regards the number of items on display, Figure 2 was developed. As this figure indicates, there is a large variation in the number of items contained in the collections of each museum. Three museums display less than 100 items, four museums between 100 and 500 items, five museums 500 to 1000 items, and five museums between 1000 and 2000 items. While breadth of a museum may be reflected in the size of its collection, duplication of
<table>
<thead>
<tr>
<th>Museum</th>
<th>Number of Items Displayed *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 - 100</td>
</tr>
<tr>
<td>Baker Museum &amp; Craft Shop</td>
<td>550</td>
</tr>
<tr>
<td>Baker Museum-Furniture Research</td>
<td>600</td>
</tr>
<tr>
<td>B. &amp; O. Transportation Museum</td>
<td>900</td>
</tr>
<tr>
<td>Barton Museum</td>
<td>600</td>
</tr>
<tr>
<td>Chillicothe Printing Exhibit</td>
<td>30</td>
</tr>
<tr>
<td>Corning Hall of Science</td>
<td>400</td>
</tr>
<tr>
<td>Dard Hunter Paper Museum</td>
<td>2000</td>
</tr>
<tr>
<td>Dayton Power &amp; Light</td>
<td>800</td>
</tr>
<tr>
<td>Durell Farm Museum</td>
<td>1500</td>
</tr>
<tr>
<td>Goodyear Exhibit</td>
<td>1500</td>
</tr>
<tr>
<td>Higgins Armory</td>
<td>1200</td>
</tr>
<tr>
<td>Hoover Models &amp; Samples</td>
<td>225</td>
</tr>
<tr>
<td>Insurance Co., North America</td>
<td>250</td>
</tr>
<tr>
<td>Libbey Glass Display</td>
<td>50</td>
</tr>
<tr>
<td>Nela Park</td>
<td>1200</td>
</tr>
<tr>
<td>Ohio Bell Pioneer Museum</td>
<td>300</td>
</tr>
<tr>
<td>Philadelphia Contributionship</td>
<td>50</td>
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</tbody>
</table>

*The count of items is approximate rather than exact.

Fig. 2.—Number of Items Displayed in Each of the Museums Studied.
items or inclusion of miscellaneous pieces may detract from its unity or other desired qualities. Variations in the nature of each museum and in the objectives set by the company also influence the number of objects required.

In the Baker Museum and Craft Shop, a visitor's curiosity is stimulated upon entrance. A reproduction of an eighteenth century chemist shop offers numerous decorative reproductions a visitor may purchase. One of the most fascinating items for sale is a document, an indenture, signed, sealed, and delivered in 1893, to William Millington, verifying his legal apprenticeship to Mr. Baker under whom he later became a chief designer. A reproduction of the first Baker cabinet shop, dated 1890, and the whirl of wide leather belts turning their antiquated pulleys contributes to the visitor's realistic immersion into the setting created. It appears that workmen have just gone to lunch while wooden chips cover the floor and stacks of duplicate furniture pieces are neatly piled near machines and work areas.

Following a gallery display analysis of "How a piece of furniture comes alive," the Baker Museum and Craft Shop offers re-created rooms and furniture of the seventeenth and eighteenth centuries, examples of Far Eastern furniture, and other documented pieces which
reflect more than 3,300 years. Sets of original furniture and reproductions by Baker defy a visitor's ability to distinguish one from the other. The very nature of craftsmanship involves technical and scientific elements; however, the making of a craftsman remains secretive, a part of the close ties between master and apprentice. In the work relationship, the sociological patterns of a period become better understood. The vast array of pieces reflect their times and the period and national rooms depict several cultures, all providing a historical backdrop from which a visitor can derive knowledge in accord with his previous preparation.

The Baker Museum for Furniture Research, though similar to the forementioned Baker museum, displays more pieces with what seems to be less unity for the entire collection. The reception room contains numerous photographs, a panel of presentation tools, and a complete set of a wood carver's chisels while the galleries are composed of numerous pieces from many eras and the reconstructed Georgian Paneled Room depicts contributions of its period. The intermingling of miscellaneous pieces is intentional and constitutes what Mr. Baker called a researcher's delight, forcing comparisons to be made among great variety. To the visitor, the number of pieces displayed in a confusing fashion is rather exhausting and
a welcome departure is found in a museum piece which is
the handiwork of a young girl whose verses, in the form
of a sampler, reflect the charm and beliefs of a century
past:

Industry taught in early days
Not only gives the teacher praise
But gives us Pleasure when we view
The work that Innocence can do.
The parent with exulting joy
Surveys it as no childish toy
But as a Prelude that each day
A greater genius will display.

The oldest railroad station in the world, Mount
Clare Station in Baltimore, Maryland, is where the first
regularly scheduled rail transportation occurred and a
series of other "firsts" were written into history. It
is here that the Transportation Museum of the Baltimore
and Ohio Railroad Company has records of the first char­
tered railroad in America, first bridges, first time
tables, and the first electric locomotive that, when
coupled with diesel power, made obsolete the famous
steam puffers. The round house contains a spectacular
display of rail locomotives, describing the development
of the power units which pulled and sometimes pushed
the coaches across the land. Records of innovation in
cars, lighting, benches, rail communications, and rails
themselves are presented along with engineering and
scientific developments, but no attempt is made to
describe the impact of rail transportation on the nation and its people. Even in the displays of toy wind-up and electric trains, there is an unwritten story of enjoyable hours of family participation.

It is in the Barton Museum that the most comprehensive probe is made of economic, political, and social aspects which affected or were affected by an industry. Material in this museum reveals that taxation of the distilling industry from 1791 to the present has brought economic benefits, sixty billion and twenty billion dollars respectively, to the federal and state governments. Since the founding of the United States, whiskey taxes, which have ranged from $.09 to $10.50 per proof gallon, have figured in numerous developments. Some people say that the War for Independence was ignited by exorbitant British taxes, not on tea, but on molasses used in making New England rum. When, in 1794, farmers in western Pennsylvania refused to pay the tax levied on whiskey, George Washington sent troops to quell the resulting Whiskey Rebellion. Since whiskey taxes abolished in 1802 and resumed to defray costs of the Civil War were not removed after the war, illegal production of liquor increased during this period as it did again during the prohibition years of 1920 to 1933. Tables at the Barton Museum point out that an excessive tax has
brought the federal government less revenue than a moderate tax.

As the center of a community's political activities, the village tavern often was a meeting place for important persons. The delegates to the First Continental Congress gathered at the Philadelphia City Tavern and Jefferson is said to have made the first draft of the Declaration of Independence in a tavern. Abraham Lincoln operated a tavern in 1832 and George Washington had a commercial distillery on his Mount Vernon estate.

From a social viewpoint, taverns of yesteryear differed greatly from the present concept and more closely resembled hotels in which the innkeeper lived, provided meals, and rented rooms. At the Barton Museum some excellent paintings depict famous taverns. Bardstown itself has a charming example, the Talbott Tavern, built in 1779 with stone walls three to four foot thick.

The puritanical nature of Prohibition is well documented with banners and pictures of Carrie Nation's crusade. Among the posters exhibited, one is inscribed thus:

Why America Went Dry --
Doctors are Dropping
Alcohol as a Medicine

The poster attests to the fact that brandy and whiskey were dropped from the list of standard remedies in the
1915 edition of *United States Pharmacopoeia*.

Many developments in the distillation of spirits were based upon superstition rather than science but some scientific theory is claimed in an advertisement for a 1731 book titled, *A Complete Body of Distilling Explaining the Mysteries of that Science*. Prescriptions of whiskey used for medicinal purposes are posted in the museum as a reminder of contributions in that area.

Among the variety of liquor bottles displayed, one designed by E. C. Booze, a Philadelphia liquor dealer in the 1840's whose name became synonymous with whiskey, is interestingly made in the shape of a house with a chimney stack. Another distinctive container is the lock stopper bottle whose combination lock was used to prevent children and servants from taking a nip.

The Barton Museum, in recording the 170 years of the distilling industry in the United States, absoringly describes the relationship of this industry to the social history and structure of this nation. Because its hundreds of objects are arranged in appropriate groupings, the extensiveness of its collection intrigues rather than exhausts the visitor.

Erected in 1940, the structure of the Chillicothe newspaper is a replica of Ohio's first capitol building,
and appropriately so, since the newspaper's origins in 1800 parallel the date when the first state house in Ohio appeared in Chillicothe. Two 3' by 9' display cases depict early developments of paper making and highlights in the technology of printing. In the display case limited to eastern developments, there is a Babylonian tablet, Egyptian papyrus, and Oriental scrolls and wood blocks. The other display, devoted to developments by western man, includes a page from the Guttenberg Bible and early American documents. Objects exhibited are of excellent quality and are artistically arranged; however, the display is small both in size and scope.

A wonderland of glass has fascinated nearly eight million visitors at the Corning Glass Center which displays in the Hall of Science a representative sampling of the 100,000 different types of glass Corning has developed since 1851. Scientific and technical progress is illustrated by the versatility of modern glass, and the physical and chemical properties of glass are described. Applications of glass in illumination, construction, industry, space travel, and daily living are of a staggering number. Besides seeing these, the visitor is given a sneak preview of future products and receives an opportunity to comment on design.
Though the Hall of Science, under Corning company control, is being treated in this paper apart from its relationship to the Corning Glass Museum which is operated by the Board of Regents of the State of New York, and the Steuben factory, any visitor to the center will view all three facilities. Therefore, reference to the most comprehensive library of glass ever assembled which is found at the Glass Museum is warranted. Also, the proximity of the Steuben factory in which glass workers can be viewed excludes the need for the Hall of Science to perform this function in detail.

At the Hall of Science, concern is primarily with scientific and technical developments. Reference to economic, sociological, and cultural elements as related to the glass making industry is conspicuously absent.

Pulp and paper executives from the Wisconsin paper area established the Institute of Paper Chemistry in 1929, but it was not until 1954 that the only international collection of paper and graphics, the Dard Hunter collection which had been on display at The Massachusetts Institute of Technology, was brought there. When added to the paper institute's own collection, the Hunter collection created "the world's greatest paper museum."
The museum is a facility as much as a collection and reflects its founder who made paper by hand, designed type, cast type, and printed his own books which describe the rare techniques of paper making displayed in the collection. The history of printing is woven into the story of paper making which was a boon to all graphics.

Fifty years of research and travel around the world by Dard Hunter are responsible for the collection which comprises one of the most colorful and, at the same time, most technical museums in the study. Included in the thousands of pieces are early and modern decorated papers, paper equipment from many countries, and paper products representing many periods of history. Documentation on the displays and the scholarly nature of the museum and its surroundings would delight anyone interested in paper research.

The Dayton Power and Light Museum is a composite of the technical and the commonplace, a display of items of the past and present which are among the most practical and obvious, yet least understood objects of everyday life. The first exhibit to greet the visitor is of a series of light bulbs depicting a range from 1879 to the present. This exhibit graphically explains improvements in technology and reflects economic elements at the same time. Table 10 is based upon information concerning
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<td>1 month - 1 year</td>
<td>$4.00</td>
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<tr>
<td>2. Clear</td>
<td>Carbon</td>
<td>1883</td>
<td>1 month - 1 year</td>
<td>2.50</td>
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<td>1890</td>
<td>1 month - 1 year</td>
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<td>4. Clear</td>
<td>Tungsten</td>
<td>1911</td>
<td>800 hours</td>
<td>1.00</td>
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<td>5. Frosted</td>
<td>Tungsten</td>
<td>1926</td>
<td>1000 hours</td>
<td>.30</td>
</tr>
<tr>
<td>6. Frosted</td>
<td>Tungsten</td>
<td>1940</td>
<td>1000 hours</td>
<td>.13</td>
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<td>7. Fluorescent</td>
<td></td>
<td>1943</td>
<td>2500 hours</td>
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*All incandescent bulbs are 60 watts; Fluorescent bulb is 15 watts.
these factors.

This museum is in a unique position since it represents a company that provides not only electrical power but gas and steam power also and allows for comparison of the characteristics of each. A hand cranked cash register is placed next to one that is electrically operated; a grouping of oil, gas, and electric lighting devices is shown; a wood and coal stove is compared with the first electric and first gas ranges; various types of cooling devices, washing devices, and typing instruments are arranged and contrasted. The visitor can see for himself that a five horsepower motor in 1923 weighed 1,085 pounds and that the present five horsepower motor weighs 119 pounds.

Many "firsts" are exhibited and include the first commercial electric refrigerator, made in 1908, and the first Servel gas refrigerator, made in 1927. One of the most exciting adventures in museum visiting is to find that some contemporary devices are not new. The first feasible dishwasher was produced in Ogdon, Pennsylvania in 1850. Fans in 1850 were run by clock springs and in 1887 a D. C. fan was produced.

Comparisons among the objects displayed in this museum could well serve to contrast the technology of various generations. There was a time, as the museum
reveals, when a radio was a complex assortment of huge black boxes with a speaker the size of present T.V. screens. This was a time when people watched the radio, probably watched the "genius" who moved dials to obtain a few squeaks from the huge box. An early "portable" radio manufactured by R. C. A. weighed nearly a hundred pounds and was powered by two sets of four dry cells. Four by six inch screens on television sets of twenty years ago contrast with screens of today which can be extremely large or very minute.

Explaining the company's development during the past eighty years, the Dayton museum effectively shows how people lived with the technological innovations of the time. By viewing familiar items found within the home at various times, a visitor can derive much knowledge from this extensive display.

The Durell Farm Museum, though limited to a thirty year period, 1790-1820, provides a breadth of objects which furnish an excellent view of the agrarian way of life almost forgotten in modern times. Economically, it depicts a survival society with a workday from sun-up to sun-down and a work assignment for each member of the family.

In the farm house, the most important room is the kitchen for there is the large open fireplace before which
the family gathered for meals and recreation. The kitchen was always the first room built and to it other rooms were gradually added. Near the kitchen door stands a musket and horn, ready to be snatched and used to confront a wild animal or hostile Indian. To the left of the fireplace, a storage place exists for the family Bible and salt box; behind this panel a secret door conceals a bottle of spirits.

Attached to the house are three sheds providing a storage complex for food and tools that were hand made or peddler bought. One shed contains articles and baskets used by the woman in preparing wheat, corn, etc., and in smoking and preserving meat for the long winter. In this shed two interesting looking baby walkers are found, the one a post with a pivotal arm, and the other, a conical wooden cage on rollers. The second shed contains tools the man used in woodworking, blacksmithing, surveying and other tasks, and the third shed, displays rakes, hoes, scythes, and other tools of the farm.

Evidences of "Yankee ingenuity" appear throughout the house in examples of wooden egg beaters made from tree branches and an assortment of cages which were attempts to build a better mouse trap. Numerous other tools and devices which, if used to measure work activities of the people living with them, would indicate that
the people were truly busy. It seems that the way of life that is easily viewed through the objects in this museum is not so easily realized. The crude yet cozy feeling of the farmhouse makes it difficult to grasp the hardships in the lives of the people who might have inhabited it. The static nature of the museum does not encourage the visitor to envision what really transpired on an early nineteenth century farm.

In honor of Charles Goodyear, a company and a museum was established. His imposing statue dominates the rotunda entrance to the museum exhibit rooms. Within the exhibit, a small clapboard building re-creates the one room laboratory where Goodyear accidentally dropped rubber and sulfur on a hot stove and discovered a process which he named vulcanization after Vulcan, the Roman god of fire.

The exhibit is dominated by products of the company's tire division although products of twelve other divisions also are displayed. Two and a half thousand different sizes and styles of tires account for sixty per cent of the company's total production. Many hundreds of tires line the perimeter of the display rooms, and two animated models demonstrate the manufacture of synthetic rubber and trace the stages of converting rubber into tires.
Highlights of technological improvements and the evolutionary developments of the tire make the Goodyear exhibit product oriented and reflective of their slogan that "More people ride on Goodyear tires than on any other kind," which has been true since 1916.

A curiosity and interest in armor and arms dating from childhood initiated the collection of John Woodman Higgins which today represents more than three thousand years of history. In the resplendent Gothic halls of the Higgins Armory there are over one hundred authentic suits of armor which span the period from 650-1550. Knights mounted on ironclad horses appear poised and ready for battle to protect the very walls of the armory, and one champion even has his small dog bedecked in a suit of armor. As the rays of sunshine in the hall are reflected on armor and weapons, at times it appears to the visitor that someone in the long quiet row of knights is moving. Staring at the banners draped about the knights' stations, one almost expects a knight to dismount and describe the tales of King Arthur and his conquests.

Besides the enchantment of the knights, the armory offers the story of the development of weapons. After a presentation of primitive stone and iron weapons, there are illustrations of nature's protective coverings for
the star fish, the turtle, the armadillo, and man himself. A blacksmith's shop is shown, and in the modern wing of the hall, displays of cast and pressed iron and steel depict contemporary uses of these materials.

A small but extremely graphic representation of the efforts of man (woman) to remove or reposition dust and dirt from his domicile spans forty centuries. The Hoover Company's compact history of cleaning depicts highlights in the technological extension of man's arm and hand with seventeen authentic cleaning devices. First attempts resulted in an instrument called a broom dated from 2300 B.C. and early examples of these are shown. After depicting examples of early sweepers which date from 1877, the beginnings of vacuum cleaners are represented. The exhibit culminates in several of the first practical electrically powered vacuum cleaners, with a 1912 model being the last displayed.

The greater portion of the Models and Samples Room remains as a reference collection for company employees. Not only vacuum cleaners but other products of their own and competitors' manufacture are included in order to provide for patent checks which is the primary purpose of the collection.
A historic cognizance involved in the founding of The Insurance Company of North America in 1792, accompanied by acquisitions from various sources, is responsible for linking the story of insurance with the history of the American people. The company began as a marine insurance company but over the years has added all types of insurance other than life. Contained in the company museum is a fleet of miniature ships which are the creations of many seafaring men. Some are actual models made in shipyards before the construction of a vessel itself was begun.

Early in the company's history there was an exhibit of nearly 120 firemarks. Today, this collection has been enlarged to include fire buckets, fire engines, hook and ladder wagons (both full size and scale models); bells, hats, capes and trophies of firemen, and various pieces of literature and documents on the history of fires. The focal point in the gallery of firemarks is a painting of Ben Franklin as a fireman.

Lithographs by Currier and Ives are hung in the museum room and an explanation of the many prints pertaining to fires is found in the notation that Mr. Currier himself was a fireman. Fire buckets usually made of leather, were often adorned with superb pictorial art as were the leather panels on the fire engines and
uniforms and hats. Examples of all of these are found in the museum.

Besides the spectacular display of historic objects in the museum, the I.N.A. archives hold additional material. Also, pieces from the company's collection are on exhibit in fifty museums and periodic displays are provided by the company for their agencies in many parts of the world.

A small alcove displays a very limited number of examples which the exquisite craftsmanship of Libbey glass workers produced nearly a century ago. Some of the more notable developments introduced to the public were of remarkable quality in various colors which became known as Pomona, Amberina, Peachblow, and Agata. Taken from company quarters to the Toledo Art Museum was a ten gallon, 110 pound Libbey punchbowl along with other fine examples of cut glass.

At a felt matted table in the center of the alcove, the visitor is free to inspect a blowpipe and battledore and six glass forms which illustrate the developmental stages in producing a glass goblet. Numerous photographs depicting the production of a fine piece of glass crystal by a mastercraftsman completes this exhibit which is limited to glasswork made by hand.
The National Electric Lamp Association in 1911 founded Nela Park, a modern-day light bulb research center, quite different from other company museums in that it scarcely treats of the past but concerns itself with contemporary lamp and lighting characteristics. A single display charts the significant progress in the incandescent light bulb which Edison himself believed could not be improved. Since the time of Edison, there has been a long list of General Electric "firsts" in the lamp division, and their display of the evolution of lighting proceeds on a basis of voltage rather than size. Included are breakthroughs in the popular incandescent bulb, flash bulbs, spot and flood lights, infra-red and fluorescent lamps.

In the hall is a lamp gallery where lamps for every purpose are on display. Six hundred sizes and types representative of the nearly ten thousand varieties produced by General Electric, some so small it would take hundreds to make a handful and others so huge as to require two men to move them, array an entire wall.

By no stretch of the imagination is Nela Park today what Menlo Park, Edison's industrial laboratory, was four score and ten years ago. The product, though much more sophisticated, is still the light bulb, and the reason for the institution's existence is still
innovation. But the byword is imagination, and the variety in lighting technique is almost limitless. Commonly used light sources as well as radically new sources such as Multi-Vapor and Lucalox are employed in this research center concerned not only with the utilization of light but with the development of light sources for the future.

Nela Park is a contemporary museum in its fullest sense and it provides an atmosphere in which effective and ineffective lighting can be seen and compared. An institution depicting white light, colored light, and even black light glowing in the world, it is a center continually concerned with turning night into day.

The Ohio Bell's Album, or Pioneer, Museum is to this company what a picture album is to a family. A constant reminder of memories of the "good old days," the museum is also the company's tribute to employees of its earliest times. As its motto indicates, this museum is:

Dedicated to All Ohio Men and Women  
Who Have Pioneered to Provide an  
Ever Improving Telephone Service  
To Meet the Needs of a Growing State.

Inspired by the convening of a National Telephone Conference in 1958, the museum celebrates the people and the invention that has provided almost instant communication throughout the world.
Authenticated pictures of Alexander Graham Bell's first laboratory as well as replicas of his first working phone provide an orientation to the museum. Early phones were heralded as a side show oddity and posters attest to the parade of songs which sung the telephone's praises: "I Talked to Papa through the Telephone," "Kissing Papa through the Telephone," and "My Love, the Telephone Girl." The "speaking tube" was a novelty and instructions for its operation were neither as simple nor effective as the present ABC system. The following was attached to a box telephone of 1876: "Either press the button to ring 'central' or tap sharply on the transmitter with a pencil."

An array of telephones reconstructs the evolutionary developments since its invention. One display contrasts the situation of an early telephone operator facing a switchboard and a maze of crisscrossed lines with that of a contemporary operator viewing a simple console and a number of push buttons. Also shown are linemen of yesterday and linemen of today. The exhibits are banked with a hundred or more photographs which capture past activities of the company and carefully identify persons who worked in connection with a communication device which continues to develop in science and service.
At the Philadelphia Contributionship, a modest but extremely significant collection of articles and documents links the beginnings of the oldest fire insurance company in America with the present. The most prized item, now preserved under glass, is a forty-four foot parchment roll, fifteen feet of which contains the Articles of Association describing the company's founding, followed by the signatures of 1,774 subscribers. The first signature is that of Benjamin Franklin and is followed by the names of John Morton and Robert Morris, other signers of the Declaration of Independence. Numerous books of company minutes as well as treasurers' accounts and policy forms are preserved and on view. All the materials were gathered for a Sesqui-Centennial celebration of the signing of the Declaration of Independence.

Notable among the other items of historic interest are a number of fire marks -- around Philadelphia, numerous historic buildings, including Carpenter's Hall are still adorned with the "hand in hand" mark of the Contributionship -- some uniform buttons, belts, and a few hats which remain as mementoes of the fire company's glories. The museum room boasts three other items of special interest: an iron chest in which were kept the securities of the company, an old seal press, and an old
lege desk containing a registry where a visitor may pen his signature with a quill, a very difficult task.

Display Methods

Having reviewed the subject matter of the museums under study, examination shall be made of the manner in which the material is presented to the visitor. Characteristics to be considered include arrangements for giving directions, forms of displaying contents, and provisions for retaining records of a museum visit. These characteristics shall be explored by an approach to museum guides, media, and publications.

Guides

As an aid to orderliness and unity and as a method of accenting various portions of a museum, guides in the form of brochures or maps or in the person of a museum employee may direct a visitor's tour. Seven of the museums investigated provide printed guides which vary from simple floor plans with minimal detail to extensive descriptions and locations of objects and areas. Museums using written guides include the Higgins Armory, the Philadelphia Contributionship, the Baker Museum and Craft Shop, and the Baker Museum for Furniture Research. Also, the Dard Hunter, Baltimore and Ohio, and Corning museums provide floor plans and recommend a route to
follow so that there is a smooth flow of traffic.

Only at Corning is there also available another type of guide, the tele-lect-tour, which can be rented for seventy-five cents. This device includes a tape recording which describes the major pieces and permits the visitor to regulate it and travel at his own speed while listening to the twenty-five minutes of taped information.

Six museums have personnel providing guided tours, partly because of security reasons. Admittance to the Durell Farm Museum is dependent upon the presence of the curator since part of the museum's quarters includes the president's office. Announcement of visitors' arrival at the Dayton Power and Light Museum will precipitate a meeting with either the curator or his secretary; then the visitors are given freedom to browse through the displays. The exhibits of Hoover and Ohio Bell Telephone are situated within the walls of the company, and security clearance is necessary before admission can be gained to these places. Since the greater portion of Libbey's display is in storage, entrance into this area requires accompaniment by a company employee. The Philadelphia Contributionship Museum, which also furnishes a written guide, utilizes its office personnel to admit visitors through the business area and to point out
artifacts which, after an orientation, can be viewed for as long as desired. Five of the museums studied, however, provide neither printed guides nor utilize employees to direct tours.

Media

The means whereby the contents of a museum are presented to the visitor were carefully scrutinized during each visit to museums of industry, and the following data results from this work.

Nine separate categories of presentation make up the compilation of display techniques. The media used to display the companies' collections seem to be distributed among the following: (1) Realia, (2) Reconstructed or reproduced objects or settings, (3) Scale models, (4) Posters, charts, photos, and paintings, (5) Diagramatics, (6) Dioramas, (7) Animated push button displays, (8) Demonstrations, (9) Films. Table 11 shows the utilization of these media as found in the museums studied.

The average number of media used by all museums is slightly less than five (4.82). Each of the museums displays realia as their forte lies in the preservation and presentation of authentic articles. The least used media is that of films (slides or movies) with only two
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<th>Scale Models</th>
<th>Posters, Charts, Pictures</th>
<th>Diagramactics</th>
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<th>Demonstrations</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Hoover Models</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Insurance Co., North America</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Libbey Glass</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Nela Park</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Ohio Bell</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Philadelphia Contributionship</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total frequency for each medium</td>
<td>17</td>
<td>12</td>
<td>12</td>
<td>15</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
museums utilizing this media, the Baker Museum and Craft Shop, and the Corning Glass Center, both of which show a twenty minute movie on the current manufacture of their products.

Although, as was stated previously, all museums studied utilize realia, the mere display of historic articles can be anachronistic if their surroundings are not carefully considered, and the insights that might be developed by a visitor could be seriously limited. In the two Baker museums, period rooms provide a realistic atmosphere for many furniture pieces and the setting is also enhanced by a reconstructed Baker factory. The Baltimore and Ohio Museum, itself a roundhouse, provides a most appropriate building for the display of railroad objects. The farm environment at the Durell Farm Museum, the historic castle setting of the Higgins Armory, and the period backdrops of the Ohio Bell Exhibit all lend credence and effectiveness to their respective displays. Within the Barton Museum, two reconstructed environments of a hotel bar and a moonshiner's still add to the realism of the objects. The other museums studied display authentic items apart from related surroundings, placing value primarily on the preservation of historic pieces for posterity.
Scale models or full size objects are used by a majority of the museums reviewed. None of the collections contain models that exceed normal size reproductions, however. Among the numerous museums using the scale model technique, the most notable is the Insurance Company of North America with an extensive display of ships and fire fighting apparatus. The Baltimore and Ohio model train exhibit probably elicits as much enthusiasm as any for it seems that everyone sometime imagines himself a Casey Jones.

A diorama, a three dimensional depiction of full or scale size, is rather difficult to construct and only four of the museums use this technique in their displays. The prize exhibit in this category is a scale depiction of the race between the first "iron horse," the Tom Thumb, and a horse drawn car which can be seen at the Baltimore and Ohio Transportation Museum.

The uses of two dimensional media including posters, charts, and pictures are extensive and often substitute where actual objects are not available, size is prohibitive, or additional verbiage would tend to confuse the visitor. All but two of the museums employ these media. A most daring use of posters is found in the Barton Museum where posters used by Carrie Nation give vivid accounts of the Prohibition period. Many
companies use charts to depict their managerial structure, and a particularly effective chart appears at the Higgins Armory reflecting developments in man's attempts to protect himself. Photographs are a well used technique which render the actualities of the past, and the Libbey Glass Display makes outstanding presentation in this area. More subjective than photographs but still contributing to displays are paintings and lithographs, particularly the Currier and Ives originals on fire and fire fighting at the Insurance Company of North America.

The difference between charts and diagramatics lies in the intent with the latter being an explanatory graphic, generally three dimensional which demonstrates activity. At the Goodyear exhibit, there are two plastic diagramatics, one showing the process whereby synthetic rubber is produced, and a second illustrating the production of tires. These displays feature animated, flashing lights arranged in sequence to aid the visitor in following processes whereby crude and synthetic rubber becomes a finished product.

Animated movement contributes life and realism to a display and, according to museum personnel, visitors appear to enjoy pushing buttons that activate equipment. At the Baltimore and Ohio Museum, efficient animation is produced by the "Jack knife" bridge which a visitor
may operate. The only other museums with this type of device include the Corning, Dard Hunter, Goodyear, and Ohio Bell.

If push button devices are not used, another method of diminishing the poor effect that "Please do not handle" signs have on visitors is to provide demonstrations by museum employees. Among available demonstrations, that of the lampworker at Corning is particularly interesting. At the Dayton Power and Light Museum the curator either operates or, under his supervision, allows the visitor to operate examples of cylinder phonographs, radios, and other equipment powered by various types of energy.

Whether the display techniques are few or numerous, in most instances they have been developed by the companies themselves. Exceptions include the Barton Museum which was aided by Mr. Lester Bridaham, director of the Chicago Historical Society, in developing its displays of Mr. Oscar Goetz' lifelong collection. Also, Dard Hunter, the paper specialist, was responsible for devising the displays in the Chillicothe Exhibit in Ohio and the Dard Hunter Paper Museum in Wisconsin.

The majority of displays in museums studied are directed toward the general public; however, several collections are geared primarily to company employees.
The displays reflect the purposes of the companies which are enumerated in Table 12. Displays at the two Baker and the Dayton Power and Light Museums, the Hoover Exhibit, and Nela Park are oriented toward company use while the Dard Hunter Museum is intended as much for its students as for the public.

Publications

For a visitor, literature concerning museum contents and related information can have a two-fold benefit. During the visitor's tour of the museum, reference can be made to printed material concerning what he is viewing. After a visitor leaves the building and relaxes at home or elsewhere, he can re-live his trip by reviewing the materials he was given or purchased. Reinforcement of what was seen and experienced as well as additional information and increased relationships can be derived from reading in retrospect.

Of the seventeen museums visited, twelve provide some type of free literature and in five of the twelve additional literature may be purchased. Museums furnishing no literature specifically regarding their displays include the Chillicothe, Goodyear, Hoover, Dayton Power and Light, and the Ohio Bell. The titles of publications which are available from museums of industry in this study may be found along with the cost, if any, in Appendix H.
<table>
<thead>
<tr>
<th>Museum</th>
<th>Stated Purposes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Museum &amp; Craft Shop</td>
<td>To research, design, and duplicate fine furniture</td>
</tr>
<tr>
<td>Baker Museum for Furniture Research</td>
<td>To research, design, and duplicate fine furniture</td>
</tr>
<tr>
<td>Baltimore &amp; Ohio Transportation Museum</td>
<td>To illustrate the historical significance of railroads in U.S. growth</td>
</tr>
<tr>
<td>Barton Museum of Whiskey History</td>
<td>To graphically depict the development of the whiskey industry in the U.S.</td>
</tr>
<tr>
<td>Chillicothe Printing Exhibit</td>
<td>To illustrate early developments in printing</td>
</tr>
<tr>
<td>Corning Hall of Science</td>
<td>To depict contemporary uses and modifications of glass</td>
</tr>
<tr>
<td>Dard Hunter Museum</td>
<td>To present a complete history of the paper-making industry</td>
</tr>
<tr>
<td>Dayton Power &amp; Light Museum</td>
<td>To orient employees to the company</td>
</tr>
<tr>
<td>Durell Farm Museum</td>
<td>To depict early crafts and tools used in agriculture in early Ohio</td>
</tr>
<tr>
<td>Goodyear Rubber Exhibit</td>
<td>To relate the story of rubber</td>
</tr>
<tr>
<td>Higgins Armory</td>
<td>To portray 3,000 years of iron and steel making, primarily in armor</td>
</tr>
<tr>
<td>Museum</td>
<td>Stated Purposes</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Hoover Models and Samples Room</td>
<td>To check patents</td>
</tr>
<tr>
<td>Insurance Company of North America</td>
<td>To celebrate the highlights of the company's early years</td>
</tr>
<tr>
<td>Libbey Glass Display</td>
<td>To preserve artistic glass pieces produced by the company</td>
</tr>
<tr>
<td>Nela Park, Institute of Light</td>
<td>To display achievements in the uses of artificial light</td>
</tr>
<tr>
<td>Ohio Bell Pioneer Museum</td>
<td>To honor persons and developments in the telephone industry</td>
</tr>
<tr>
<td>Philadelphia Contributionship Museum</td>
<td>To celebrate the highlights of the company's early years</td>
</tr>
</tbody>
</table>
In examining contents and methods of displays, it was established that most of the museums studied approach their displays of products from an evolutionary or historical standpoint. However, several museums emphasize processes in creating a product, and a few combine approaches. A great variation exists in the size of collections held by museums, but size does not appear to be a determining factor in regard to the degree to which the characteristics of a company or industry are related to one another or to broader developments in society, be they of a cultural, social, scientific, technical, political, or economic nature. Rather, the purpose of a museum, linked with the manner in which displays are presented and the aids provided for the visitor in the form of guides and publications often appear to be better measures of museum differences. With the intention of locating additional areas of commonalities and divergencies particularly as they are related to elements of industry, consideration of additional representations and reflections as they appear in museums will furnish the subject of the following section.
CHAPTER IX

INDUSTRIAL ELEMENTS REFLECTED IN MUSEUMS

Automation and diversification concomitants of the expanded machine age, have created within industry a gargantuan complex producing consumer goods of a variety and number never before imagined. It is the purpose of this chapter to categorize and point out the manner and frequency in which industry is reflected in the museums studied. The procedure followed enumerates the kinds of industries represented by the museums and delineates the types of industrial characteristics depicted by the displays.

Divisions of Industry

Descriptions of industries which are represented by museums of industry in this study will be examined as to the categories listed in A Curriculum to Reflect Technology (78, p. 41), Manufacture, Construction, Communication, Transportation, and Power are listed. Table 13 shows the frequency with which each division is represented by the museums studied.
## TABLE 13
DIVISIONS OF INDUSTRY REPRESENTED IN
MUSEUMS STUDIED

<table>
<thead>
<tr>
<th>Division of Industry</th>
<th>Number of Museums Representing Each Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture</td>
<td>11</td>
</tr>
<tr>
<td>Construction</td>
<td>0</td>
</tr>
<tr>
<td>Communication</td>
<td>2</td>
</tr>
<tr>
<td>Transportation</td>
<td>1</td>
</tr>
<tr>
<td>Power</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Museums Included</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
Table 13 shows a high concentration in the category of Manufacture (eleven museums), no representation in the division of Construction, and minimal representation in the Communication (Chillicothe and Ohio Bell), Transportation (Baltimore and Ohio), and Power (Dayton Power and Light) industries. The table also indicates that the matrix used does not accept two of the museums studied (The Philadelphia Contributionship and The Insurance Company of North America). Therefore, it is necessary to secure another matrix which will encompass all museums.

Delmar W. Olson's doctoral thesis "Technology and Industrial Arts," (55), provides a somewhat different categorization of industries: Manufacture, Construction, Power and Transportation, Electronics, Research and Services. Some of the differences in categorization appear to be a matter of terminology and definition while others evidence a distinct theoretical departure. The following schema should help in making comparisons.

<table>
<thead>
<tr>
<th>Warner et al.</th>
<th>Olson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing ---------------</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>Construction ---------------</td>
<td>Construction</td>
</tr>
<tr>
<td>Communication ---------------</td>
<td>Electronics</td>
</tr>
<tr>
<td>Transportation ---------------</td>
<td>Transportation</td>
</tr>
<tr>
<td>Power -----------------------</td>
<td>Power</td>
</tr>
<tr>
<td></td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>Service</td>
</tr>
</tbody>
</table>
A distinct difference between the two schemas may be noted. Since each of the companies contacted in the study reported that they spend from twenty to fifty per cent of their finances on research and development, the existence of this area as a separate category does not appear to be justified. Electronics treats of the emission of elections and could logically be placed under the divisions of power or communication. While there are service aspects in many industries, complete dedication to providing service rather than to promoting elements associated with the five categories formulated by Warner, et al., seems to warrant the listing of service as a separate industry. Adding service to Warner's list of industries allows for inclusion of the two companies which were omitted from the previous classification. Therefore, a revision of Table 13 results in Table 14.

Each museum's presentations were carefully scrutinized and the aspects related to industry were derived. Definitions assigned to the extracted elements are as follows:

Finances -- Economic relevancies to company, products, employees

Materials -- (Raw) materials utilized in production

Tools & Equipment -- Instruments whereby changes in materials are wrought

Personnel -- Employees of all classifications
<table>
<thead>
<tr>
<th>Division of Industry</th>
<th>Number of Museums Representing Each Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture</td>
<td>11</td>
</tr>
<tr>
<td>Construction</td>
<td>0</td>
</tr>
<tr>
<td>Communication</td>
<td>2</td>
</tr>
<tr>
<td>Transportation</td>
<td>1</td>
</tr>
<tr>
<td>Power</td>
<td>1</td>
</tr>
<tr>
<td>Service</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Museums Included</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>
Facilities -- Environment and physical setting

Research & Development -- Evolution of products from the drawing board to the production line

Production -- Processes whereby a product is created

Product -- The result of the production process

Promotion -- Advertising and sales efforts

Distribution -- Transportation and dispersion of products

Service -- Accommodations for consumer satisfaction

This classification allows for an overview of industry and combines specific characteristics under general headings. Having included the two museums of insurance companies in the service division of industry in Table 14, all museums are represented.

**Elements of Industry**

The second segment of this chapter is devoted to the identification of distinct industrial characteristics (applicable to all or most industries) as they are depicted in the museum. Attention here is drawn not only to the number of industrial elements reflected but also to the degree to which they are treated.

To describe the extent to which these various elements are depicted, a grading system was evolved. Representations of the degree to which each defined
industrial characteristic is shown in the museums are described in terms of minimal, moderate, or extensive use. "Minimal" is taken to indicate a very small display or part of a display peripheral to the complete collection. "Moderate" is interpreted as a complete display with limited relevancy, and "Extensive" is construed as a complete display presented with detailed information and occupying some prominence in the collection.

Table 15 lists the derived characteristics ordered by frequency of appearance in the museums rather than by an industrial organizational pattern and reflects the degree to which these characteristics are utilized.

The foregoing deduced characteristics of industry as exhibited in museums of industry indicate that prime emphasis is assigned to products, the tangible results of production which are directly related to profit making. (Financial factors, however, are not given prominence in the museum displays.) Research and development, rating a high frequency in Table 15, is included in the evolutionary displays of products. The fairly high representation of tools and equipment is accounted for by the inclusion of numerous hand tools in the exhibits.

The comparatively high depiction of facilities often is reflected in nostalgic preservations of "I can remember when" and includes full size and scale models
<table>
<thead>
<tr>
<th>Characteristics of Industry</th>
<th>Number and Degree to Which Museums Reflect Industrial Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimal</td>
</tr>
<tr>
<td>Product</td>
<td>0</td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td>4</td>
</tr>
<tr>
<td>Tools &amp; Equipment</td>
<td>1</td>
</tr>
<tr>
<td>Facilities (physical)</td>
<td>1</td>
</tr>
<tr>
<td>Production (process)</td>
<td>0</td>
</tr>
<tr>
<td>Materials</td>
<td>2</td>
</tr>
<tr>
<td>Service</td>
<td>0</td>
</tr>
<tr>
<td>Promotion</td>
<td>3</td>
</tr>
<tr>
<td>Personnel</td>
<td>1</td>
</tr>
<tr>
<td>Finance</td>
<td>0</td>
</tr>
<tr>
<td>Distribution</td>
<td>0</td>
</tr>
</tbody>
</table>
of company facilities along with a large number of photographs recording company environments at various times. The complex process involved in the utilization of automated production makes this depiction difficult. The fact that many companies provide company tours which show to a limited extent how a product is made may contribute to the absence of this element in more than half the displays. Closely allied to production are the materials utilized, and omission of this characteristic by ten museums may be because many materials are self evident in the finished product.

Service and promotion receive a similar amount of representation although not equal prominence in the displays. Service elements range from a company's major aim to the factory repair and guarantee. Promotion which incorporates advertising and sales, extremely important aspects of an industry since products must be sold if the company is to remain in business, was expected to be an area of high concentration. However, this element is excluded in most museums.

Elements dealing with personnel, finance, and distribution are not depicted in the majority of museums, and in the few museums referring to them they are not treated extensively. As a composite, Table 15 can be interpreted as an indication that museums of industry
provide a number of displays depicting characteristics of industry. In presenting themselves and their history, museums place prime importance on products, research and development, and tools and equipment, giving less attention to other characteristics.

As an institutional vehicle whereby industrial elements are reflected, museums of industry depict to a limited degree characteristics relevant to understanding the industrial composition of the American society, the more prominent of which are products, and research and development. Some of the characteristics depicted to a lesser degree are tools and equipment, facilities, production, materials, service, and promotion. Personnel, finance, and distribution are displayed but slightly. A division of industry was proposed and a schema developed consisting of the following categories: Manufacture, Construction, Transportation, Power, and Service. Eleven of the seventeen museums represent industries in the manufacturing division. The other divisions with the exception of the construction industry are each represented by only one or two museums. This compilation of industrial attributes in conjunction with findings from previous sections of the study will, in the next chapter, be used to provide a boundary within which contributions to curricula can be assessed.
CHAPTER X

CURRICULUM IMPLICATIONS

The composition of this chapter is based on the realization that curriculum is not restricted to the physical setting of a classroom but to the characteristics of the learner and his environment. Aims or objectives of a curriculum are derived from the point of view taken. Ralph W. Tyler (73, p. 4) distinguishes four philosophical approaches which are perspectives to the development of curricula as progressive, essential, sociological, and educational.

The progressive emphasizes the importance of studying the child to find out what kinds of interests he has, what problems he encounters, what purposes he has in mind. . . . The essentialist . . . is impressed by the large body of knowledge collected over many thousands of years, the so-called cultural heritage. . . . Many sociologists . . . view the school as the agency for helping young people to deal effectively with the critical problems of contemporary life. . . . The educational philosophers recognize that there are basic values in life, largely transmitted from one generation to another by means of education.

The position taken in this study is a composite of the four approaches described above.
Use of a museum involves the presentation of a learning situation which can affect the learner by creating an imbalance in the internal-external environment. By looking at what others have done, the learner may be motivated to accomplishments himself. Implicit in this proposition is the belief that familiarity with the past glories and failures of man is a valuable aid to dealing intelligently with contemporary life. Progress is dependent upon past developments, or the rediscovery of America would need to take place repeatedly.

The museum bears witness to the fact that man has been dependent upon technology. The ramifications that follow from this knowledge are contingent upon the contributions that museums of industry add to an understanding of the total technology. Aiding individuals to comprehend the "what," "how," and "why" of industry enlarges and enhances their pursuits within an industrial framework. This means that the educated man today not only must manipulate the world with his established concepts, symbols, and tools, but that he should maintain continued contact and control over its ever-changing technological components. Just as in the operation of the model train exhibit at the Baltimore and Ohio Museum where for a few minutes one can control the world in miniature, man must give direction to the machine or be
left in its wake.

It is beyond the scope of this paper to present by grade level the implications of material contained in museums of industry. Only general applications to curriculum will be sought. The derived functions of industrial arts education which were presented in Chapter III (78) have been designated as Orientational, Technical, Consumer-Cultural, Recreational. By presenting museum contributions to the understanding of industry through the structure of the derived functions of industrial arts, the intention is to locate areas of the educational discipline and the institutional creation which can complement each other.

**Orientational**

Awareness is the key point here. An orientation to an industry, as provided by the museum and not a visitor's motives, is founded in its displays. Though abridged in form, displays can capture the highlights of an industry through the deliberate presentation of salient developments in products, methods, and other aspects of industry. A presentation that spans years or centuries serves to acquaint a viewer with the industry in general and the company represented in particular, and can fulfill curiosity or become the stepping stone whereby
curiosity is aroused. Characteristics of orientation exclude deep penetration into specific elements of industry which require detailed information and lead to the technical function which will be considered later in the chapter.

The orientational function is generally fulfilled by limited documentation, perhaps only the name of an object. Each of the museums studied provides some form of orientation to an industry. Among the most outstanding examples of capsule orientations are the collection of cleaning devices at Hoover and the exhibit of printing at Chillicothe. Seventeen items bridge the time span from the construction of the twig broom in 2300 B.C. to 1907 when the Hoover vacuum cleaner became a practical and reliable cleaning device. At Chillicothe a few score items depict man's attempts at transfer printing from Egyptian seals to the early use of moveable type in Europe and consequently, in the United States.

Other examples of orientation to an industry are provided by:

Baker Museum and Craft Shop -- 1890 furniture factory
Baltimore & Ohio Museum -- Round house with historic items
Barton Whiskey Museum -- Series of whiskey bottles
Goodyear Exhibit -- Diagramatic of rubber and tire production
Higgins Armory -- Charts depicting 1500 years of armor
Insurance Co. of North America-- Wall display of firemarks
Libbey Glass Exhibit -- Crystalized stages of glass blowing
Ohio Bell Museum -- Telephones of yesterday and today

These displays depict only the surface or accidental properties of an industry. They concentrate on the "what" and provide a quasi-encyclopedic view of industry. Intricacies are not shown, but rather a panoramic approach, microcosmic in nature, is set forth. It is the full story, the truth in twenty-five words or less.

In their orientations to industry museums did not include, as was anticipated, a general yet complete perspective of industry, showing such aspects as: Organizational Patterns in Industry, Production, Tools, Machines, Methods, Products, People-Management-Labor, Finances, Distribution and Sales, and Impact of Industry Upon the Community, Nation, and the World. The only museum that attempts to depict such breadth is the Barton Museum. In this museum not only are production, tools, machines, methods, and products highlighted, but the social and economic resultant from this industry are illustrated.
The technical function as regards museums concerns itself with depth and quite often is the outcome of an orientational quest. Both intellectual and manipulative in nature, the technical function is directed toward the "how" and the "why" and is characterized by the acquisition of both knowledge and related technical skills. Its extension may be made to the point where a person becomes "technically competent" and can earn a living from the application of technical knowledge and skill. Within this structure, science and technology, the theoretical and the practical, are balanced by an individual's penetration into both areas.

Depth of study in a museum is made possible by the extensiveness of a collection. Rather than being solely a presentation of items, the technically oriented collection takes on a new perspective, that of furnishing a reference in which comparisons can be made. Most of the museums visited display everything they have collected. The growth of these museums demands that more space be created or each item will be granted less of the original area. Some museums, including the Libbey Glass Exhibit, supported by a huge storage room (which is their reference collection) containing priceless items, and the Hoover, situated in the same room as their storage and reference
area have provided space for additions.

The most extensive and, at the same time, technically precise collection in the study is that of the Dard Hunter Paper Museum in which the complexities and intricacies of hand-made paper from around the world are on display. It is a collection of products, materials, tools, and machines brought together by a world renowned paper authority, the late Dard Hunter, who not only traveled widely to collect information as well as tools and objects but actually made the paper on which he printed the gathered data. This museum is a world mecca for persons involved in the study and research of the paper industry. A library and reading room containing the books written, printed, and bound by Dard Hunter as well as irreplaceable manuscripts from many countries are located in the museum. Besides depicting numerous developments in the history of paper-making, museum displays are surrounded by the realism of a reference collection with more than two thousand items.

The Baker Furniture Museums house extensive reference collections, primarily for the use of Baker designers. The Higgins Armory boasts an enormous collection, especially inviting for persons in the iron and steel industries. Each of these collections necessitates the use of an authoritative guide endowing it with
perspective as the history of its time is told. In themselves, these collections reflect persons of another era -- Chippendale, Sheraton, King Arthur, Sir Lancelot, and they are the most comprehensive collections of their nature that have been gathered in one place.

Opportunities to learn about the colonial shipping industry and the developments in fire fighting are presented in the collections of the Insurance Company of North America. The relationship of this collection to historical material incidentally reveals the ingenuity of Benjamin Franklin who began the first volunteer fire company in the United States and explains how the economy of early America was involved with insurance on shipping.

Consumer-Cultural

A cultural heritage is not easily described since it depends upon the conquests of man, his use of past technology, the innovations he made, what he transmitted to his son and to his son's son, and so on. It deals with the historic "progress," the best of the past and its significance to what we have today and shall have tomorrow. Changes in culture, then, are predicated upon the technological advances man has made, is making, and will make.
Few remnants of yesterday remain in use today, but we are still enjoying the fruits of former inventions. Men of the past conserved some objects and ravaged others. Today, men continue this practice and save some of the thoughts and creations of men, some products and natural resources, but consume two-thirds of the United States' Gross National Product in food, dwellings, cars, and other articles and fill the junk yards with refuse. Obsolescence is built into many of the items made, partly because they are machine made and repairs are more costly than replacements. Things today are used as if they were quickly "going out of style" -- and they are. Advertising and selling are concerned with convincing people that they have a need for new products and a need is created.

With such a series of goods being produced, collections of items which reflect a culture must be preserved if links with the past are to be provided. The Durell Farm Museum represents what not so many years ago was a way of life and is now a curiosity. The Baltimore and Ohio Transportation Museum displays the beginnings and developments in a mode of transportation which contributed greatly to the building of this nation but which shows signs of approaching the end of an era. Many people today have never ridden on a train and fewer still have
been aboard a steam locomotive, but the museum can retain examples of articles around which many inventions and events took place. Also, in the Dayton Power and Light Museum which contrasts machines, devices, and appliances powered by different sources, i.e., man, steam, electric, and gas, there will be available a perspective of energy sources even when these are dwarfed by solar or atomic power.

Recreational

What is pursued for the purpose of fun or enjoyment can also be educational. Since man has had the opportunity to rest and relax, he has become a superb rationalizer who is often eager to emphasize opportunities for learning which may be found in holiday treats that are too expensive to be justified by elements of pure enjoyment. The idea of combining light aspects with weighty and substantive objectives has great appeal. Even in choosing vocations, there is frequently an aim of mixing work with play, or, since this is often difficult, of taking a position which one will enjoy.

The recreational function truly can be educational if the recreation is not haphazard. This function differs from the other derived functions in that it is sought more frequently and usually occurs within an informal
educational structure as compared with the formal educational structure which generally characterizes the other functions. Often the recreational function expresses itself in the form of a hobby or avocation; however, it should be noted that this function may become linked with technical competence and result in a vocational choice.

Unless museums among those studied or museums similar to them are located near the home environment, it may be difficult to make a field trip to one. Therefore, these museums might become valuable additions to a vacation's itinerary, particularly since admission in most cases is free. To gain the greatest advantage from a trip, it is advisable to be familiar with the general contents of the museum. Writing in advance for information on the collections could easily result in a more worthwhile visit. Even careful preparation for a visit cannot eliminate some forgetting. Photographs of objects of interest -- not just of the family group -- and notes of one's reactions to the displays along with guides and other museum materials will allow review and reinforcement at home later. Then, where one went and what one saw will make a difference in living.

This chapter is retrospective insofar as it has described museum collections which vary in quantity.
quality, breadth, and depth in their penetrations of the nature of industries which they portray. Differences in museum collections result in dissimilarities in the contributions they make to the four approaches of learning about industry. Based upon the derived functions of industrial arts education -- Orientational, Technical, Consumer-Cultural, and Recreational, limitations and advantages of displays were described. The passive nature of museums was contrasted with the active role desired of the visitor who comes prepared to communicate, to learn a new set of symbols and be stimulated by what he experiences. Since the amassing of data by either the museum or the visitor proves a shallow aim, it becomes the responsibility of each to utilize what is learned. For vital learning to occur, the museum must provide facilities whereby a collection can become alive and the visitor permitted to use the museum and his mind to the fullest. Elements of industrial arts education, industry, and the museum share much common ground and in the next and final chapter, their contributions to one another shall be summarized.
CHAPTER XI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Interest in the investigation of American industry is rooted in the ever-changing complexities of current technology with its impact upon so many aspects of life. The curriculum of industrial arts evolves around the industrial-technological character of industry and therefore concerns itself with learning as much as possible about these characteristics. As a vehicle whereby industry reveals itself, the museum of industry becomes an important source of information. Not only reflections of industry but illustrations of processes which are concealed in factories and relevancies to developments in society could allow the museum to provide a composite picture of much value. During this study museums of industry were examined in respect to the quality and extent of their contributions to the understanding of industry and the results of this investigation will subsequently be summarized and interpreted.
Summary

The inception and development of this study were elicited from a desire to better understand the nature of industry. Such interest in studying industry proceeds from the aims of industrial arts education and addresses itself to the present complexities of industry as affected by advancing technology.

The first three chapters provide the foundation and establish the museum of industry as a vehicle whereby industry can tell about itself and an avenue whereby industrial arts can enrich the study of industry. These early chapters, then, describe the purpose of the study: to determine how effectively museums of industry established and operated by companies can interpret industry. The limitations of literature concerning these specific museums necessitated a study of the development of the museum as an institution. After extracting from published material concerned with museums in general, the review was channeled to those museums collecting, preserving, presenting, and interpreting items related to industry and technology. Included in this group are exhibitions, fairs, open-air museums, industrial museums, science and industry museums, and, eventually, company museums (designated in the study museums of industry).
Previous to the main study a preliminary investigation and a pilot project were conducted to obtain a first-hand understanding of technical museums and to establish the scope of company museums. The preliminary investigation was comprised of visitations to numerous museums and interviews with curators and with industrial contributors to museums of science and industry. This investigation pointed out the need for improved quality of the museums in existence and the desirability that changes be associated with a set of standards. Only one museum group in the country has developed a set of standards and these have not become mandatory. In the museum field personnel have not been trained to operate the museum as a totality. Most museum staff members have entered the museum field indirectly, some via library science, but few have been trained specifically in museum work. During the past fifteen years, however, some advances have been made in the training of museum staff.

At the Center of Science and Industry in Columbus, Ohio (COSI), a unique and beneficial opportunity for investigation was found. This museum had been in operation only one and one half years at the time the study was begun. Staff members of this young institution were asked: "How should industry depict itself?" and "What do you require of industries attempting to present their
displays in your museum?" Answers received to these and other questions were vague and uncertain. The Center has some excellent displays, but many exhibits present a great deal of advertising which is undesirable and which the COSI staff intends to prohibit in the future. In conversations with representatives of industries which had contributed to the Center, an overwhelming number of answers received to questions about displays indicated an uncertainty about what the companies should display and what significant aspects of their industries should be presented.

The pilot project was part of the research technique to locate the universe of museums of industry from which a sample could be drawn. Composed of two surveys, the study aimed first to determine how many of the company museums listed by Laurence Vail Coleman in his study published in 1943 (21) were still in existence and the reasons why any had been discontinued. In the second survey, museums not listed by Coleman and obtained from other sources were contacted. When the surveys were completed, the possible population, as determined by research, of ninety-eight museums of industry had dwindled to forty-three. Some museums had changed from company control to control by another organization and many had been discontinued for lack of space or other reasons.
From the established population of forty-three existing museums of industry, a sample of seventeen museums was drawn as subjects for extensive research.

Using guides which had been developed during the preliminary survey, all the museums in the sample were reviewed on the same basis. Although the majority of museums are located in heavily populated areas, this does not seem to be a significant factor since the Corning Glass Center in a small city of 17,000 draws nine times the number of visitors that attend the other museums combined. The majority of museums investigated were formed through the efforts of a company president and accessions often resulted from objects gathered during his extensive travels. Most museums were established by companies after they were in existence from twenty-five to fifty years and several museums did not come into being until the sponsoring companies were more than 100 years old. Whether or not a museum continues to grow is dependent upon its nature and purpose as well as the interest taken in it by the company and visitors which influences the funds and space allotted to it. Though most of the museums studied do not charge admission, the desirability of setting a fee which would contribute to the operating costs of a museum is supported by the good attendance of visitors at the two museums in the study that are not free.
However varied are the contents of each museum, most provide orientational materials that show either the evolution of a product or the process whereby a product is made. The number of items displayed by each museum range from 30 to more than 2,000. Care in selecting and arranging items can easily compensate for their paucity just as indiscriminate duplication and confusing configurations of myriad items can detract from a display's effectiveness. Most museums, however, succeeded in conveying an interesting story of the company and/or industry represented. Entwined with the history of many companies are sociological, political, and economic factors which are related to some degree by a number of the museums.

Nearly half of the museums provide a floor plan or written guide for the use of the visitor and several museums, usually because of security reasons, have their staff members give tours. Since, as collections, museums give primary importance to authentic pieces, display methods other than exhibiting realia receive only moderate or slight attention. Pictorial representations, reconstructed objects, and scale models are media which are rather widely used while films, dioramas, and pushbutton animations are absent from most of the displays. Whether, as in most cases, the displays are directed toward the
general public, or whether they are intended primarily for the use of company employees influences the contents and methods chosen for the museum. Most of the displays were developed solely by the companies and their purposes are directly reflected in what is shown.

These specialized museums represent five of the six divisions of industry upon which an industrial classification was based. The divisions represented include those of Manufacture, Communication, Transportation, Power, and Service and do not account for the Construction industry. Among the representation, by far the heaviest concentration is found in the area of Manufacture. When the characteristics of industry are examined, the depiction of products receives primary emphasis. The second and third most frequently exhibited characteristics of industry found in the museums were those of research and development and tools and equipment respectively. Processes of production are illustrated in only half of the exhibits studied but company tours augmented this area in several institutions. Physical facilities, materials, service, and promotion are given some consideration by the museums but the factors of personnel, finance, and distribution are omitted from the displays of all but a few companies.
The final chapter on curriculum is interpreted through the educational aims of industrial arts as acknowledged in Chapter III. Those objectives, which are orientational, technical, consumer-cultural, and recreational present the museums' collections as a translation of industry to those who would:

1. Desire to gain a perspective of a particular industry and the concurrent technology;
2. Desire to gain an understanding of a particular industry and the concurrent technology of materials, products, processes, and man's place within this complex;
3. Desire to gain an appreciation of the technological advancements that man inherits in order to better use the current products and technology;
4. Desire to develop useful and wholesome activities and interests for leisure hours.

As storage and retrieval institutions, museums of industry supplement orientational, technical, and consumer-cultural functions. As places which have gathered and unified objects with affinities to the past, they make a unique contribution. Stated, obvious, or implied relationships among the objects and to events, inventions, and developments in society offer much knowledge to
persons who venture to search. The history of man has been written; these are the stories, the books of his triumphs. Whether approached as a serious learning endeavor or as a recreational pursuit, the material is impressive.

Conclusions

Having examined how effectively museums of industry reflect industry, the data indicates that these museums depict or reflect industry only to a limited degree. In the specialized museums studied, each contributed a partial representation of the industrial-technological elements of one industry or company. In most instances, there was concentration upon a few aspects of the industry and no attempt to deal with others.

The finding, limited depiction of industry, can best be explained in a perspective of museum development. The origins of many of the museums investigated spring from the collections of company presidents who accumulated pieces for their intrinsic value and usually did not envisage their placement in a museum. A special interest rather than an intention to gather samples of various elements related to the industry motivated the collectors. (The individual nature of many collections may explain why a number of the museums surveyed were disbanded after
the "collector" had left the museum scene.)

The establishment of these museums, then, in few instances resulted from attempts to representatively reflect industry in the preservation, presentation, and interpretation of materials. However, the thousands of irreplaceable items and the particular approaches taken to an industry are not to be degraded since insights and knowledge about the industry can still be derived.

Even in the number of media museums employ, many possibilities are untapped. Nevertheless, museums possess advantages that are not found in plant tours and published material. Along with the presentation of objects, museums furnish written material which can be read and re-read in conjunction with the objects as the visitor desires. Opportunities for pointing out relationships are particularly numerous in museums since they eclipse time and distance and increase vividness. Although the exclusion of the noise and dust of a factory setting might be interpreted as neglecting realism, the studious atmosphere created in a museum is a better stimulus for thought and reflection. Without the pressure of a test at the end of a chapter or the confinement of a chair and desk, the museum can stimulate learning by its informal environment.
As with the depiction of industry, the educational function of a museum is not often the result of a well developed pattern. Museum personnel are aware of the knowledge value in their collections but they generally are not committed to promoting educational programs, leaving this area to educators. The number of school groups who visit these museums is limited -- limited to the number of teachers who are familiar with the museums and acquainted with the benefits of visiting them. Museums appear to have an open door policy toward educational endeavors but many will not step beyond their doors to initiate a relationship.

**Recommendations**

The need for periodic checks to identify museums of industry and to record their growth or decline manifests itself in the study. Of the museums established after Coleman's survey in 1942 (21), only half were listed in the Museum Directory in 1965 (18). Therefore, it is recommended that an extensive search be conducted to discover additional museums. With less than one-third of the museums cited by Coleman still in operation, it is desirable to continually update museum lists and to indicate when and why a museum is terminated or established. Several museums were uncovered by contacting companies
directly and making inquiries. Records of company museums might be maintained by the national headquarters for the Chamber of Commerce. Only with efficient methods for revealing and recording company endeavors that can be classified as museums of industry will their number and location be accurately known at all times.

To the companies which presently maintain museums, credit and publicity should be given. Not only would the firms be encouraged to continue their museum operations, but also companies who have items worthy of display might be influenced to develop their collections into museums. Publicity by state departments of industrial or economic development could have a two-fold benefit. Interest shown in museums could result in crucial preservation and presentation of materials and foster their diverse utilization. The public also could become increasingly aware of these museums and the value to be gained by visits. In turn, greater public interest could stimulate museum efforts and eventually draw larger crowds to them.

An additional recommendation is that studies be undertaken to investigate more specific educational benefits which might be derived from museums of industry. Museum material could be evaluated with regard to its readability and comprehension as related to age and grade levels. Such studies could involve student participation
and the development of programs within the museum setting. Students might be provided opportunities to become junior curators, enabling them to gain familiarity with industry and develop interests in the museum field itself. Unlike the art museum, the museum of industry is close to the world of the working class and furnishes a bridge for culturally deprived groups.

Exploration of museums of industry has revealed areas of limitation and illuminated elements of significant contribution. The history of museums of industry as repositories of industrial achievement and technological innovation spans less than a man's lifetime and is an institution of the twentieth century. Only future developments will determine if it will become a critical resource for the twenty-first century.
APPENDIX A

LIST OF EIGHTY THREE-MUSEUMS

(From Coleman's Company Museums)

California

Schlage Lock Co. -- Lock Collection

Wells Fargo Bank and Union Trust Co. -- Wells Fargo Historical Collection

Colorado

The Denver and Rio Grande Western Railroad Co. -- Railroad Archives and Museum

Connecticut

Colt's Patent Fire Arms Manufacturing Co. -- Colt Museum

Underwood Elliott Fisher Co. -- Underwood Elliott Fisher Museum

Scovill Manufacturing Co. -- Museum (Project)

The Waterbury Button Co. -- Museum (Project)

Delaware

E. I. DuPont de Nemours and Co. -- DuPont Museum

Illinois

Felt and Tarrant Manufacturing Co. -- Museum of Arithmetical Machines
V. Mueller and Co. --
Collection of Surgical Instruments

Elgin National Watch Co. --
Watch Collection

Abbott Laboratories --
Historical Collection

Indiana

Lincoln National Life Insurance Co. --
Lincoln National Life Foundation Museum and Archives

The Studebaker Corporation --
Studebaker Museum

Maryland

The Baltimore and Ohio Railroad Co. --
The Baltimore and Ohio Historical Collection

McCormick and Co., Inc. --
McCormick Tea Museum

Massachusetts

First National Bank of Boston --
Historical Museum

United Shoe Machinery Corporation --
Shoe Museum

George E. Keith Co. -- Old Red Shop

Crane and Co., Inc. -- Crane Museum

Dennison Manufacturing Co. --
Dennison History Room

Waltham Watch Co. -- Franklin Dennison Collection

American Steel and Wire Co. -- Industrial Museum
Crompton and Knowles Loom Works --
Crompton and Knowles Museum

Norton Co. -- Norton Hall Museum

Worcester Pressed Steel Co. --
John Woodman Higgins Steel Armory

Michigan

Wisconsin Land and Lumber Co. --
Paul Bunyan Museum

Ford Motor Co. -- Ford Rotunda

Baker Furniture, Inc. --
Baker Museum for Furniture Research

First National Bank and Trust Co. --
Louis G. Kaufman Collection

Missouri

Monsanto Chemical Co. -- Exhibit

Nebraska

Union Pacific System --
Union Pacific Historical Museum

New Jersey

Ingersoll-Rand Co. -- Rock Drill Museum

Thomas A. Edison, Inc. -- Old Edison Laboratory

New York

Mergenthaler Linotype Co. --
Mergenthaler Historical Collection

Sperry Gyroscope Co., Inc. --
Sperry Gyroscope Company Museum
Aluminum Company of America — Aluminum Museum

American Telephone and Telegraph Co. — The Bell System Historical Museum

Asbestos Limited — Asbestos Collection

Burroughs Wellcome and Co., Inc — Wellcome Exhibition Galleries

Chase National Bank — Collection of Moneys of the World

Charles DeZemler, Hair Cutter to Men — Barbering Exhibit

General Motors Corporation — Parade of Progress

The Home Insurance Co. — The H.V. Smith Museum

International Business Machines Corporation — Art Museum (Project)

Metropolitan Life Insurance Co. — Metropolitan Archives

New York Central System — Museum of Transportation

New York Life Insurance Co. — Historical Exhibit


The News Syndicate Co. — The News Lobby Exhibit

The Seamen's Bank for Savings — The Seamen's Collection

E. R. Squibb and Sons — The Squibb Ancient Pharmacy

Western Union Telegraph Co. — Western Union Engineering Museum

Eastman Kodak Co. — Eastman Kodak Company Collection
Taylor Instrument Companies -- Taylor Museum

General Electric Co. -- Research Laboratory Exhibits

Cluett, Peabody and Co., Inc. -- Collar Museum

Ohio

Chillicothe Newspapers, Inc. -- Exhibit of Printing

The Rudolph Wurlitzer Co. -- Collection

The Sherwin-Williams Co. -- The Sherwin-Williams Collection

United States Glass Co. -- Museum (Project)

Libbey Glass Co. -- Libbey Glass Museum

Owens-Corning Fiberglas Corporation -- Museum (Project)

Toledo Scale Co. -- Toledo Scale Museum

Pennsylvania

Bethlehem Steel Co. -- Bethlehem Steel Exhibit

Hamermill Paper Co. -- Hamermill Collection

Swigart Associates, Inc. -- Museum

Insurance Company of North America -- Insurance Company of North America Collection

The Mutual Assurance Co. for Insuring Houses from Loss by Fire -- The Mutual Assurance Company Museum

The Philadelphia Contributionship for the Insurance of Houses by Loss by Fire -- The Philadelphia Contributionship Museum
Philadelphia National Bank -- Philadelphia National Bank Exhibit

Fisher Scientific Co. -- Fisher Collection of Alchemical and Historical Pictures

H. J. Heinz Co. -- House "Where We Began"

Rhode Island

Gorham Manufacturing Co. -- Gorham Collection
Rumford Chemical Works -- Rumford Museum

Vermont

National Life Insurance Co. -- Museum (Project)
Vermont Marble Co. -- Marble Exhibit

Virginia

Norfolk and Western Railway Co. -- Railway Historical Collection

Washington

Northwestern Mutual Fire Association -- Historical Exhibit

Wisconsin

J. I. Case Co. -- Farm Machinery Collection

Canada

The Bell Telephone Co. of Canada -- Telephone Museum and Historical Collection

Canada Steamship Lines Ltd. -- The Coverdale Collection of Historical Canadiana

Hudson's Bay Co. -- Hudson's Bay Co. Historical Exhibit
APPENDIX B

SURVEY INSTRUMENT AND REPLY CARD

Dear Sir:

A doctoral research study initiated here at The Ohio State University is examining the contribution of company museums to the study of industry in industrial arts education.

In 1942, Lawrence Vail Coleman, then the Director of The American Association of Museums, conducted a study of company museums of which your museum was one. This study resulted in a book entitled Company Museums, published by The American Association of Museums, Washington, D. C., 1943.

As part of my study, I wish to chart the growth and development of those museums.

Your assistance in completing and returning the attached postal card and sending any museum literature will be greatly appreciated.

Sincerely yours,

Charles J. Beatty,
Instructor

Charles J. Beatty
The Ohio State University
Area of Industrial Arts Education
2047 Neil Avenue
Columbus
Ohio 43210
Your museum exists today? ( )yes ( )no
Name and Address of Company:

Company Head:
Museum Head or Curator:
Nature of growth and development since 1942:
-- or when and why was it discontinued?

Charles J. Beatty
The Ohio State University
Area of Industrial Arts Education
2047 Neil Avenue
Columbus, Ohio 43210

History -- American Business and Industry
Company Museums (collections -- exhibits)
APPENDIX C

POSTAL CARD AND LETTER SURVEY INSTRUMENT

========================================

Charles J. Beatty
The Ohio State University
Area of Industrial Arts
Education
2047 Neil Avenue
Columbus
Ohio 43210

========================================

name and address of company:

person to contact:

comments:

========================================
April 29, 1966

General Electric
Public Affairs
Evendale Plant
Interstate 75
Cincinnati, Ohio

Dear Sir:

Re: Company Museums (collections-exhibits)

A doctoral research study initiated here at the Ohio State University is examining the contribution of company museums in the study of industry.

Presently, I am attempting to discover the existence of company museums.

I would appreciate your help!

1. -- If you have such an institution -- please forward this information.

2. -- If you know of such institutions in your metropolitan area -- please forward this information.

The enclosed postal card will facilitate your reply. Your assistance in this matter will be greatly appreciated.

Sincerely yours,

Charles J. Beatty
Instructor

Approved by:

William E. Warner -- Graduate Advisor
APPENDIX D

LIST OF ADDITIONAL MUSEUMS

Kentucky

Barton Distilling Co. --
  Barton Museum of Whiskey History

Michigan

Pewabic Pottery Co. -- Collection
Baker Furniture Inc. Baker Museum and Craft Shop
National Bank of Detroit -- Collection

New York

Corning Glass Works -- Corning Glass Center
Western Electric Co., Inc. -- Collection

Ohio

Cincinnati Milling and Grinding Machine Co. --
  Old Shop of 1884
Goodyear Rubber Co. -- Goodyear Rubber Exhibit
General Electric Co. --
  Nela Park, The University of Light
Ohio Bell Telephone Co. -- Pioneer Museum
Union Fork & Hoe Co. -- Durell Farm Museum
Dayton Power and Light Co. -- Museum
The Hoover Co. -- Models and Samples
National Cash Register Co. -- Collection

Wisconsin

Institute of Paper Chemistry -- Dard Hunter
  Paper Museum
APPENDIX E
LOCATION, TOUR, INTERVIEW GUIDES AND
PHOTO SECTION

Location Guide

1. Location
   ___ City
   ___ Suburb
   ___ Countryside

2. Size of population in the area served by the museum:
   ___ 100,000 and up
   ___ 50,000 to 100,000
   ___ 25,000 to 50,000
   ___ 10,000 to 25,000
   ___ 5,000 to 10,000
   ___ 5,000 or less

3. Near or in a business district:
   Yes: No: Comment:

   Near or in an industrial area:
   Yes: No: Comment:

4. Physical attachment with company buildings:
   ___ attached to (part of) building
   ___ section within building
   ___ separate building

5. Kind of structure:
   ___ brick   ___ wood   ___ steel   ___ other
   Comment:
Tour Guide

1. What kinds of displays are used?

2. Is the display emphasis on depth or breadth or a combination of both?

3. If depth is emphasized, are the displays highly technical or over simplified?

4. Is miscellaneous material displayed?

5. Do specialized exhibits show complete evolution or entire processes?

6. What critical concepts of the industry or company are displayed?

7. What aspects of the company are omitted?

8. Is an attempt made to depict historical, social, political relevancies to the company?

9. Is central emphasis placed on widely known or glamorous products or processes?

10. Does the museum attempt to propagandize or advertise? If so, how?--through display, literature, talks, etc.?

11. Can the entire industry be studied in this museum?
Interview Guide
(Directed to Curator or Director)

1. At what point in company growth was the museum established?

2. Who developed the museum?

3. What purposes or objectives was the museum of industry set up to achieve and how effective has it been in realizing them?

4. Have the purposes or objectives changed over the years: What precipitated the change(s)?

5. What is the museum's frame of reference . . . company or similar industry?

6. How does the museum attempt to depict industry?

7. Do they develop their own displays?

8. To whom do they gear their displays?

9. What is the educational role performed?
10. Upon what does present or future existence depend? What is the extent of their resources?

11. Is the museum affected in any way by its setting?
   --What characterizes the community?
   --How are such characteristics reflected within the museum?
   --Does the community use the museum for classes, meetings, or other activities?

12. How many and what kinds of people visit the museum?

13. Why do the visitors come?
The first Baker cabinet shop has been recreated within this museum. More than 1,000 pieces of period furniture are on display...mostly 17th and 18th century masterpieces.
Period rooms, woodworkers' tools and well over 2,000 other items, including chairs, commodes, desks, and tables are displayed for designer and visitor.
One hundred and seventy years of American Whiskey history are portrayed by... items dealing with production, and related social, economic, and political developments.
A small, but significant display depicting the history of printing through Babylonian tablets, Egyptian seals, oriental wood blocks and authentic examples of the use of... "moveable type".
Early communication devices along with numerous displays and pictures depict the service contribution of the Bell employees.

Machines and appliances contrast the various sources of power (gas, steam, and electricity). ...machines and appliances utilizing these power sources are contrasted in the museum.
The tools, implements, and "work saving" appliances of the 1790's grace the recon-pioneer home of agricultural America.

The rubber industry is aptly represented by the numerous innovations that led from Charles Goodyear's discovery of vulcanization.

Selected glass products which depict the era of the glass craftsman are displayed at Owens-Illinois.
The twig broom displays man's early desire to keep his shelter clean. This display traces the development of cleaning devices through the modern vacuum cleaner.

Photos courtesy of HOOVER ENGR. DEPT.
John Woodman Higgins' lifetime collection of the 3,000 year history of iron and steel is portrayed amidst the atmosphere of a 14th century castle. His collection is dominated by over one hundred suits of armor.
APPENDIX F
LETTER OF PERMISSION AND ACCEPTANCE

THE OHIO STATE UNIVERSITY
College of Education
1945 North High Street
Columbus, Ohio 43210

April 29, 1966

Mr. Carl J. Zinke, Curator
Toledo Scale Museum
Telegraph Road
Toledo, Ohio

Dear Mr. Zinke:

SUBJECT: Museum Visit and Interview

A doctoral research study initiated here at The Ohio State University is examining the contribution of company museum to the study of industry in industrial arts education. The scarcity of written material on this topic makes it important for me to visit prime sources, the company museums, for data.

Your museum has been selected as one of those under study, and I wish to request permission to:

-- interview the curator or director,
-- visit the museum,
-- review any literature pertinent to the museum,
-- take pictures.

The visitation, hopefully will be on either Friday or Saturday within the next three months. The enclosed postal card will facilitate your reply, which can indicate a date and time suitable to you.

Your assistance in this matter will be greatly appreciated.

Sincerely yours,
Charles J. Beatty, Instructor

Approved by:

William E. Warner, Graduate Advisor
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PLEASE NOTE:

Map of United States with Location of Museums of Industry, © 1961 by The University of Chicago, page 230, not microfilmed at request of author. Available for consultation at Ohio State University Library.

University Microfilms.
APPENDIX H

DATA ON SAMPLE OF MUSEUMS OF INDUSTRY

Baker Furniture Incorporated
Baker Museum and Craft Shop
Exhibitors Building
Grand Rapids, Michigan

Company Head: Mr. Hollis M. Baker, Jr.
Curator: Mr. E. J. Bellaire

Staff includes a secretary-receptionist. Quarters are 60' x 100'. Hours: Monday through Friday from 9 a.m. to 5 p.m. The museum was established in 1941 and was moved to Holland, Michigan in 1951. It was re-established in Grand Rapids in 1964. The exhibits include antique furniture, a curiosity shop, a reconstructed chemist shop, the first Baker cabinet shop, and a display of how choice pieces of cabinet work are reproduced. The Museum has no library but has available a free brochure, "The Baker Museum and Craft Shop." Attendance is 4,000 annually. Admission is $.50.

Baker Furniture Incorporated
Baker Museum for Furniture Research
6th and Columbia Avenues
Holland, Michigan

Company Head: Mr. Hollis M. Baker, Jr.
Curator: Mr. Edward Brolin

Staff includes a secretary-receptionist. Quarters are
300' x 25'. Hours: Monday through Friday from 10 a.m. to 5 p.m. The museum was established in Grand Rapids in 1941 and was moved to Holland in 1951. The exhibits include 1200 furniture pieces of the 16th, 17th, 18th and 19th centuries. There is no museum library. Available publication include "The Baker Museum," a free guide, and "A Special Collection of Authentic Furniture" for $1.00 and "Furniture by Baker" for $3.00. Attendance is 5,000 annually. Admission is $.50.

Baltimore and Ohio Railroad
Baltimore and Ohio Transportation Museum
Pratt and Poppleton Streets
Mount Clare Station
Baltimore, Maryland

The quarters include a round house with a diameter of 240' and another building with two floors each 60' x 240'. Hours are from 10 a.m. to 4 p.m. from Wednesday through Sunday. The museum was established in 1935 by Major Pangborn, an official of the company. Exhibits include locomotives, railroad cars, interiors, and rail ties. Some items have been loaned out for movies and special purposes. The museum has no library and available literature includes a free "Guide to the Museum" and a brochure, "The Baltimore and Ohio Transportation Museum" which costs $.50. Yearly attendance is approximately 30,000 and admission is free.
Barton Distilling Company
Barton Museum of Whiskey History
Bardstown, Kentucky

Company Head: Mr. Oscar Goetz.
Curator: Mr. N. W. Stanfill.

The staff includes three student guides. Quarters are 40' x 60'. Hours are from 9 to 5 on Monday through Friday. The museum was established in 1957 and includes exhibits depicting the processes of whiskey distillation, the history of the whiskey industry in the United States, and the Prohibition Era. Some of the exhibits are on loan from other companies. The museum has no library but provides free literature including, "The Barton Story," "How to be a Whiskey Expert," and various pamphlets of the whiskey industry. Yearly attendance is 25,000 and admission is free.

Chillicothe Newspaper, Inc.
Exhibit on Printing
50 W. Main Street
Chillicothe, Ohio

Company Head: Mr. Robert E. Scharfer.

Person in charge of museum: Mr. N. L. Kallenberger, general manager.

The building is modeled after the first Ohio capitol building and includes two cases of 6' x 3' x 9' in the general business office. The museum is open from 8:30 to 5 from Monday through Friday. Exhibits in the walled
cases are devoted to the history of printing and includes Babylonian tablets, papyrus, and Egyptian seals. The museum has no library or publications on the museum. About 200 persons visit yearly and admission is free.

Corning Glass Works
Corning Glass Center
Corning, New York

Company Head: Mr. R. Lee Waterman, president.
Director of the Hall of Science and Industry: Mr. Ray Owen.
Director of the Steuben Factory: Mr. John Grakan.
Curator of the Corning Museum of Glass: Mr. James B. Brown

Staff includes six student guides and two persons at an information booth. The quarters are in 7,000 square feet.
Museum hours are daily from 9:30 to 5 from June through October. Closed Mondays from November through May.
The museum was established in 1951 and its exhibits include animated, push button exhibits illustrating the versatility of modern glass and examples of glassblowing.
The museum has a library but as part of the Corning Museum of Glass and tours are available in the Steuben Factory. Publications include a "Tour Guide," "The Corning Glass Center," both free, and "Corning Glass Center" for $1.50. The attendance is 900,000 annually and admission is free.
The Institute of Paper Chemistry
Dard Hunter Paper Museum
1043 E. South River Street
Appleton, Wisconsin

Curator: Dr. Harry F. Lewis.

Staff includes a secretary and the museum is housed in quarters of 1500 square feet. Hours are from 8 to 5 on Monday through Saturday. The museum was begun in 1938 at the Massachusetts Institute of Technology and was moved to the Paper Institute in 1954. The extensive exhibits depict paper making around the world. The museum library boasts approximately a thousand volumes. Free guides to the museum include "Upper Museum Display Cases" and "The Dard Hunter Paper Museum." Yearly attendance is 1500 and admission is free.

Dayton Power and Light Company
Museum
1900 South Broadway Street
Dayton, Ohio

Curator: Mr. Richard P. Keyes.

The staff includes a secretary and museum quarters are 40' x 80'. The museum is open by appointment during working hours of 8:30 to 4:30 from Monday through Friday. The museum was established in 1958 and its exhibits include machines contrasting power by man with energy provided by gas, electricity, or steam. Research and office areas are combined. Attendance is 3,000 yearly and admission is free by appointment.
Union Fork & Hoe Company  
Durell Farm Museum  
500 Dublin Avenue  
Columbus, Ohio

Company Head: Mr. Edward Durell, president.  
Curator: Mr. Fred D. Comer.

The museum is located on the third floor of the company office building and encompasses approximately 600 square feet. It is open during office hours by appointment only. The museum was established in 1956 and is a re-creation of a pioneer home of the late eighteenth century with tools and equipment characteristic of that time. The museum has a small library of about twenty volumes and provides a free six page foldout, "Durell Farm Museum." Several hundred persons visit yearly and admission is free by appointment.

Goodyear Tire and Rubber Company  
Goodyear Rubber Exhibit  
1144 E. Market Street  
Akron, Ohio

Company Head: Mr. Victor Holt, Jr.  
Curator: Mr. J. B. Golden.

Staff includes an assistant curator and two tour leaders who are Goodyear trainees. Museum quarters are approximately 960 square feet. Hours are from 8:15 to 4:45 on Monday through Friday. The museum was established in 1942 and displays processes, inventions, and the products
of the rubber industry. There is no museum library or publications but there are company publications and a library for the rubber industry is maintained in another building. Annual attendance is 12,000 and admission is free.

Worcester Pressed Steel Company
The John Woodman Higgins Armory
100 Barber Avenue
Worcester, Massachusetts

Company Head: Mr. Allan D. Wassall.
Curator: Mr. Albert J. Gagne.

Staff of one guard. Museum quarters are in a building with two wings, each 150' x 50' and two balconies 20' x 40'. The museum is open from 8:30 to 4:30 on Monday through Friday and from 8:30 to 12 noon on Saturday. The museum was established in 1928 and its exhibits depict 3,000 years of metal craftsmanship, including numerous suits of armor. There is a museum library and free brochures include, "The J. W. Higgins Armory," and "Stained Glass to Stainless Steel." Available also is "A Catalogue of Armor" for $1.50 and "Knights and Armor" for .50 cents. Annual attendance is 8,000 and admission is free.
The Hoover Company
Models and Samples
North Canton, Ohio

Museum Head: Mr. H. W. Hoover, Jr. Person in charge of Museum: Mr. Raymond L. Wearstler, public relations director, and Mr. H. W. Yoss, engineer. The museum quarters are 30' x 30' and it is open during business hours by appointment. Established in 1924, the museum size was reduced in 1960. Its display depicts the development of cleaning pieces from a twig broom to the electric vacuum cleaner. There is no library or publication available. Attendance is estimated at fifty persons yearly and admission is free by appointment.

Insurance Company of North America
Historical Collection
1600 Arch Street
Philadelphia, Pennsylvania

Company Head: Mr. H. Richard Heilman. Archivist: Mrs. Georgeanne P. Daly. Quarters are 60' x 60' plus a hallway and the building entrances. Hours are from 8 to 5 on Monday through Friday. The museum was established in 1926 and exhibits marine paintings, prints, models, fire paintings, prints, models, and aviation models. The museum has no library but does include a research area. A free brochure on "America Firemarks" is available. Books available on the museum include The Historical
Collection, To Have and to Hold, and the Biography of a Business, 1792-1942. A yearly attendance of 500 persons is estimated and admission is free.

Owens-Illinois Incorporated
Libbey Glass Exhibit
Ash and Buckeye Streets
Toledo, Ohio

Historian of the museum: Mrs. Ruth Denney.
Staff includes Mr. Paul Billmaier in public relations.
Museum quarters includes a display case of 4' x 8' and an area for temporary display of 6' x 10'. Hours are from 8:30 to 4:30 Monday through Friday. The museum was established in 1890 and features glass pieces dating from 1880 of handmade and cut glass. Selected pieces of the exhibit are in the Toledo Museum of Art. Informational literature is available in "The Story of Libbey." Annual attendance is estimated at 100 persons and admission is free by appointment.

General Electric Company
Nela Park: The University of Light
Nela Park
Cleveland, Ohio

In charge of the museum: Mr. J. Patrick, public relations director. Hours are from 8 to 5 on Monday through Saturday. The museum was established in 1913 and is housed in an entire building. Exhibits include displays
of lamps, light bulbs, various lighting effects and developments in the lighting industry. There is no library in the museum but a nearby building has a library on lighting. A free brochure, "Nela Park" is available. Attendance is 25,000 annually and admission is free.

The Philadelphia Contributionship for Insurance
The Philadelphia Contributionship Museum
212 South Fourth Street
Philadelphia, Pennsylvania

Company Head: Mr. Walter L. Smith, Jr. (Also in charge of the museum.) Quarters are in an office area 12' x 16'. Open from 9 to 4:30 on Monday through Friday. The museum was established in 1926 and contains documents, fire fighting equipment, badges, buttons and other historical items dealing with fire and fire insurance. There is a free guide, "At the Sign of the Hand in Hand," and a brochure, "Franklin and Fires." About ten persons visit yearly and admission is free.

Ohio Bell Telephone
Ohio Bell Album (or Pioneer) Museum
750 Huron Street; Basement Room B
Cleveland, Ohio

Company Head: Mr. F. R. Eckley. Persons in charge of museum: Mr. H. R. Rindland, public relations director, and Mr. Thomas Tredon, display manager. Museum quarters are 20' x 40'. Open during business hours by appointment
The museum was established in 1958 at the time of the National Telephone Conference in Cleveland. Exhibits include early telephones from the establishment of the company in 1921 and depict the important roles played by telephone company employees. There is no museum library but a public relations library is located in the same building. Attendance is estimated at 100 to 150 persons yearly and admission is free by appointment.
APPENDIX I

DATA ON ADDITIONAL EXISTING MUSEUMS OF INDUSTRY

Abbott Laboratories
Historical Collection
North Chicago, Illinois (60064)

Company Head: George R. Cain. Curator of Museum: Lawrence N. Crail. Museum quarters include table cases in the company library and paintings in offices and plant. Open during business hours. The museum was established in 1938 and includes a permanent display of early pharmaceutical products and a traveling display of thirty-five paintings. Publications include, "A Corporation Collects" and admission is free.

Arrow Division of Cluet Peabody and Co., Inc.
Collar Museum
433 River Street
Troy, New York 12180

Company Head: Mr. Barry T. Leithead, president of Cluett Peabody and Mr. R. T. Garrison, president of the Arrow Company. Person in charge of the museum: Mrs. Elizabeth J. Johnson, personnel manager. The museum quarters are in a room 20' x 35'. Open during business hours. The museum was established in 1912 and reports no substantial change since 1942. The exhibit is permanent and consists of 3,000 collars which date from the company's beginnings in 1851. Admission is free.
Canada Steamship Lines Limited
The Coverdale Collection of Historical Canadiana
P.O. Box 100
Montreal, Canada P.Q.

Person in charge of the museum: Mr. J. G. Fisher. The museum was established in 1930 and reports being unchanged since 1942. Mr. Fisher notes: "Our collection of Canadiana is housed as part of the interior decoration of the Manoir Richelieu Hotel (Murray Bay) and the Canadian furniture and Indian relics are part of the decor housed at Hotel Taloussac."

Cincinnati Milling and Grinding Machine Co.
Old Shop of 1884
Marburg Avenue
Cincinnati, Ohio

Person in charge of museum: Mr. William C. Grindrod, advertising and sales promotion manager. Re-created old tool and die shop is housed on fourth floor of the company. Open during business hours by appointment. The museum was established in 1954 and exhibits early milling machines, cutters, grinders, Putnam planers.

Crane and Co., Incorporated
Crane Museum
30 South Street
Dalton, Massachusetts 01226

Company Head: Mr. Bruce Crane. Person in charge of museum: Mr. Winthrop Crane, 3rd vice president. Quarters are in the "Old Stone Mill" built in 1844 by the company
on the bank of the Housatonic River. Open from 2-5 p.m. on Monday through Friday during June, July, August, and September. The museum was established in 1930. Exhibits include a scale model of the vat house of the first Crane mill (made by Dard Hunter), and hand molds used by Zenas Crane from 1801-1831. Mr. Winthrop Crane notes that the museum is a "source of interest to our employees and visiting customers as well as the public, . . . a unique exhibit of our 165 years of papermaking." The museum has not grown materially since 1942 and admission is free.

Denver and Rio Grande Western Railroad Company
Railroad Archives and Museum
Lewis Building
Denver, Colorado

Company Head: Mr. G. B. Aydelotte. Person in charge of museum: Mr. William E. Marshall assisted by Mr. E. T. Thompson. Quarters are in the company offices and the museum is open during business hours. Established in 1941, the museum is essentially unchanged since 1942. Exhibits include photographs, records, and narrow gauge equipment used on western railroads. There are company archives and a reference collection. Admission is free.
Fisher Scientific Company
Fisher Collection of Alchemical and Historical Pictures
711 Forbes Street
Pittsburgh, Pennsylvania 15219

Person in charge of the museum: Mr. Harry M. Schwalb.
Quarters are in the offices of the company and the collection may be viewed during business hours upon request.
Established in 1920, the exhibits are of paintings, etchings, and engravings in the field of alchemy and include reproductions supplied to scientists for use in conjunction with books and articles.

Home Insurance Company
The H. V. Smith Museum
59 Maiden Lane
New York, New York

Company Head: Mr. Kenneth E. Block, president. The museum is quartered in a special room and hall near the executive offices. The museum which was established during 1941 is open during business hours. Exhibits include a reconstruction of an early nineteenth century fire house, equipment and memorabilia of early volunteer fire companies, firemarks and photographs.

International Business Machine Corporation
I.B.M. Gallery
590 Maiden Lane
New York, New York 10022

Person in charge of museum: Mr. Richard D. Collins, manager of the arts and science department. Open during
business hours. The gallery was established in 1956 and exhibits artistic, photographic, and scientific materials. Ten permanent exhibitions are held annually and traveling exhibits are lent to museums, educational institutions, galleries, and civic groups.

J. I. Case Company
Farm Machinery Collection
700 State Street
Racine, Wisconsin

Person in charge of museum: Mr. D. E. Fricker, public relations director. The museum was established in 1942 and is presently dormant. Plans are underway either to reinstitute the museum or to donate the contents to some other organization. The exhibits are of farming tools, machines, and equipment.

Lincoln National Life Insurance Company
Lincoln National Life Foundation Museum and Archives
1301 S. Harrison Street
Fort Wayne, Indiana 46801

Company Head: Mr. H. F. Rood. Person in charge of museum: Dr. R. Gerald McMurtrey. Quarters are in a special room of 30' x 100'. The museum is open during business hours. Established in 1928, the exhibits are of Lincolniana: paintings, photographs, prints, sculpture and metals. The museum library includes 10,000 volumes and a free publication is available -- "Lincoln Lore."
McCormick and Company, Incorporated
McCormick Tea Museum
Light and Conway Streets
Baltimore, Maryland

The public relations department directs the museum.
Quarters are in a tea house in the style of an old English tavern. Open during business hours, this museum was established in 1936. Emphasis is on the tea house to which visitors are invited rather than on exhibits.

Metropolitan Life Insurance Company
Metropolitan Archives
1 Madison Avenue
New York, New York 10010

Company Head: Mr. Gilbert W. Fitzhugh. Person in charge of museum: Mrs. Mary S. Frazer, librarian. The quarters are in seven rooms in the Tower Building. Open during business hours. Established in 1909, the exhibits depict company history chronologically presented, documents, publications, and photographs reflecting changes and growth of the company.

Mutual Assurance Company
The Mutual Assurance Company Museum
240 South Fourth Street
Philadelphia, Pennsylvania 19101

Company Head: Mr. Morgan Denison, treasurer. The museum is quartered in two rooms. Open during business hours. Established in 1926, the museum contains exhibits of fire
marks, fire prints, hats, capes, and badges of firemen.

National Bank of Detroit
Collection
16125 East Jefferson Street
Detroit, Michigan

The museum is housed in the bank lobby. Open during business hours. Established in 1947, the exhibits are composed of a numismatic collection of United States currency.

News Syndicate Company
The News Lobby Exhibit
220 West 42nd Street
New York, New York 10017


New York Life Insurance Company
Historical Exhibit
51 Madison Avenue
New York, New York 10010

Person in charge of museum: Mr. V. DeKanel, public relations associate. The museum was established in 1938 and company archives were set up in 1955. Exhibits include old advertisements, correspondence and other
materials pertaining to the history of the company.

New York Times Company
The John H. Finley Memorial Museum of the Recorded Word
229 West 43rd Street
New York, New York 10036

Company Head: Mr. A. O. Sulzberger. Curator: Mr. Robert S. November. Quartered in a 20' x 40' room on the tenth floor. Open during business hours. Established in 1938, the exhibits feature the evolution of the written word from 3,000 B.C. and the development through modern inventions, photographs and books relating to the history of the graphic arts.

Sherwin-Williams Company
The Sherwin-Williams Collection
101 Prospect Avenue, N.W.
Cleveland, Ohio 44101

Person in charge of museum: Mr. Clayton H. Lange, public relations manager. Quartered in a special room in the executive offices. The museum was established in 1923 and at present the staff is in the process of revamping and re-arranging materials. Exhibits are of the history of the paint industry with specific items in the manufacture and marketing of the company's products.
Swigart Associates, Inc.
Museum Park
409 Penn Street
Huntingdon, Pennsylvania

Company Heads: Mr. William E. Swigart, Jr. and Mrs. Helen F. Swigart. Quartered in 4000 square feet in Museum Park Building. Established in 1935, the museum material was moved to a new building in 1957. The exhibits include objects related to the company's operation as an insurance agency. It includes a cross section of American cars, and a collection of auto name plates and license plates.

Union Pacific System
Union Pacific Historical Museum
Union Pacific Headquarters Building
Omaha, Nebraska

Person in charge of museum: Mrs. Irene Authier Keeffe, director. Quarters are in a 30' x 100' room off the lobby. Open during business hours. Large groups are seen by appointment. Established in 1922, the exhibits include a Lincoln collection, Indian artifacts, and early rail-road items.

Vermont Marble Company
Marble Exhibit
Proctor, Vermont

Company Head: Mr. Frank Stevenson, president. Person in charge of museum: Mr. Gerald G. Racette, manager.
Quarters are on the second floor of the shop building. Open during business hours. Established in 1934. The exhibits include a variety of marbles, and exterior and interior applications. Attendance in 1965 was estimated at 83,000.

Waterbury Button Company
Museum
Waterbury, Connecticut

Company Head: Mr. L. P. Sperry, Jr. No one in charge of the museum. Open for private showings only. Established in 1941, the exhibits feature old buttons, especially buttons from uniforms.

Wells Fargo Bank and Union Trust
Wells Fargo Historical Collection
Market and Montgomery Streets
San Francisco, California 94120

Company Head: Mr. Ransom Cook, chairman of the Board. Person in charge of museum: Mrs. Irene Simpson, director. Open 10 - 3 every banking day. Established in 1935, the exhibits include historical materials, realia, documents, pictures and prints covering the period from the discovery of gold through the San Francisco fire and earthquake. The museum continues to grow and includes numerous photos of Wells Fargo employees and offices.
Western Electric Company, Incorporated
Collection
195 Broadway
New York, New York

Person in charge of museum: Mr. R. P. Dugan, exhibit associate. The communication exhibits are quartered in Disneyland-Annaheim, California; The Museum of Science and Industry, California; The Columbus Museum of Science and Industry; The Franklin Institute -- Philadelphia, Pennsylvania. A major exhibit is planned for the Shreveport plant.

Western Union Telegraph Co.
Western Union Museum
60 North Hudson Street
New York, New York 10013

Company Head: Mr. R. W. McFall, president. Person in charge of museum: Mr. J. E. Stebner. Quartered in the mezzanine of the company's office building. Open weekdays during business hours. Established in 1930. Since 1942, the Western Union Engineering Museum has changed to the Western Union Museum. The exhibit includes over 2,000 items of telegraph apparatus and documents.
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