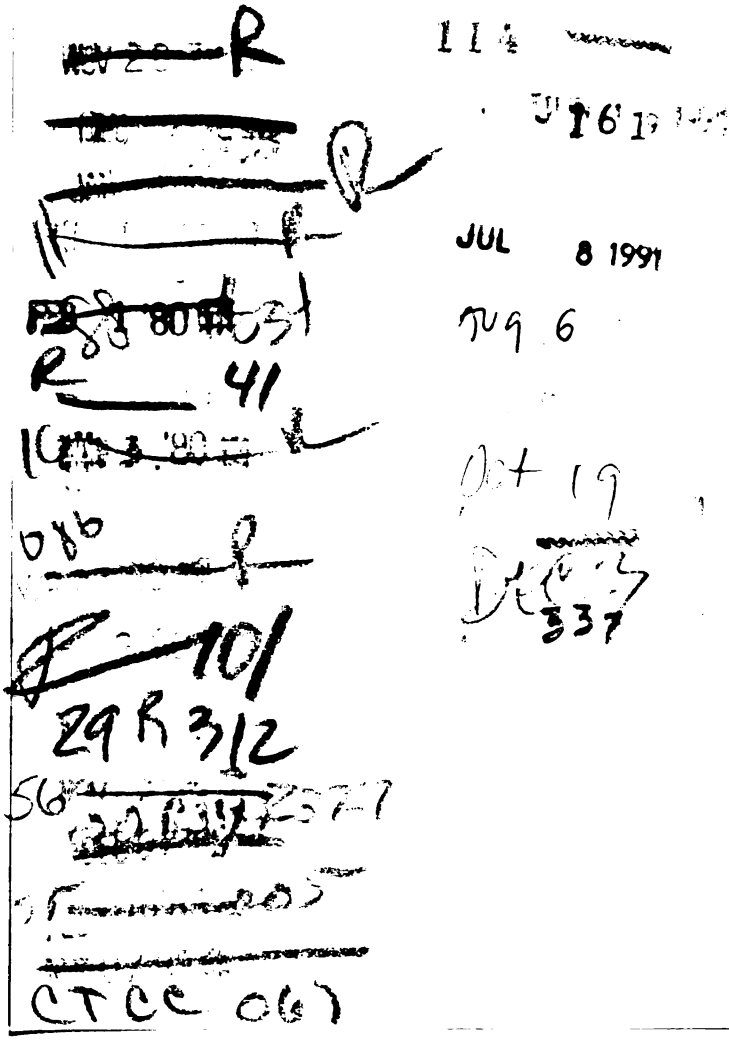
EXHIBIT EFFECTIVENESS IN AN INTERPRETIVE CENTER

Thesis for the Degree of M. S.
MICHIGAN STATE UNIVERSITY
WILLIAM GEORGE THOMAS
1977



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ABSTRACT

EXHIBIT EFFECTIVENESS IN AN

INTERPRETIVE CENTER

By

William George Thomas

Throughout many interpretive nature areas, a common way of disseminating information to people is through the use of exhibits. However, once the exhibit is in place, little is known about visitor response to the exhibit. What attracts the visitor to an exhibit and holds his attention? Are certain types of exhibits more interesting than others to the visitor? Are the effects on the visitor those desired? Answers to such questions would give professional interpreters an idea of how to design and construct more effective exhibits.

In an attempt to determine what the response of visitors is to interpretive exhibits, it was felt that two methods of research should be conducted.

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First, an intensive search through previous documents to find if any effective methods had been determined. Second, the circulation of a questionnaire at an interpretive facility to ascertain if the exhibits there adhere to these methods or if other methods are indicated. The findings could then be combined as a guide to the interpreter.

It was determined that there was considerable agreement between past works and the findings of the questionnaire. Certain physical factors, such as use of stuffed animals or concise labels in an exhibit will attract and hold the attention of the visitor. Themes of exhibits, and the form the exhibit takes is important in determining the amount of interest the visitor will give to an exhibit. Animal themes and live animals held the highest interest value. The commonly used, glass-inclosed exhibit case was found to also be a popular method of presentation. The visitor was found to have very favorable attitudes about viewing of the interpretive exhibits and gained much information through this medium.

EXHIBIT EFFECTIVENESS IN AN INTERPRETIVE CENTER

By

William George Thomas

A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Department of Fisheries and Wildlife

1977

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ACKNOWLEDGEMENTS

I would like to thank Mr. Thomas H. Smith, Chief Naturalist of the Huron-Clinton Metropolitan Authority, and Mr. Roger A. Bajorek, Supervising Naturalist, Stony Creek Metropark Nature Center for granting permission to carry on this survey at the Stony Creek Nature Center.

From the beginning of my Master's program, I have received much helpful guidance, critique, and encoragement from Dr. Gilbert W. Mouser of the Michigan State University's Fisheries and Wildlife Department. During this study Dr. Mouser, Dr. Eugene W. Roelofs of the Fisheries and Wildlife Dept., and Dr. Paul H. Risk of the Park and Recreation Resources Dept. have been helpful in providing their comments after reviewing the first draft of this thesis. My gratitude to these men.

I also want to thank my daughter, Kelly, from whom I took much time of her early years to

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complete this project. But, most of all, more than any other person, my wife, Kathy, deserves credit for the constant encouragement, devotion, and tremendous help in the completion of this thesis. I owe her much.

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INTRODUCTION

Problem and Over-all Objective

Being a naturalist, I am interested in finding the best means of reaching people, and making a lasting impression on them through the many forms of natural history interpretation. At the Stony Creek Nature Center, where I have worked for several years, we have developed many ways to communicate with people. Through the years, we have been able to determine what is successful in school lectures, nature center lectures, field trips, and special programs. However, it occurred to me that we have only vague notions about the success of our exhibits. The only feedback on these we receive comes in the form of a few comments offered by visitors. Further, in constructing these exhibits, we tend to put in "what looks good", feeling that this will attract and hold the interest of the public. After the

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displays are put in the exhibit room, it is largely unknown to us just what reactions people have to our efforts. Is the way the nature center visitor perceives the exhibits the same as we -- the park naturalists? Are the types of exhibits we place there the kind that hold the interest of the general public? Do these exhibits create the kind of effect we had hoped for on the visitor?

It was the over-all objective of this study, then, to gain a better insight into the reactions of people toward the exhibits at a nature interpretive center--specifically Stony Creek Nature Center. It was felt that such a study would be helpful in determining the types and design of exhibits that would be successful in creating the desired reactions in the visiting public.

Specific Objectives

To meet the over-all objective of this study, that of exhibit success, it was necessary to break this aim down into several more specific objectives.

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1) To determine what color, composition, layout, lighting or other physical factors of the exhibit attract and hold the attention of the visitor.

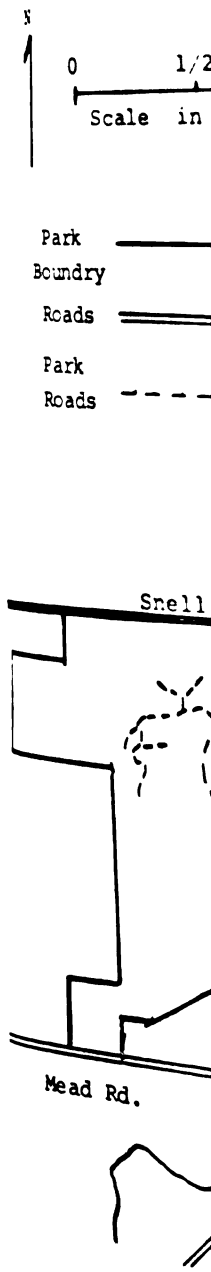
2) To determine what themes of exhibits stimulate interest in the visitor.

3) To determine in what ways the exhibits affect the nature center visitor.

Area of Study

The Stony Creek Nature Center is one of three nature centers administered by the Huron-Clinton Metropolitan Authority in three of its ten metroparks. It is located approximately twenty-nine miles north of Detroit, Michigan, between the cities of Romeo and Rochester, at the north end of Stony Creek Metropark. (Figure 1)

The "nature area" portion of the park comprises some eight hundred acres and is continuous with the rest of the park in land only. A separate road entrance to the nature area comes from Inwood Road and allows parking for one hundred cars. This area received ninty-four thousand visitors in 1976. Within this area are three public nature trails varying in length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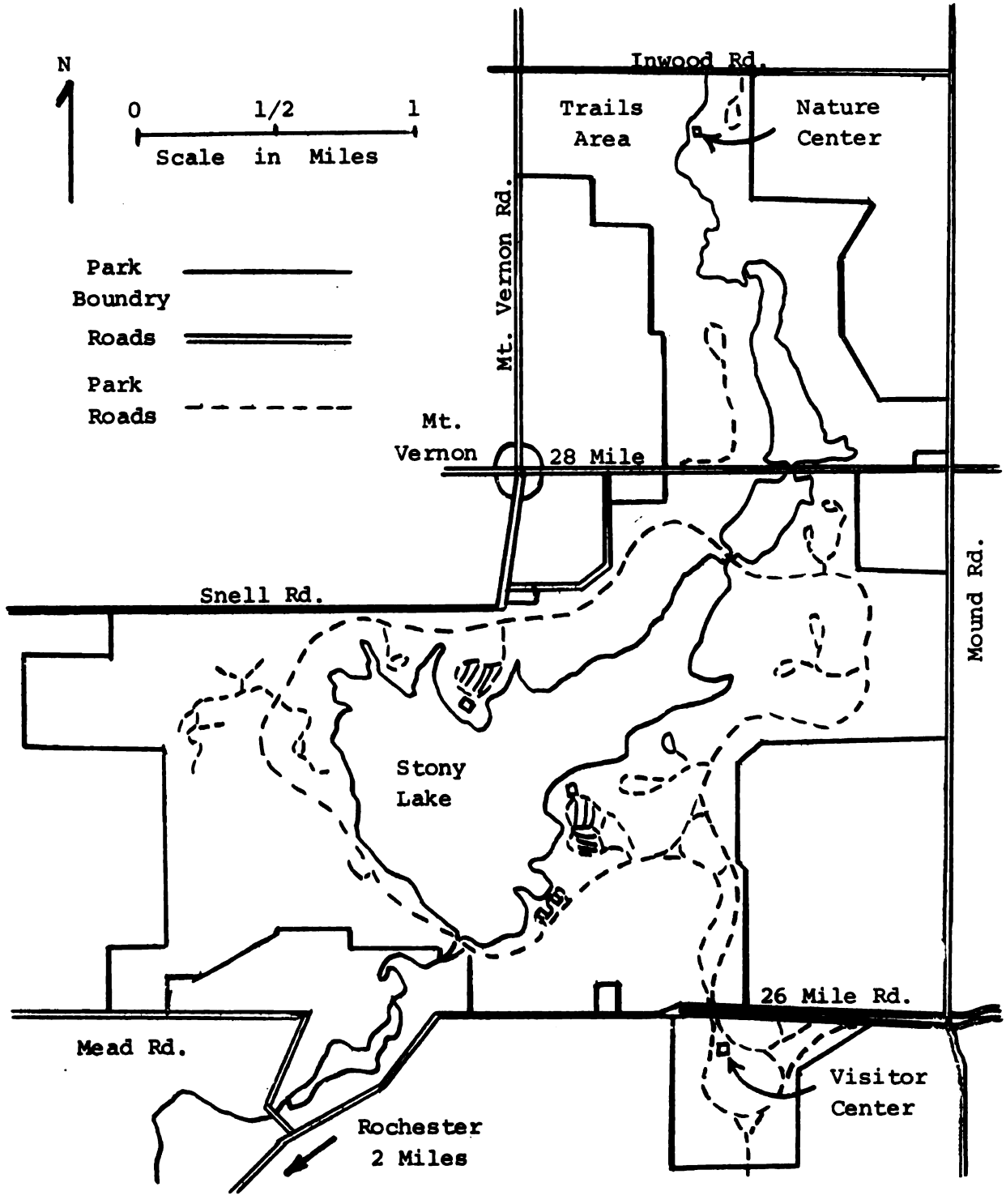

Figure 1

Stony Creek Metropark Map

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(one-half to two-and-one-half miles), a special study area, a wide variety of habitats, and the Nature Center Building.

The building is a two-story, one-time residence built in 1928 as a country retreat. When the Metroparks took possesion, it was remodeled into an interpretive facility capable of handling thousands of visitors annually. The interior of the building includes public restrooms, an office, workroom, storage areas, classrooms, observation porch, and exhibit room. It is the exhibit room that comprises the major interest of this study.

The exhibit room of the Nature Center is the largest room in the building, measuring 19 1/2 feet by 32 1/2 feet. Its general decor is rustic, enhanced by old barn wood paneling and hand hewn beams. On one end of the room is a large fireplace (Figures 2 and 3). Contained in this room are a lighted map table, registration desk, access to the naturalist's office, and a variety of exhibits. The types of exhibits contained in this room are as follows:

1) Live animal displays (Figure 4)
2) Aquariums (Figure 5)
3) Stuffed "touchable" animals (Figure 6)

Figure 2. Exhibit Room, Stony Creek Nature Center, West

Figure 3. Exhibit Room, Stony Creek Nature Center, East

Figure 4. Live Animal Displays

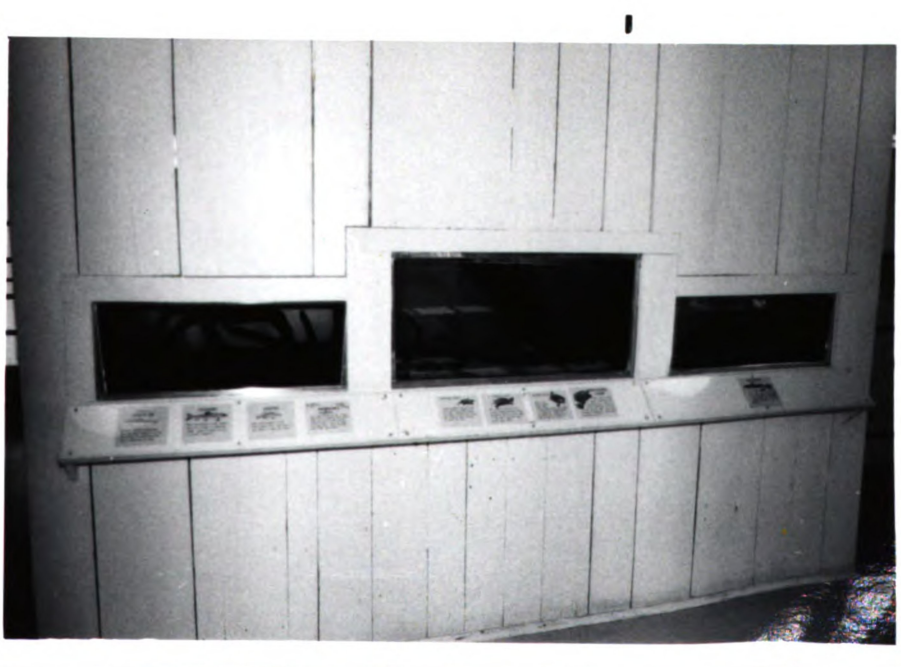


Figure 5. Aquarium Exhibit

Figure 6. Stuffed "Touchable" Animals

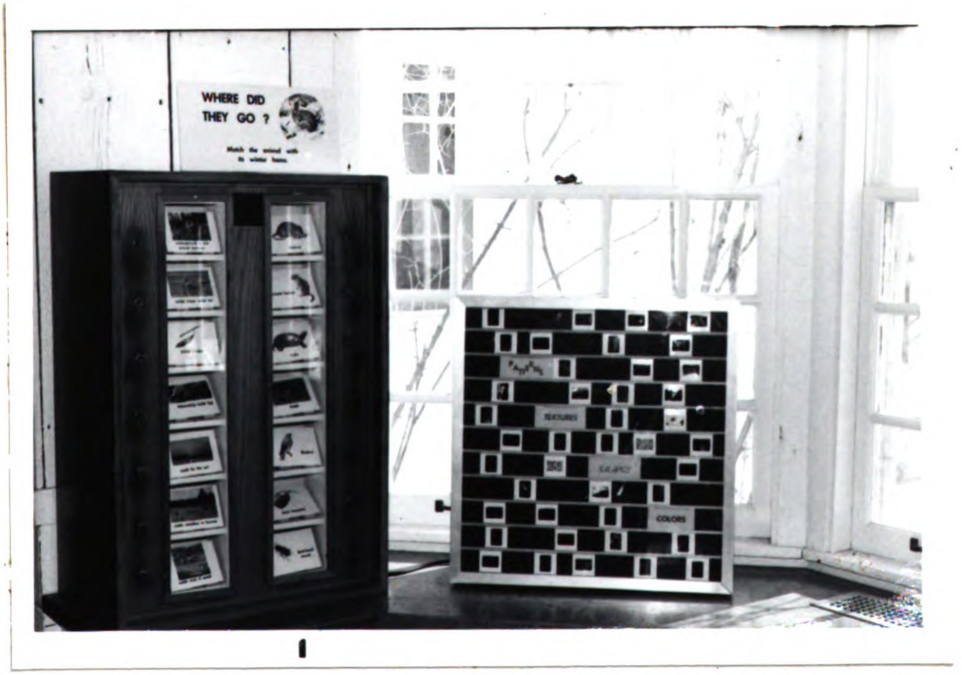
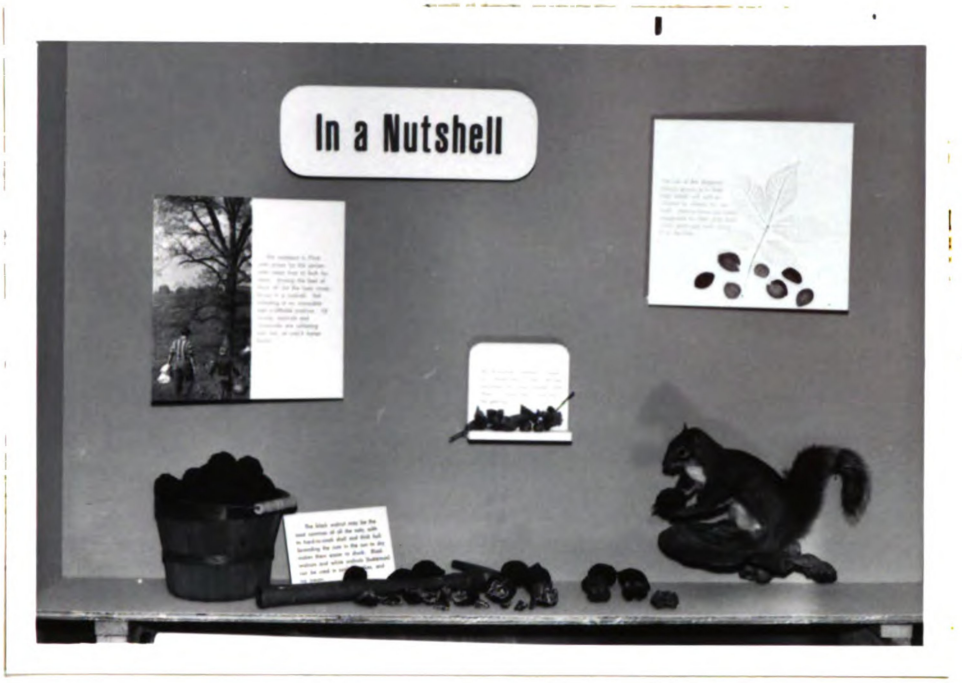


Figure 7. Matching Game and Photo-Slide Exhibit

Figure 8. Phone Exhibit

Figure 9. Large, Turkey Exhibit



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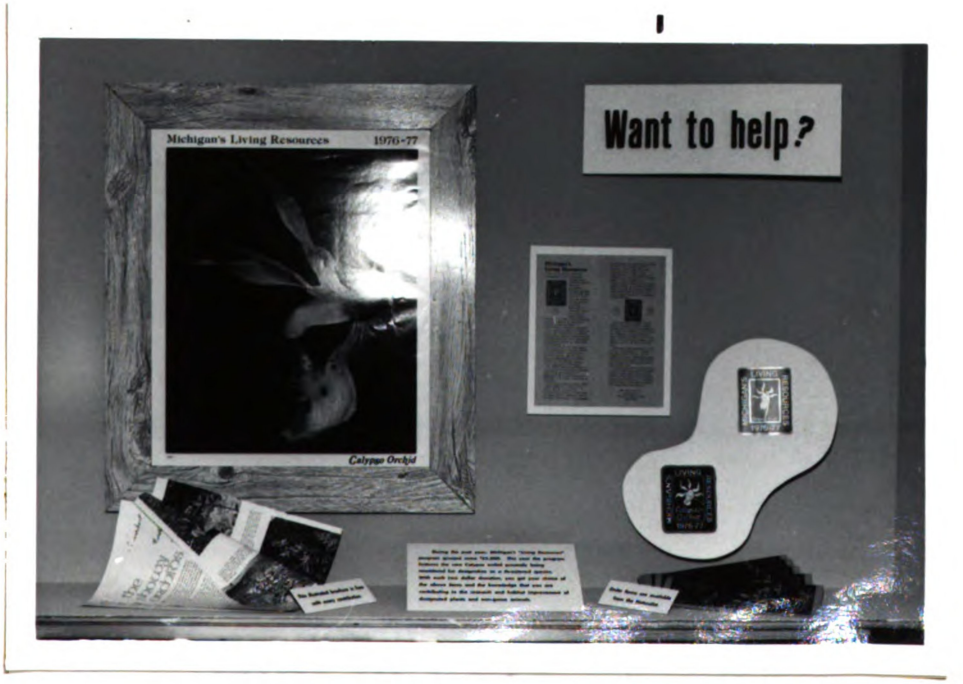
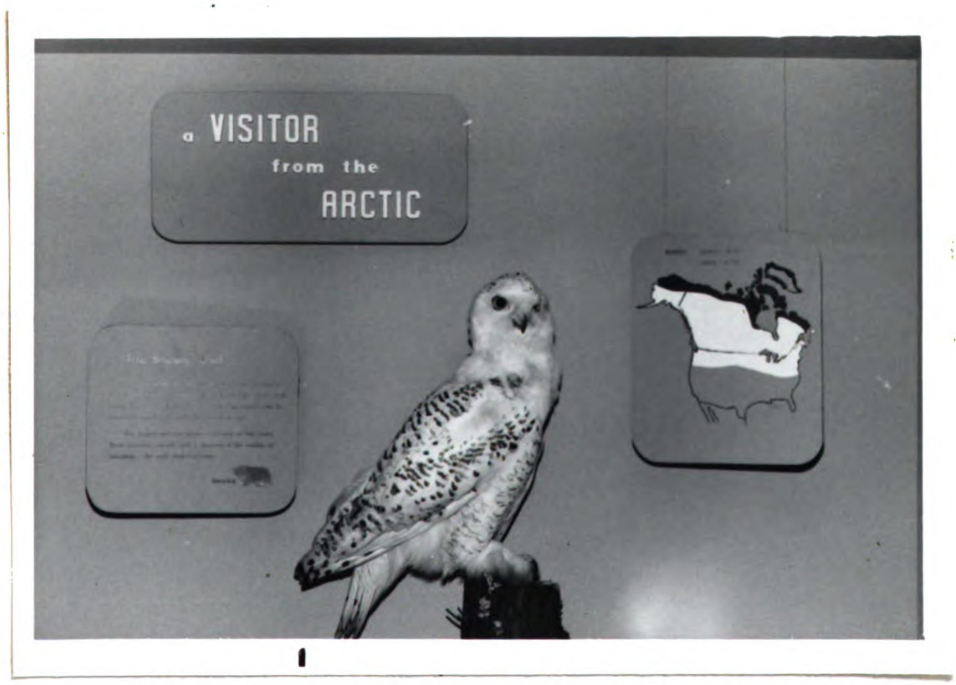


Figure 11. "Want to Help?" Exhibit

Figure 12. Snow Exhibit



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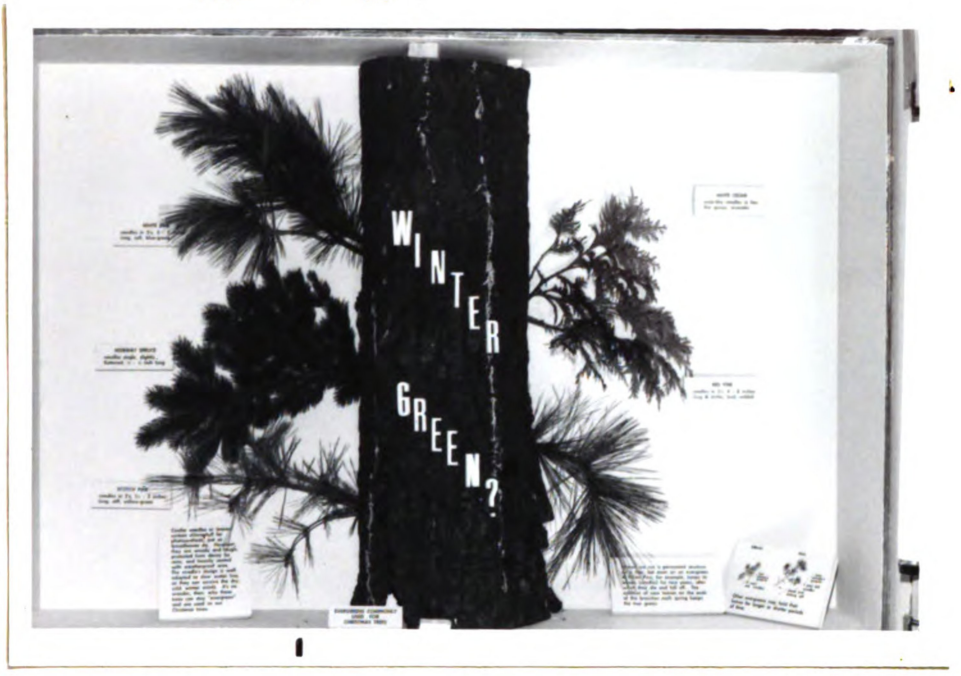

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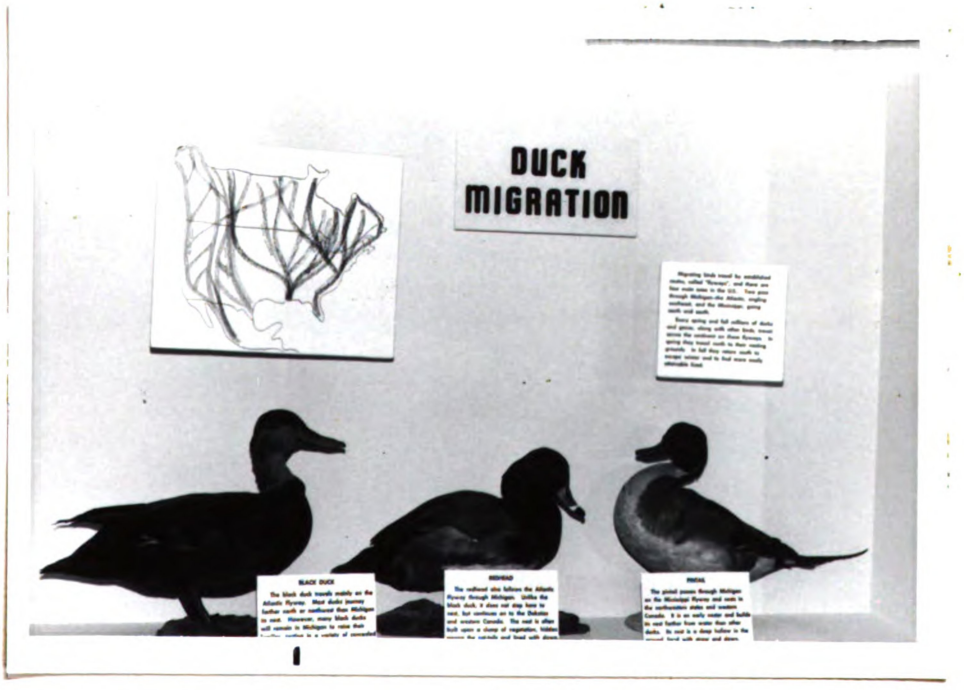

Figure 15. Duck Migration Exhibit

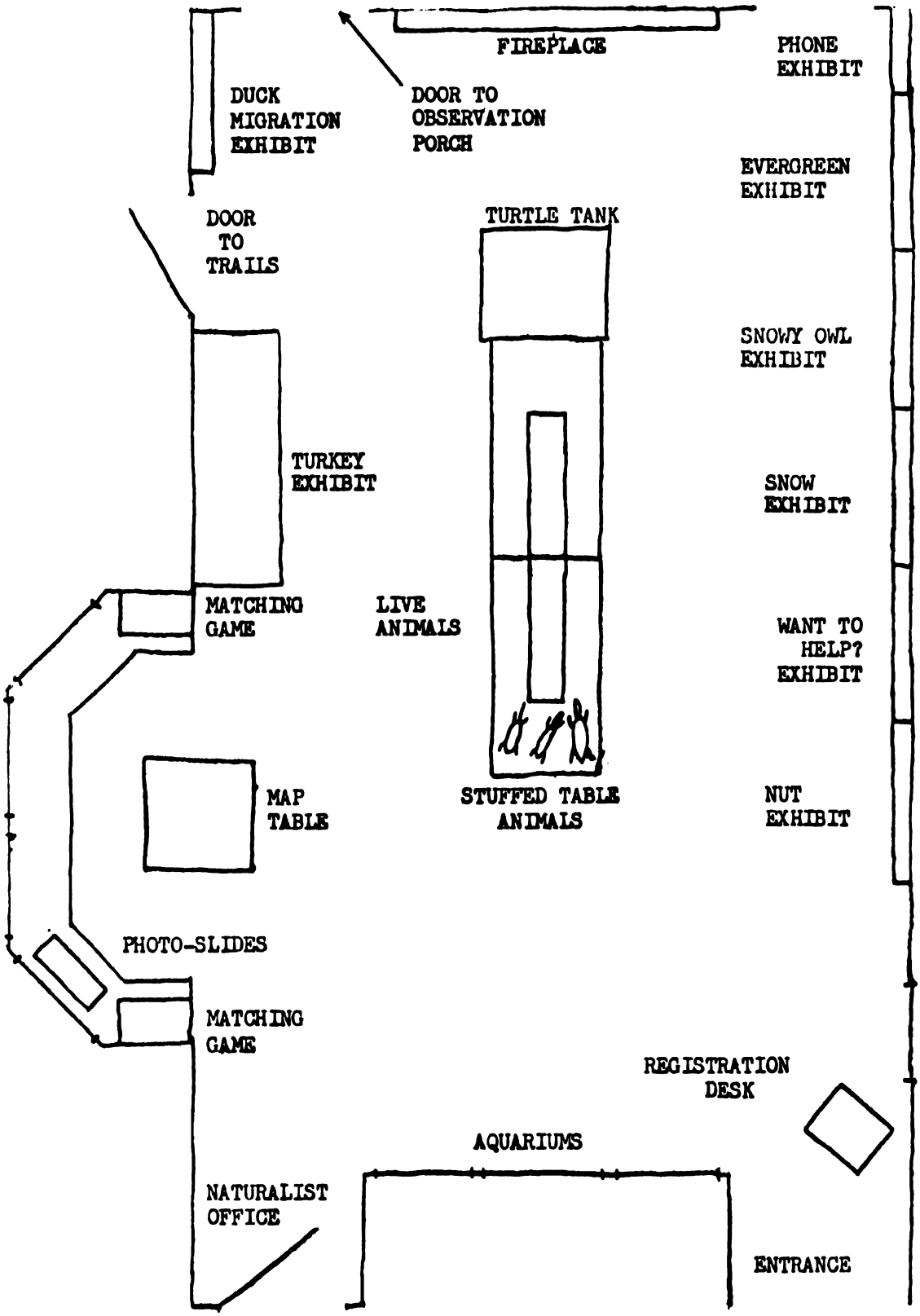

Figure 16. Floor Plan of Exhibit Room

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4) Two matching-games (Figure 7)
5) A photo-slide exhibit (Figure 7)
6) A glassed-in phone exhibit (Figure 8)
7) A large glassed-in exhibit (Figure 9)
8) Six, wall-mounted, glass-enclosed exhibits (Figures 10-15)

The general layout of the exhibit room is given in Figure 16.

Description of Exhibits Used in Study

For the purpose of this study, the exhibits in the Stony Creek Nature Center are broken down into seven main types: 1) live animals, 2) aquariums, 3) stuffed, table animals, 4) matching games, 5) photo-slides, 6) phone, 7) glass-enclosed.

It is the policy of Huron-Clinton Metropolitan Authority to avoid exhibiting live warm-blooded animals at the nature centers. Therefore, the animals on exhibit at Stony Creek Nature Center are types representative of the cold-blooded fauna of the area. Snakes, salamanders, frogs and toads are kept in covered aquariums of various sizes. These are placed on two shelf-units which are on two wooden tables in the middle of the room (Figure 4). This allows visitors to view the animals from both sides. The

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interior of the cages are kept simple so the animal will be in view at all times. On one end of these tables is a specially built, open-topped, turtle tank. This extends only 2 1/2 feet off the floor for the purpose of allowing visitors to reach in and touch these creatures.

Fish, also cold-blooded animals, are considered as a separate display in this study since they are set apart from the other animals in the room. The aquaria are built into one wall of the exhibit room with only one wide side of each of the three aquaria visible (Figure 5). Maintenance of the tanks is carried on behind the aquaria in a separate room not visible to the public. Each species on display is accompanied by a label placed near it. On this label is a picture of the animal, and a short interpretive narration.

From observations of the present investigator, it seems people enjoy petting animals to see how they feel. For this purpose, three stuffed mammal specimens are put out on one end of the live-animal table (Figure 6). It was found that they had a tendency to move around, so small chains were attached

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There are two matching-games placed on a window shelf in the exhibit room (Figure 7). These have two glassed-in sections, each with seven openings in which can be placed an object, picture or wording. The idea is to match both sides by pressing a switch near each opening on either side. If these two switches have matching concepts, then a red light comes on at the top.

Near these matching-games is a slide viewing exhibit (Figure 7). This has many rows in which numerous slides can be inserted. They can then be viewed since the exhibit is back-lighted. Rather than just have slides for viewing, some aesthetic or thought-provoking idea is incorporated through the slides. During the time of this study, the concept was "Patterns, Shapes, Colors, and Textures" found in nature and illustrated by the slides.

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One glass-enclosed exhibit is considered separately from the rest for the purpose of this study because it contains a listening phone (Figure 8). A recorded message is played over these hear-phones when a button on the exhibit is depressed. The subject of this exhibit at the time of this study was hibernation, with the title, "Who's That Sleeping." The exhibit itself, as in any of the following, can serve the same function.

There are two other types of glass-enclosed exhibits. One is a very large exhibit positioned on the floor with a viewing area of fifty-seven inches by forty inches (Figure 9). The bottom of this exhibit is twenty-eight inches off the floor. The other type is a smaller, wall-mounted exhibit with a viewing area of thirty-eight inches by twenty-eight inches (Figures 10-15). The bottom of this type of exhibit is forty-one inches off the floor. There are six of these smaller types in the exhibit room. Both types have slanted glass fronts to reduce glare, and fluorescent light fixtures to provide illumination. The exhibits themselves are actually constructed in inserts which fit into these cases. These inserts

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can be changed periodically with those not in use put in storage. The subject of the large exhibit at the time of this study was the wild turkey, and (with it being displayed during Thanksgiving and Christmas), had a title of, "Happy Holidays . . . Turkey." The subjects of the smaller displays during the study are as follows:

1) duck migration--same title
2) evergreens--title, "Winter Green?"
3) snowy owl--title, "A Visitor from the Arctic"
4) snow--title, "The Winter's Dress"
5) Michigan's Endangered Species Program--title, "Want to Help?"
6) wild nuts--title, "In a Nutshell"

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CHAPTER I

EXPLORATION OF PREVIOUS WORKS

There have been many studies of commercial exhibits at trade fairs, and the use and design of display windows. Financing these studies is part of big business. Good, effective advertising in these mediums naturally means more sales, and, in turn, more money.

On the other hand, there has been very little research on the effectiveness of interpretive exhibits at nature centers. There has been little financial backing for these studies because of no monetary return. Recent research assembles some understanding of how these exhibits may be better designed and constructed to attract people, and make the desired impression on those people. Fortunately, much of the psychology and design principles that apply to commercial displays can also apply to the interpretive

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exhibit. This knowledge can then be borrowed and used in the nature center exhibits to "sell" the interpretive idea.

The job of most nature center exhibits is to educate people about the natural history of an area. However, "educate" conjures up thoughts of schooling and hours of study. Since nature centers are generally located in areas where people come to recreate in their free time, the nature center exhibit must put forth enjoyable rather than hardsell education. This is true of most audio-visual methods used in education. They tend to offer a more enjoyable means of learning than the standard text book method. Audio-visuals, according to Edgar Dale, offer seven contributions to the field of education. They,

> 1) Supply a concrete basis for conceptual thinking hence they reduce meaningless word responses 2) Have a higher degree of interest 3) Make learning more permanent 4) Offer reality of experience which stimulates self-activity on the part of the viewer 5) Develop continuity of thought 6) Contribute to the growth of meaning and hence to vocabulary development

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7) Contribute to the efficiency, depth and variety of learning.[1]

Exhibits offer a quick, concise method of presentation. They give ideas in a form more readily grasped than some other audio-visual types. Since the exhibits are permanent, a person can view or return to the exhibit as much as he wishes. A large audience (made up of the individual viewers) can be reached over a period of time, incorporating very little space.

As an educational tool, exhibits have the function of attracting attention to, and arousing interest in a subject, or creating a demand that a certain thing be done.[2] The exhibit planner has the job of motivating the visitor to stop in front of the exhibit; remain long enough to look at the material; then to be stimulated enough for immediate

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[1]Edgar Dale, Audio-Visual Methods in Teaching, p. 31, 36, cited by Bruce A. Riley, Investigation of Factors Which Influence Flow Developement in Exhibition Design, (unpublished Master's Thesis, Michigan State University, E. Lansing, Mich. 1962), p. 36.

[2]Evart G. Routzahn, The A B C of Exhibit Planning, p. 17.

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[3] Grant

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or future thought or action.[3] In order to accomplish this, the exhibit planner can work with three basic elements: 1) the story or theme of the exhibit, 2) the objects or specimens which are the subject of the theme, and 3) the design or way of presenting the exhibit.[4] A carefully planned exhibit with an appealing look can do much more to inform visitors about a subject than could any lecture or written material. People can grasp an idea very quickly through pictures or actual objects. The old saying, "a picture is worth a thousand words," is very true. An attractive exhibit draws the people to itself to "look at the picture."

Theme

The prime consideration in preliminary planning of an exhibit is the audience. To get a message

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[3]Grant W. Sharpe, Interpreting the Environment, p. 287.

[4]Albert Manucy, Emphasis on Indigenous Qualities in Exhibitions for Youth Foundation Conference, St. Petersburg, Fla., 1966), p. IV-8.

across, the makeup of the potential audience must be known. Some things to consider are the age, intelligence, social background and time available to that audience. Unfortunately, when planning an interpretive exhibit, the considered audience may consist of a wide range of these factors. However, one thing that most have in common is that their visit is intended to seek entertainment or recreation during their leisure time. "They may not be attending for education. The educational message must be 'cleverly' worked into the theme which is focused on getting and keeping attention."[5]

At the same time, it should be stressed that the exhibit planner not insult the intelligence of the visitor or create a theme with extreme juvenile material. Henry D. Brown of the Detroit Historical Museum, writing in Museum News, advises: "presume the visitor to be intelligent, but uninformed in your segment of specialized knowledge. The exhibit

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[5]Patricia J. LaFlame, Ideas for Exhibits . . . , Michigan Cooperative Extension Service Publication no. 22 (Institute for Extension Personnel Developement, 1968), p. 3.

should provide a logical and straightforward progression from items and situations known and recognized by the visitor to those new and unknown."[6] The theme must create some interest to draw the audience to the exhibit. "It must present subject matter of general interest to the surrounding society, diverse if the society is multistratified and limited if the society is homogenous."[7] It is difficult to have an exhibit that is of interest to everyone who visits an interpretive center. However, a center normally has room for more than one exhibit. By varying the exhibits slightly, the interest attraction of some exhibits may appeal or be appropriate to almost any visitor.

Occasionally, it may be possible to draw visitors to exhibits by the design of the exhibit. Incorporating some physical attribute in the exhibit will create curiosity in the visitor, and pull him

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[6]Jefferson T. Warren, Exhibit Methods, p. 6.

[7]Bruce A. Riley, Investigation of Factors Which Influence Flow Develope ment in Exhibition Design, (unpublished Master's Thesis, Michigan State University, E. Lansing, Mich. 1962), p. 42.

to the exhibit to examine its contents. This is especially useful where the message may not seem important to the visitor, but nevertheless is one the planner feels should be conveyed. A good example here might be environmental issues. The majority of the general public takes an apathetic approach to these topics, even though they are important to society and the future. Some type of "drawing card" in an exhibit dealing with such a subject may help in getting the message to the people.

When deciding on a theme for the exhibit, the interests of the people should be kept foremost in mind. As James Gardner and Caroline Heller put it,

> all good exhibition starts from a sympathetic appreciation (conscious or unconscious) of the kinds of things people want to see and know. In fact the one dogmatic rule that you can make about exhibitions is that the interests of the potential public come first. Without this concern for people, exhibitions are simply expensive collections of pointless objects.[8]

The question, then, is what does interest the public about natural history? People seem

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[8]James Gardner and Caroline Heller, Exhibition and Display, p. 12.

conditioned to concentrate only on their own interests, and, knowingly or not, block other distractions from their minds. "Observation is a complicated business because there is so much to see."[9] Even if there are many interesting things nearby, one will observe only a fraction of what there is to see.

Concerning interests, the visitors may be divided into two groups. First there are those who come with a definite purpose or interest. Students working on a project, birdwatchers, photographers, or those interested in flowers are but a few. They pay close attention to exhibits dealing with their special subject and ignore the rest. The other group might be considered as those just out for a good time. They may come in and glance at many exhibits, examining those which coincide with their casual interests. Jefferson Warren found that these people are interested in the exhibits which are "near and dear" to them. "Visitors are most interested in the ground under their feet, the sky above, and local waters. An exhibit pertaining to the immediate

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[9] Ibid., p. 51.

environment evokes a sympathetic response which does not occur to such a degree with exhibits of exotic material."[10] It seems very few people are concerned about occurances in other parts of the world, but when something happens in their own back-yard, they take notice! A good example is the snowy owl. There are perhaps thousands of snowy owls in the arctic, but being so distant, not many people think, or even know about them. However, if a migrating snowy owl should stray into a local community, suddenly interest grows. Everyone goes out to look for the bird. The owl might even get its picture in the paper.

Since most nature centers have adjoining trails, exhibits in a nature center have a prime purpose of orienting the visitor to what he may expect to find on those trails. The exhibits are not an end in themselves, but rather a transition point between the parking lot and natural area. Here, curiosities are heightened and opportunities for enjoyment of the outdoors are instilled. "It has

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[10]Warren, op. cit., p. 24.

been described as the key which opens the door to an understanding of the complexities of nature."[11] If exhibits are not of local interest, they do not act as a lead-in to the trails, or act as a guide in explaining trailside observations.

Another point in favor of regional exhibits is they may bring to mind a visitor's past experiences. If things in the exhibits remind him of these experiences, it might motivate him to find out more from the exhibit. Also, the exhibit may hold a valuable answer that a visitor has wondered about for a long time. Here he may obtain satisfaction by answering his own question. Exhibits dealing with local subjects are more likely to satisfy these needs.

Dr. J. Alan Wager found in his studies "that presentations that included violence or violent events were the highest in interest" for exhibit themes. This is, as he points out, "what writers and entertainers have known for centuries. Such

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[11] William F. Hopkins, Developement and Operation of the Nature Interpretive Program, HCMA Metroparks 1952-1973, (Huron-Clinton Metropolitan Authority Report, Detroit, Mich.), p. 16.

land-shaping processes as glaciation were also of high interest as were ecological relationships and mammals and birds."[12] Another study done at U.S. Forest Service visitor centers in Michigan also found that the wildlife exhibits held the highest interest of the unanimated exhibits.[13] People have a tendency to relate to animals more than with most other natural objects. It is believed by the present investigator that this is due to the closer association of animals and man.

Once an interesting exhibit theme has been chosen, it should be narrowed down to present only a single message, idea, or mood.

> Exhibits are often expected to do too much. They are sometimes too technical or too abstract. Some have an overload of information, too many unrelated components, or have more than one theme; and these words

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[12]Dr. J. Alan Wager, Evaluating Interpretation and Interpretive Media, (paper presented to the Association of Interpretive Naturalists, April 7, 1972, Pine Mt. Ga.), p. 4.

[13]David W. Lime, An Exploratory Study of the Use of Two Forest Service Visitor Information Centers: Voyageur and Sylvania, (North Central Forest Experiment Station Office Report, St. Paul, Mn., 1973), p. 7.

can be summarized in one word 'clutter'."[14]

Overdoing exhibits may cause the visitor to become confused or overwhelmed. Instead of examining the exhibits, he may simply be "turned off" and leave with no enjoyment or enlightenment. "If an exhibit doesn't sell its message immediately, people will simply move on."[15]

Exhibit themes should accomplish orientation with unity. In other words, the exhibit should not cause a person to look to another exhibit (or elsewhere) to continue the theme. "Displays should be designed in eyefuls and each eyeful should be able to make a simple point without reference to what comes before or after it."[16] People tend to look at exhibits as individual entities and "will not bother to associate the idea in front of them with anything they have already seen."[17] This is a particularly hard concept for an interpreter to grasp

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[14] Sharpe, op. cit., p. 285

[15] Ibid.

[16] Gardner, op. cit., p. 28.

[17] Ibid.

while planning an exhibit theme, since everything in nature is interrelated. It is difficult to remove one portion of nature's scheme and deal with it as a separate topic in an exhibit.

After looking through a number of separate themes, visitors may begin to unconsciously link these into an overall view of nature. This overview of related ideas may create an "image" for the interpretive center, and should be one goal toward which each exhibit should strive.[18] Subject matter in individual exhibits can also gain coherence by creating unity in design and layout of the exhibits and exhibit area. This is accomplished through the use of colors, lights, exhibit cases or other related and similar forms of support.[19] Variation is important to stifle monotony, but varying each exhibit will totally separate each from everything else in an interpretive center. It will add to the confusion of too many things to view.

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[18]Joseph A. Nicholson, "Interpreting the Interpretive Center," The Visitor, p. 11, July-Aug., 1975.

[19]James H. Carmel, Exhibition Techniques (Traveling and Temporary), p. 29.

To further alleviate monotony for the repeat visitor, exhibits should be changed periodically. Store window designers are well aware that if they leave the same merchandise in the window for extended periods, it will take on a comforting and familiar look and act as just a bit of the scenery to the passer-by.[20] The same would occur in the interpretive center for the repeat visitor. In fact the visits may cease altogether since they offer nothing new. Also, exhibits may become obsolete no matter how well built and designed. They may be out-dated or have no meaning at all for a new generation of visitors with different tastes, interests, and backgrounds.[21]

Specimens

Exhibits would not be "exhibits" without things to show. Instead, they would be more reading material to add to the already over abundant pile of

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[20]Howard Ketcham, Color Planning for Business and Industry, p. 65.

[21]Sharpe, op. cit., p. 301.

printed matter. All other criteria of building an exhibit rest on the material to be shown. Themes are planned according to the objects on hand. All parts of design, i.e. lighting, color schemes, typography and so on, are geared toward showing off those objects.[22] On the other hand, the objects to be shown help enliven the theme of the exhibit and, with the design, attract attention to the theme.

Specimens or graphic images offer the most attracting force to the exhibit. But, these must have meaning; in themselves, and in connection with other objects or ideas in the exhibit. Hopkins states that the original premise of nature center exhibits "is not intended to be a museum for the collection of natural objects, but a place where natural objects, or illustrations and models of natural objects, are used to explain natural phenomena, to show relationships which exist in the wild, or display natural objects which might not be readily seen from the trails."[23] In displaying these objects, the exhibits are therefore

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[22]Gardner, op. cit., p. 8.

[23]Hopkins, op. cit., p. 35.

a means of visual communication which compliment observations in the natural area and are not in any way meant to replace the natural area. However, through interest in these objects, visitors may gain a more beneficial experience while in the natural area. "Natural objects in an exhibit have an intrinsic interest, but often the interest is heightened by showing man's use of these products in historic times"[24] or possibly the present.

> Directly observing these things in their three dimentions gives us the excitement of translating abstract image into immediate experience. When exhibition can give us the feeling of direct perception for the first time or persuade us to look at familiar objects with fresh interest and awareness, then it is doing its job.[25]

Design

The design of the exhibit offers the planner numerous possibilities limited only by his enthusiasm and imagination. There is a great opportunity for

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[24] Manucy, op. cit., p. IV-10.

[25] Gardner, op. cit., p. 8.

creativity and the unleashing of imagination in designing exhibits.[26] Neither the theme or the specimens offer this chance. The theme of an exhibit is determined so it will interpret some aspect of nature and so is limited to these natural phenomena. The specimens cannot be changed since they are natural objects set by nature. Only the design offers the possibility of change to create different reactions.

All facets of design offer variability. One can vary colors, lighting, shapes, supportive structures, layout, text, or even add animation or self-participation as inducements for the visitor to examine the display. But creativity and imagination can go too far if no restraints are used. "Display then must be a matter of calculated thought and planning." In designing, one must keep in mind "to win an audience it must be attractive, informative, persuasive, and aesthetically pleasing. It must have a conscious sense of promotion and a clear cut message."[27]

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[26]Sharpe, op. cit., p. 287.

[27]Beverly Pick, Display Presentation, p. 48.

Albert Manucy, at the 1966 Natural Science Center Conference stated, "The basis of good design is composition which, like good writing, involves unity, coherence, and emphasis."[28] As with commercial displays, the designer is attempting to "sell" an interpretive idea. Combining the composition of the writer with the psychology of the salesman, an interpreter should be sensitive to public taste and reaction.[29] He must also be prepared to adjust his ideas of design to conform with the main purpose of "selling" the display. Occasionally, the ego prevents one from accomplishing this purpose. Forming an idea for a design is a method of personal creativity and achievement. However, if the design does not get the original point of the exhibit across to the public, then it is no great achievement at all. The interpreter must remain flexible and conform to a type of design which the public will accept. "It is important to remember that different visitors will react in different ways. Those who are highly motivated

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[28]Manucy, op. cit., p IV-10.

[29]Pick, op. cit., p. 48.

may accept our efforts no matter how bad they are. However, if the visitor is not highly motivated, we must make things enjoyable and easy for him."[30] In this respect, the potential audience must again be considered, just as it was for the theme of the exhibit. The same audience attributes that were discussed in the earlier section of this study also have a direct bearing on the form the exhibit will take. People have very definite psychological and physiological preferences for such things as color, lighting, method of display, viewing area, or even the location of the exhibit. If these preferences are not met or in some way altered to another acceptable form, we will loose those visitors no matter how interesting the theme of the exhibit may be.

One important aspect of exhibition which may bring a harmony to the exhibits, and insure success is the interpretive center itself. The structure; the surrounding landscape; even the layout of the interior all set a mood, and enhance a favorable attitude for acceptance of the exhibit's contents.

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[30]Wager, op. cit., p. 4.

They should carry the visual personality of the exhibition's purpose. In the case of a nature center, the exhibit's "personality" would be enhanced if the architecture of the building were to blend with the surrounding natural landscape. Many people seem to have a preconceived idea of a nature center as being a rustic building in the woods.

The interior can also help set a psychological environment toward the subjects of the exhibit. A layout using natural objects or designs as decor may help in creating an "outdoorsy" mood. If exhibits deal with subjects other than natural history, such as environmental issues, the area these exhibits occupy may carry a different mood through another decor. It has also been found that color carries a large psychological load in setting mood. "Within the realm of the immediate approach area, color can be a determining factor . . . for the creation of a conducive atmosphere . . . . Coordinated color arrangements can arouse the visitor's curiosity and interest."[31]

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[31]Riley, op. cit., p. 43.

Circulation -- One important consideration in determining the layout of an exhibit area is the circulation or flow pattern for visitors. It has been found that people in company with crowds have definite psychological patterns. James Gardner and Caroline Heller found that some of these are: that people generally follow people; are curious; gather at exhibits where others are standing; avoid open spaces where they are conspicuous; like to get their bearings; enjoy surprise; find walking tiring.[32] These patterns people set are very important criteria in the establishment of circulation. Certain psychological devices can then be employed to establish a flow pattern. The movement of people can be decidedly dictated by placement of participation devices. The flow can be altered by the inclusion of closed areas, highly structured areas, darkened alcoves, open bays, ramps, or other types of elevations, lounge areas, or physical impediments.[33]

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[32]Gardner, op. cit., p. 38-39.

[33]Riley, op. cit., p. 57.

The establishment of a circulation pattern is important to the enjoyment and learning of the visitor.

> We must place the visitor in a good frame of mind and set up a clear communications atmosphere for him. He should be relieved of all problem solving and decision making in so far as it is possible and practical. Through the use of the finest known techniques and a catering to the psychological attitudes of the visiting public, visitors should be made comfortable and welcome as possible.[34]

The establishment of a flow pattern frees the visitor from the necessity of decision-making so he does not need to choose one course of inspection from many possibilities, "yet, conversely, he should not be made a complete captive of a highly structured system. The visitor should be immediately supplied with an overall understanding of the situation and then gently led to it."[35] In this case, the visitor's first impressions of the interpretive center should relieve him of the tensions of daily life, and nervousness from being in unfamiliar surroundings. One way of

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[34] Ibid., p. 44.

[35] Ibid.

accomplishing this is through inclusion of an "initial entrance feature which serves to relieve the visitor from irritating external stimuli."[36] Caution should be exercised here. As Gardner noted, "there is a strong tendency for visitors to step warily into a hall, hesitate to orient themselves, and move boldly off into the desired direction. For this reason, intricate displays should be banned from the entrance."[37] Therefore, some simple orientation or atmosphere-setting device should be used to first acquaint the visitor to the interpretive center.

Some nature centers do not have a fixed flow pattern, but instead use a pattern that "may be so little in evidence that the positioning of exhibits at first appears casual and accidental: in fact it has to be very carefully worked out both in relation to people's movement and points of view to the character of the exhibits and their backgrounds."[38] This leaves

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[36]John Cabot, "The Visiting Public and the Museum," Midwest Museums Quarterly, p. 22, Spring 1961, cited by Riley, op. cit., p. 43.

[37]Gardner, op. cit., p. 39.

[38]Ibid., p. 45.

a visitor with the feeling of being free to wander around but makes sure that each of the exhibits will fall into a carefully composed pattern. A technique of creating this free or uncontrolled flow may be termed "weighting." This method causes the visitor to unconsciously select preplanned directions to consecutive exhibits and so eliminate the need for physical barriers.[39] It also serves to orient the visitor to the overall layout of the exhibits since there will be no obstructions to the view. If the visitor wishes to re-examine a certain area, the lack of physical barriers allows him easy access to any of the exhibits. This method works extremely well where the only unity in the exhibit themes is very broad subject matter, and where there is little linkage between groups of exhibits.

On the other hand, if the exhibits have a stronger relationship to one another, especially in a desired sequence, a controlled circulation may be

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[39] Donovan Worland, "A New View of Museum Exhibit Design," (Western Museums Conference, Asilomar, Calif., Oct., 1959), p. 15, cited by Riley, op. cit., p. 45-46.

best. This means quite simply that the visitor is not offered a choice of routes, but is instead directed along the correct path to insure everyone sees everything in the right order.[40] The visitor may set his own pace with his own inclination to stop and observe areas of interest, or may pass them by more quickly. Still, there may be the feeling of being shoved where one may not necessarily want to go; a psychological feeling of constriction. Therefore, in a controlled circulation, variety of arrangement, atmosphere, and scale is an absolute essential to the planner.[41]

Gardner has set certain rules that should be followed when a controlled flow is used. They are: 1) It should not last for more than one hundred yards, with a periodic loosening of the layout to avoid the feeling of unbearbale constriction (Perhaps even less lengthy in interpretive centers that are not large.). 2) All displays with a related sequence should be arranged together down the same side of a gallery. 3) Each display will at least be passed by every

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[40] Gardner, op. cit., p. 43.

[41] Ibid.

visitor, so adequate space for stopping must be provided. 4) For special displays drawing large crowds, extra space must be available.[42] Even when adhering to these rules, problems may arise when very heavy use days occur. The one-way circulation may cause a traffic tie-up at an exhibit of particular interest. For this reason, it is good to limit the exhibits in this controlled circuit to those that are quickly and easily understood, and appreciated by everyone.

To relieve the channelized feeling, and, more importantly that of fatigue, the element of surprise may be incorporated. Spectacular features can be placed effectively at sudden turns. Sound or light leaking through a partial barrier excites curiosity and so offers enjoyment of surprise to the visitor.[43] Spacial arrangement is a method of relieving visual fatigue. Joseph Nicholson stated that, "as the visitor moves through changing levels there are spacial surprises which tend to reinforce the overall graphic information presented. These dimensional

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[42] Ibid.

[43] Ibid., p. 39.

changes along with appropriate changes in informational mediums increase visitor interest and produce a special flow for the story line."[44] Simple and constant variations in areas such as exhibit size and placement, flooring textures and general atmosphere help to relieve physical as well as mental fatigue.

Exhibit Arrangement -- The way the exhibits as a whole are arranged is another factor to consider. There are three things of importance that should be thought over in arranging exhibits: their relation to each other, their separation from each other, and the height from the floor at which they are displayed.[45] Exhibits of a story line obviously must be within close proximity to one another if the viewer is to get any connection between them. Each of these must convey its ideas quickly so that the story line is not lost in one complex exhibit. On the other hand, exhibits that are displayed separately are the most

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[44]Nicholson, op. cit., p. 10

[45]Routzahn, op. cit., p. 92.

successful.[46] These do not compete with other near-by exhibits and so can be observed longer and the message absorbed more completely. "Since exhibition is a matter of seeing things, everything must be considered in relation to the eye and position of the viewer."[47] Viewing distance is important to consider when determining the size of the objects to be in the exhibit. In most cases, exhibits are in a position to be viewed closely, and so offer no problem in showing material to people. However, large objects naturally require much space, and so increase the distance between the whole exhibit and the viewer. In this instance, everything must be considered so the viewer will have a good vantage point, especially concerning labels.

Viewing height as well as distance should also be taken into account. Since most centers require the visitor to walk through the exhibits, the visitor will be standing while viewing. It has been established that the average viewing height for an adult is five

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[46]Sharpe, op. cit., p. 295.

[47]Gardner, op. cit., p. 56.

feet-three inches above the ground.[48] The designer can establish this as a norm for easy viewing. However, since children are frequently visitors to nature centers, this height may be objectionable. Some compromise can be established so all sized viewers can participate: perhaps an elevated platform.[49]

Exhibit Technique -- The main thrust of this study is the exhibits themselves. It is true that many outside influences can cause success or failure of an exhibit. However, in many cases, the exhibit planner and builder must work in previously established centers; places where architecture, interior decor, circulation patterns, even the types of exhibits and exhibit cases have already been established. This, however, does not mean that these things cannot be changed if they have a degrading effect on the exhibits, but this may take a long time to determine. Here the exhibit designer must use his personal techniques

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[48] Ibid.

[49] Warren, op. cit., p. 5.

in an experimental way to ascertain what is successful in his new surroundings.

This exhibit technique may be considered as a form of art. Like other art forms, it has its followers and critics. There are some who will obtain a great deal of informative and aesthetic appeal from it, or some who feel it is a waste of space. D. M. MacMaster of the Chicago Museum of Science and Industry states,

> Exhibit techniques are simply methods of communication . . . the arts of dramatic presentation are brought to bear on the problems of mass communications. By providing high entertainment value with high educational value, by appeal to emotions as well as the intellect, exhibit techniques evolve seemingly of themselves.[50]

Caution is advised when using personal exhibit techniques as a form of art. While useful in attracting attention and creating interest in an exhibit, considering them as an art form may cause the designer to add too much to his exhibit. Exhibit techniques

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[50] Ibid., p. 77.

should only be used to enhance the exhibit, never to monopolize interest in its own right.[51]

The main reason for incorporating different exhibit techniques is the aesthetic pull towards the visitor. There are a number of principles involved in creating an aesthetically attractive exhibit. Some to consider are: 1) Harmony; of color and form, all the elements making up the exhibit, 2) Equilibrium; balance between the various portions of the exhibit around an imaginary center, 3) Contrast; the use of shapes, proportions, and lighting, to break monotony, 4) Proportion; use of objects with dimensions which will be mutually complimentary in size, 5) Originality; freshness or novelty of an individual's own method.[52] To this list should be added neatness and simplicity for the average public will only be impressed by what they can easily and quickly understand.

In order to put his own techniques to work, the exhibit designer has seven tools at his disposal:

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[51]Gardner, op. cit., p. 12.

[52]Frank J. Bernard, Dynamic Display Technique and Practice, p. 11.

1) specimens or objects, 2) color, 3) lighting, 4) fixtures or display medium, 5) narrative, 6) animation, and 7) participation. Each of these has some very definite attractive force to visitors, and so are dealt with separately in this study. It must be remembered that most or all of these make up an exhibit, and so must be considered together to compliment one another in the final exhibit design.

Specimens -- In displaying an object that is to be the focus of an exhibit, it should be placed where it will not receive interference from other things within the exhibit. It should be positioned where it will attract attention since what catches the eye may catch the mind.[53] Making the object stand out or be different in some way will cause it to be noticed. This might be accomplished by spot-lighting it, by physical isolation, placing it among dissimilar objects, by color, or even by the display structure. Varying the main object in an exhibit

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[53]William Hayett, Display and Exhibit Handbook, p. 38.

by any means will emphasize that object.[54] If the object is subordinate to the narrative or subdued by the color or lighting, it will not be prominent and may be ignored.

Overcrowding an exhibit with specimens may overpower the visitor, and cause him to shy away from such an abundance of information. Unless there is some special reason for using many specimens, they should be limited. It is not the purpose of an exhibit to give a short course on nature, but rather to deal with one small aspect of it. Limiting specimens also emphasizes the elegance of form of each and helps to give each a special importance it would lack if crowded with other objects.[55]

Lighting -- "It is lighting . . . that largely determines how we see, what we see and how we feel about what we see."[56] We are creatures of sight. It has been found that approximately 87% of our impressions

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[54] Carmel, op. cit., p. 68.

[55] Ibid., p. 73.

[56] Gardner, op. cit., p.59.

are received through our eyes.[57] And sight is dependent on light. For this reason, we are daytime creatures, and where daylight does not occur, we use artificial light. It is easy to see why the intensity, color, quality, and brightness of light can affect the way we perceive things and the opinions we form about what we see. This perception, too, is the first step in leading to understanding. Without the experience of sight, we have more difficulty in gaining knowledge.

Light can affect us much more than by merely showing us things. "Light can create atmosphere and mood more effectively--yet more subtly--than the most complex architectural system of forms and shapes . . . . The color of light alone can influence mood and can well affect the reception accorded by the visitor to ideas or objects presented."[58] The color of light affects our physical and psychological beings to a very great extent. It has been found that

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[57]"Eyes, Our Windows to the World," Better Light Better Sight Bureau, Form N. B-564, Frontis Piece, cited by Riley, op. cit., p. 2.

[58]Carmel, op. cit., p. 116.

"the eye sees best in white, yellowish, or yellowish-green light, and worst in blue light."[59] Red light quickens mental reactions and tends to cause over-estimation of time. On the other hand, green light favors slower muscular responses and underestimation of time.[60]

The exhibit designer should determine how light can affect his exhibit. He needs to consider 1) the intensity of light which will determine the speed and acuity of the visitor's vision and will help to counteract outside lighting; 2) directional control to eliminate glare, bring out textures and patterns, concentrate light for emphasis and produce dramatic effects; 3) diffusion of light to eliminate undesirable shadows, raise general lighting level of the exhibit and make forms more clear; 4) the color of light which can create atmosphere and attract attention.[61]

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[59] Faber Birren, Color Psychology and Color Therapy, p. 243, cited by Riley, op. cit., p. 41.

[60] Ibid.

[61] Howard Ketcham, Color Planning for Business and Industry, p. 68.

To have the most effective lighting on an exhibit, the designer must have complete control.[62] The light that enters through a window from the outside may be admitted through controlled conditions so it is graded and glare avoided. Also, these outside openings should "be placed in such a position or screened in such a manner so that the eye will not see the sky or other bright areas, such as white paving or buildings in sunlight, once it has adjusted itself to the lower levels of illumination found inside."[63]

The general make-up of the specimens and the theme of the exhibit are the deciding factors in selecting the type and quantity of lighting fixtures to be installed.[64] The reflectivity of the specimens and their color determine how well these objects will be seen under different lighting conditions. The theme of the exhibit may carry a mood which can be

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[62]Gardner, op. cit., p. 41.

[63]Michael Brawne, The New Museum: Architecture and Display, p. 170.

[64]Bernard, op. cit., p. 208.

furthered by some special lighting effect. Those two factors must be compromised for lighting that will present the exhibit in the best manner.

Usually, lighting for exhibits should approximate that of daylight. This brings out true color values, and shows objects in their most natural way. However, some varience may be required to make certain objects more visible. Dark surfaces need a greater intensity of light than do light surfaces. The former tends to absorb or "swallow" much of the light making it more difficult to see.[65] Light should also be glare-free. Light traveling directly to the observer from a bulb tends to dazzle and irritate. For this reason, indirect lighting, or lighting with some form of shield should be used.[66]

Another factor to consider is the economics of lighting. Fluorescent light bulbs use a given wattage to greater advantage than do incandescent lamps, giving light several times more intense with

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[65] Bernard, op. cit., p. 208.

[66] Ibid., p. 209.

much less heat loss.[67] Fluorescent lighting also offers a soft, nearly shadowless light. However, fluorescent light cannot be focused to emphasize an object. Incandescent light can do this. What is to be accomplished in the exhibit will determine the type of light to use.

Light can be used for eye-catching effects. Emphasis can be placed on a small object by spot-lighting it.[68] Confined localized lighting within relatively dark spaces produces a series of "television screens", focusing attention on them.[69] Flickering light, changing colors, neon lights, ultraviolet lights, moving lights, and transparencies all attract attention.[70] Attention can also be concentrated on an exhibit when it is the main source of light and the rest of the area is darkened.[71]

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[67] Ibid.

[68] Brawne, op. cit., p. 176.

[69] Ibid.

[70] Bernard, op. cit., p. 209.

[71] Gardner, op. cit., p. 75.

One other physical factor of light should be considered: it will deteriorate many items that are placed in the display, except metal, stone and glass. Outdoor light is the worst for this--and adds another plus for restricting its entry.[72] Measures to restrict all light are, of course impossible. Instead a means to adapt the eye to progressively lower levels of light could be devised in the transition from outdoors to indoors.

Color -- Color is one of the most valuable tools used to attract the eye and pull the components of an exhibit together. The commercial display designer learned this long ago. The functional use of color in these displays is increasing sales of all types.[73] Through research they have found what colors affect people in what ways, so that proper use of colors will influence people to purchase certain products. Information gained from the research of these commercial displays can be easily adapted to the nature center display to give the desired effect.

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[72]Brawne, op. cit., p. 170.

[73]Ketcham, op. cit., p. 2.

"The eye reacts to color much as the ear does to music chords. Certain combinations of tones are as agreeable to the ear as certain color combinations are to the eye. Musical dissonances have their equivalent in 'clashing' colors."[74] These color combinations can then react on our emotions as much as certain music does. Certain colors can bring to mind emotional associations based on past experiences. Red incites the mind to activity and brings about thoughts of action, urgency, heat, fire, sentiment, and passion. Yellow brings to mind open air, sunlight, joy, fun, and movement. Blue provides one with a feeling of spaciousness, distinction, and coolness. Green indicates nature, pleasant anticipation, and a soothing, calming effect. Occasionally, mixtures of the basic colors can also impart some emotional feeling such as violet (red and blue mixed) which gives one a melancholy feeling, or purple (red and violet mixed) which is associated with majesty.[75]

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[74]Bernard, op. cit., p. 194.

[75]Ibid., p. 195.

Along with the emotional impact that some colors impart is a physical response which they seem to create. The warm colors which include yellow, orange, red, and their combinations with white, impress the eye, enhance the specimens and seem to optically push them to the front of the display. The cool colors, blue and green, create balance and an enlarging illusion to the exhibit.[76] Green also creates a condition for meditation and allows ideas to be executed.[77]

Just as music preferences vary from person to person, so, also, do color preferences. The average order of color preference is blue, red, green, violet, orange, and yellow.[78] However, even for the individual this is not very set, since color preferences may vary from year to year, place to place, age group to age group, or between economic levels.[79] In general again, children tend to favor brighter colors,

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[76] Ibid.

[77] Riley, op. cit., p. 39.

[78] Birren, cited by Riley, op. cit., p. 40.

[79] Ketcham, op. cit., p. 28.

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whereas adults are more responsive to off-shades and sophisticated mixtures; preferences shift from warmer to cooler colors with increasing age.[80]

To some extent, colors can be used as "attention-getters" in an exhibit. The main attracting colors are the reds, oranges, and yellows; purple-blue and purple are less effective and blue and blue-grays are attention-losing.[81] Effectiveness of using any color in attracting attention must be coupled with other colors or design tools. Complimentary colors combined in an exhibit appear to flicker imparting a very attracting influence.[82] Yellow seems to be the most visible color from a distance, and, combined with black, form the most legible mixture of color combinations.[83]

Complex color combinations and "loud" colors should be used with extreme care. The more complex

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[80]Edgar Dale, Audio-Visual Methods in Teaching, p. 378, cited by Riley, op. cit., p. 39-40.

[81]Ketcham, op. cit., p. 66.

[82]Dale, cited by Riley, op. cit., p. 39.

[83]Birren, cited by Riley, op. cit., p. 40.

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the color images, the more strain that occurs on the visitor to try and retain them.[84] So called "loud" colors do attract attention, but do so away from the material being displayed.[85] These colors should be used only for small areas to attract attention to details.

For a pleasing effect on the eye, light shades are recommended. They give the appearance of deepening the exhibit, thereby seemingly increasing its size and making it look less crowded.[86] These shades can then be very useful when numerous items are to be used in the exhibit. The opposite is true for dark shades. They give the impression of closing in the background, and shortening the space to the eyes of the spectator.[87]

From the research accomplished about color impressions, it would seem very easy to choose a color to fit the design of an exhibit. These impressions

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[84]Dale, cited by Riley, op. cit., p. 39.

[85]Bernard, op. cit., p. 194.

[86]Ibid. p. 195.

[87]Ibid.

do play a part in color choice, but should not be the only requirement. Another consideration is the color of objects used in the exhibit. This may be a prime determinant in the color scheme; a color scheme that will give harmony between the specimens and the exhibit decor. It has been proven that a neutral-colored item will seem to get lost in a bright, contrasting background, where a strong-chroma item will require such a background to give it support and contrast.[88] Use of the pastel shade of the specimen's chief color is usually a safe rule.[89]

Single colors in an exhibit tend to be monotonous and unappealing. Even though there may be some contrast with colors in the specimen, a solid background may not be the choice to hold interest. Instead, "using well placed accent colors with a total color impression of middle value" would break the boredom.[90] The use of a light-to-dark value in a ratio of one-to-three gives a very good balance in

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[88]Ketcham, op. cit., p. 66-67.

[89]Bernard, op. cit., p. 194.

[90]Ketcham, op. cit., p. 66.

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exhibit preparation.[91] The use of many colors is prohibitive, but use of some colors will help to tie several aspects of an exhibit together.

> a color repeated in different parts of a display tends to show a relationship among those parts. A brilliant cerise used only twice in one design will make those two points seem related to each other, and the eye will tend to go back and forth between them. A bright green that is next to a slightly grayed green, that, in turn, is next to a grayer tone of green gives a feeling of relationship among the colors that carries the eye along. Such a color plan might also show a relationship between the ideas that are presented in the three similar colors.[92]

Fixtures -- In this study, the use of the term "fixtures" refers to the medium which will hold the exhibit or present it to the visitor. The exhibit must have some means of being viewed by a standing observer who may be either an adult or child. Presenting the exhibit to the viewer may also require carrying lighting or subdividing spaces.[93] There are a number of ways to do this. Most obvious is to

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[91] Ibid.

[92] Dale, cited by Riley, op. cit., p. 40.

[93] Brawne, op. cit., p. 181.

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simply place the exhibit out for inspection. This method works well for specimens which are meant to be handled. Setting out in the open, of course, offers no barrier to inquisitive hands, so items of value should not be displayed in this manner. On the other hand some restraint or enclosure is needed for the live animal exhibits. Cages can conform to most of the rules governing other exhibits as far as lighting, color and any other design tools are concerned. In this case, the animal is considered to be the specimen in the exhibit. The four most common elements of exhibit display are walls, panels, supports, and cases.

Walls may be considered the most primary and readily available support surface for an exhibit. It is ideally suited for flat-work displays and can be modified by color or addition of distinctive surface.

Since there normally are walls only on the outer fringes of a room, panels may be used as inward extentions of the walls. In this way they serve the same function as the wall. However, one advantage they do have over the wall is their mobility. They

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can be changed around so that the space they define can be altered, and the position they hold in relation to lighting, other exhibits, and circulation patterns can become effective for each particular occasion.[94]

Supports may encompass all methods of holding an exhibit which cannot be described as a wall, panel or case. These have the advantages of securement against removal, providing viewing height, and differentiating the display from its surroundings.[95]

Cases normally are the most often used method for holding exhibits. They are glass or plastic enclosed structures which offer certain advantages over some other forms of exhibit presentation. Being enclosed, valuable objects can be publically displayed yet protected from theft or handling; dust and insects can be excluded; and climatic conditions can be more constant or even altered by inserting for instance hygroscopic material.[96] Each case being a separate entity in itself, the interior setting can be built

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[94] Ibid., p. 182.

[95] Ibid., p. 188-9.

[96] Ibid., p. 185.

to coincide in scale with the specimens being shown.[97] However, being enclosed does produce the disadvantage of placing some material, plastic or glass, between the exhibit and the viewer. This surface can act as a light reflector, giving an extremely distracting element to the exhibit. Therefore, these see-through materials must be positioned or sloped so they will not reflect irritating light to a spectator.[98]

Each of these mediums has uses for particular types of displays and for different purposes. Monotony and fatigue can again result if only one of the methods is used in an interpretive center. It would be preferable to use a combination of them, each suited to a type of exhibit that is compatible with its type of display.

Narrative -- Once the exhibit fixtures are up with the appropriate colors and lighting to go along with the specimens shown, some form of interpretation must be used to bridge the gap between the

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[97] Ibid., p. 187.

[98] Ibid., p. 184.

exhibit elements and the viewer. The best "bridge" would be the interpreter himself; a personal contact so that explanations and questions answered can be geared to each individual visitor. This, however, is not practical and we must rely on other means to get the interpretive message across. Most often this takes the form of written material in an exhibit, which in this study will be referred to as the narrative. Here, unfortunately, lies one major drawback; the "premise that modern man tends to overlook printed typography in favor of the pictorial image."[99] It appears in society today, that with all the printed material people contact, they soon become tired of it and look for an easier way to gain information. Adding to this, most of what we read for pleasure, education, or otherwise, we read sitting down. There are very definite limitations to the amount people will read standing up.[100] In exhibits, visitors may just look at the pictures or specimens, being

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[99]Riley, op. cit., p. 3.

[100]Carmel, op. cit., p. 101.

content with what little knowledge they gain from them, and ignore the narrative.

Where many exhibits have a message to put across, it is very important to keep the narrative in these as simple and as easily understood as possible. In some cases, exhibits may be designed where no labels at all are needed to convey a message. These quite often wind up being the most successful. However, it is difficult to interpret without having an exchange of words in most exhibits. For this purpose, certain considerations can help make reading the narrative more enjoyable and relaxing. Above all, it must be legible and visible. It must be properly lit and positioned so it can be easily read without obstruction.[101] The ideas, concepts, and processes should be put across in a comprehensible way. If something is difficult to understand, most people will not bother to figure out what is being said, but will turn away to something else. To make a lasting impression, the narrative should teach enjoyably and stimulate the imagination. Through stimulation, people become

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[101] Ibid., p. 105.

interested and want to gain further knowledge of the subject. Interest can be heightened by not simply communicating fact, but instead creating a memorable experience on which future learning can build. Using the past to explain the present and the present to suggest the future will give a basis upon which visitors can build.[102]

"Keep in mind that an exhibition for the public is a display, a presenting to view, an offering for inspection, and not a convenient substitute for a film, book or series of lectures."[103] A person visiting exhibits will spend only a short time looking and reading a limited amount of descriptive or informative text. The narrative must not be lengthy, but should get its point across in as few words as possible and still be understandable. The most effective exhibits are those with a single purpose, best achieved by brief captions or headlines, not by long compositions.[104] Many exhibits attempt to present too much,

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[102]Worland, cited by Riley, op. cit., p. 56.

[103]Carmel, op. cit., p. 101.

[104]Hayett, op. cit., p. 9.

rather than a selection of the best. They become wordy and redundant in an attempt to convey an over-abundance of thoughts. If a concept cannot be simplified into a short narrative, it should not be used as an exhibit.

The same is true concerning the words used. Simple words are universally understandable, and it is understanding that is the exhibit's goal. Therefore, elaborate words are best left out of exhibits "for making readability rather than beauty the criterion."[105]

The narratives used in exhibits can be divided into three main groups: those that must be seen for the exhibit to make sense; those that act as explanation for those that are interested; those that give facts, figures and explanations for a special interest group.[106] The latter type of narrative should be used in exhibits only where people with the right type of technical backgrounds are present. Explanitory narrative should help tie loose ends together so that the whole exhibit gives a meaning that the eye and

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[105] Carmel, op. cit., p. 103.

[106] Gardner, op. cit., p. 104.

the intelligence can easily follow. Narrative that is necessary for understanding usually includes an exhibit title and captions for pictures or objects.

It is normal for people to have preferences as to what they read. Studies have shown that this is true of the narrative material in exhibits. It was shown that the greatest interest and actual reading occured with exhibits that presented information as cause and effect relationships, or that had parts in making a complete story. It was also found that if a place to sit was provided, more was read. The least read and least interest occured with the presentation of isolated facts, such as the identification of species.[107]

Titles are an important portion of the exhibit since they can captivate the visitor's curiosity with only a few words. In this way, a title can draw a person to the exhibit. They are composed to announce the exhibit and give the general context of things to be seen, but done in a way to invite the visitor over to inspect the exhibit further.

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[107]Wager, op. cit., p. 4.

They should always be short--not more than five words, and positioned and lighted for good viewing.[108]

The mechanics of setting up the narrative are as much common sense as those of color. What looks good to the interpreter should look good to the majority of visitors. The readability of the narrative is determined by such things as contrast, colors, lighting, placement and size. It is increased when the contrast between letters and the background is highest. Tests have shown that black letters on white are easiest to read.[109] Lighting and placement should illuminate the printing and make for ease in reading. In order to be seen, the size of the printing is important, but length of the narrative is also important. The highest readability appears to be with a line no more that sixty characters in length.[110] For greater legibility, printing or lettering should be accomplished by mechanical processes. This will insure an adequate standard of finish and execution,

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[108] Gardner, op. cit., p. 104.

[109] Carmel, op. cit., p. 105.

[110] Ibid., p. 106.

as well as uniform letter size and spacing.[111] Once a particular type face has been chosen, it is wise to use it consistently.[112] Different kinds of type used in a display are a distraction and awkward, as well as appearing unprofessional. For the same reason, many fancy type faces are not recommended.[113]

Since a majority of narrative material is not read, especially when there are many exhibits, the messages they attempt to put forth may be re-worked for a more interesting or attention-getting delivery. Dr. J. Alan Wagar found that visitor enjoyment was greater if the narrative was taped and played back to the visitor. This method also seemed to increase the visitor's retention of the material presented.[114] Other research indicates that the exhibits that used hear-phones or taped messages were more popular than

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[111] Pick, op. cit., p. 138.

[112] Gardner, op. cit., p. 109.

[113] Ibid.

[114] Wager, op. cit., p. 5.

those with only printed matter. However, some people still did not stay to hear the full length of the message.[115]

To probe the visitor's curiosity, and thus create interest in the narrative, a moving or animated message is effective.[116] Certain mechanical devices have been built for this purpose. They send a message in flashing lights across a narrow screen "holding" the passer-by to see what comes next. People who would never read certain printed messages will take time to wait for the complete message on moving lights.

Animation -- Animation can be a very effective tool used by the designer to attract attention to a display. "Any individual . . . , unless he is consciously seeking information, will be attracted by simple and what may seem childish things. Novelity, ingenuity, movement, . . . tricks and mystery" these are the ingredients of animation.[117] Any form of

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[115] Lime, op. cit., p. 7.

[116] Bernard, op. cit., p. 210.

[117] Gardner, op. cit., p. 12.

bringing life to an exhibit, any kind of movement or curiosity placement will attract attention to the exhibit and help to create interest in the subject matter. "Life" is a key word in using animation, for it gives us the basis for animation in an exhibit. Movement is associated with life. So is sound which can be piped into an exhibit. Live animals themselves might even come under this heading since they bring movement to an exhibit. They have great attractive force in an exhibit, as evidenced by the annual visitation to zoos. Forms of animation may help the exhibit to "live" for people, enhancing a valuable learning experience. On the other hand, the designer must be careful to make sure the animation is incorporated as part of the exhibit. "Often arbitrary technical tricks are used to gain attention with little consideration to the actual retention value of the various exhibits."[118] Flashing lights are very effective in attracting attention, but have little to do with, for example, an exhibit on night, singing insects. Instead, the sounds of these insects

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[118]Nicholson, op. cit., p. 9.

played over a speaker may not only draw attention, but also become a part of the exhibit and add to the learning experience. Using animation in this manner makes it a valid technique in exhibit design.

Animation, for the most part, is primarily used as a device to draw people to an exhibit. Its secondary function, that of adding information to an exhibit, will help to create interest. Wagar found that "movies associated with high interest, followed by exhibits that used shifting lighting, then those that included audio or recorded sound. The lowest in interest were those that relied on written text and mounted photos--flatwork exhibits that are probably the commonest of all."[119] Wagar further stresses that the stimuli associated with high interest are dynamic, and are those associated with entertainment. Those with lower interest are inert, and are associated with the traditional educational methods.[120]

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[119] Wager, op. cit., p. 4.

[120] Ibid.

Visitor Participation -- Animation and visitor participation used as tools in an exhibit are very similar and in some cases may overlap. In this study, animation is refered to as some form of attraction device (sound, lights, movement, etc.) which may add some feeling or learning value to an exhibit. Participation is a device which actively involves the observer through the sense of smell, tactile feeling, manual maneuvers, or mental exercise. A participation exhibit may also attract attention, simply because of its nature of involvement. It also will add to the mood, interest, and learning value of the exhibit.

A participation exhibit "encourages the visitor to participate in the exhibit." Therefore, he is apt to "concentrate to a greater degree and to be less distracted by what is going on around him."[121] Devices encouraging people to take part may come in a variety of forms. Push buttons may be the most common, for very few people can resist

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[121]Carmel, op. cit., p. 123.

"pushing." These types play on people's curiosity much like putting up a "wet paint" sign. Incorporating a test such as matching games causes the visitor to use his knowledge of some subject, and through the test may gain more knowledge. Studies have shown that visitors have better retention of information when they are exposed to even the simplest challenge.[122] Sense of touch may be used to gain information on some exhibit. Many objects encourage a tactile sensation for enjoyment. Again, many people cannot resist "petting" a stuffed animal to see how it feels. But tactile sensations are not limited to touching alone. Some tactile sensations may create a mood or feeling for an exhibit such as a heat lamp used near a desert exhibit, or a fan used to create wind for an exhibit on storms. Odors can be used in the same way as tactile sensations to enliven an exhibit. "The act of smelling is an important part of human life and more often than not recalls to mind pleasant incidents."[123] Examples of this are smoke, and

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[122] Ibid.

[123] Warren, op. cit., p. 21.

thoughts of a campfire, or ozone which freshens the air after a storm.

Wittisch best sums up the success of using participation exhibits: "Effective perception is thus a blending of sensations (from all senses) which then gives rise to thoughtful shuffling, arranging, and selection of a pattern. This pattern may be thought of as an understanding of an event or object."[124]

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[124]Walter A. Wittisch and Charles F. Schuller, Audio Visual Materials: Their Nature and Use, p. 30.

CHAPTER II

METHODOLOGY

Sampling Population

The concern of this study was with the adult nature center visitors who entered the exhibit room. It was felt that their intent in coming into the exhibit room was to view the exhibits. The survey was restricted to the adult population since they are better able to understand and give a more mature response. For this reason, the sampling cut-off point was limited to age fifteen and above.

Questionnaire

To put the questionnaire in final, understandable form and format, the book, Questionnaires: Design and Use by Douglas R. Berdie and John F. Anderson, was consulted.

The resulting questions were reduced to a workable and uncumbersome ten that would give insight into the objectives of this study. Three demographic questions were also included to find if this information had any bearing on the main questions. A sample of the finalized questionnaire appears in the Appendix.

Sampling Frame

The major details of the sampling frame were worked out with Mr. Thomas Smith, Chief Naturalist for Huron-Clinton Metropolitan Authority. This was done in order to gain an approach that would be the least disruptive to the duties of the naturalist or the quality of the public's visit.

The original thought was to distribute the questionnaires during peak visitation periods, such as the month of October. This would have obtained a larger sample but would have created congestion due to visitors filling out questionnaires. For this reason, a lower usage period was chosen for sampling.

Another problem in sampling arose while testing questionnaires on another survey. It was found that certain visitors hesitated to fill out questionnaires if they were with groups or especially with children. This did not seem to be due to unwillingness to cooperate, but rather to a concern for losing moments with others in the group, or worry about what the children would do during this time.

To alleviate this problem, it was decided to allow the visitors to choose their own course of action, without any pressure from a staff member standing by. Since all visitors came through the front door of the Nature Center passing by a registration desk, this seemed the most likely place to ask the visitor for help on this survey. A sign was placed on the registration desk asking visitors if they would please fill in a questionnaire after looking over the exhibits. Beside this sign was a small box containing the questionnaires and a supply of pencils. So that no one felt they had to answer in a particular way, a closed, slotted box was provided for the completed questionnaires.

Sample Obtained

Questionnaires were placed out in the above manner on January 2, 1977. By January 22, 1977, fifty-three questionnaires had been completed by visitors. During this time, the Nature Center had a visitor registration of 394. At least one-third of those registered were in groups: Boy Scouts, school groups, etc.

Tabulation of the Sample

Due to the facilities available, these questionnaires were hand tabulated. Analysis in this manner consisted of simple percentages and numerical tabulations, ratings and catagorization of the answers obtained.

Each question was set up with the purpose of satisfying one or more of the objectives of this

study. For this reason, they will be dealt with as each becomes relevant in the following chapters.

CHAPTER III

FINDINGS

Attraction and Attention-Holding

The questions designed to find what attracted a visitor to an exhibit and hold his attention were numbers 2, 3, and 5 on the questionnaire.

Question 2 was established to find what percentage of visitors read the narratives included in certain exhibits. This was done by asking "What was the percentage of the exhibits in which you fully read the labels?" To make this a simple task, and not create unnecessary hardship on the visitor, percentages of fully read material were broken up into four catagories: 0-25%, 26-50%, 51-75%, and 76-100%. Fifty-two of the fifty-three who took part in this survey responded to this question. It is very likely that fewer would have responded had the question been open-ended.

TABLE 1

RESULTS OF QUESTION 2: PERCENTAGE OF LABELS READ

Percentage of Labels Read	Number of Responses	Percentage of Total
0-25%	6	11.5%
26-50%	14	26.9%
51-75%	16	30.8%
76-100%	16	30.8%

From this information it would seem that the majority of visitors read over one-half of the labels in the exhibits. This may indicate that some attraction is held in the reading material of an exhibit. Further, the labels do hold attention for the majority of the observers. This may come from a desire on the part of the visitor to gain knowledge about the exhibit subject.

Question 3 could be partially indicative in determining if certain physical factors in an exhibit attract attention. This question asked the visitor to rank the glass-enclosed exhibits in

order, from those they liked most to those liked least. Only forty-three respondents chose to rank the exhibits. Most of the others stated simply that they were all good and could not rank them against one another.

TABLE 2

RATINGS OF GLASS-ENCLOSED EXHIBITS

Exhibits	Number of responses in each ranking								Average rating
	1	2	3	4	5	6	7	8	
Turkey	18	9	5	4	3	2	2	0	2.511
Duck Migration	3	7	12	6	3	4	4	4	4.093
Evergreen	1	1	7	9	6	11	5	3	5.000
Snowy Owl	11	14	5	4	3	3	3	0	2.883
Snow	1	7	6	8	8	4	6	3	4.534
Want to Help?	1	0	3	2	6	8	8	15	6.325
Nut	2	4	3	7	8	9	7	3	4.976
Phone	7	3	1	3	6	4	6	13	5.302

From the average rating column in Table 2, it is seen that those exhibits with the highest rating (lowest average) are exhibits containing stuffed animals.

In order of ranking, these are; the Turkey Exhibit, Snowy Owl Exhibit, Duck Migration Exhibit, Snow Exhibit, and Nut Exhibit. It would appear that inclusion of a stuffed animal in an exhibit to illustrate some facet of the subject tends to attract attention.

The exhibits with the lowest ratings (highest average) are two exhibits that use only flat-work to illustrate their subject; the Phone Exhibit and "Want to Help?" Exhibit. Exhibits with some type of object illustrating the subject matter do seem to be more attention-holding than those with flat-work.

Color in these exhibits seemed to have little effect on their attraction to people. Background colors in some high-ranked exhibits were the same as those in the low-ranked exhibits. Lighting was the same for all exhibits.

Question 5 was a direct attempt to determine what attracted visitors to the glass-enclosed exhibits. This was accomplished through the open-ended question: "What in that exhibit (answer to question 4) most attracted you to it?" Forty-five people responded.

Results of this question were not as great as anticipated. These results gave a better indication of the preferred themes people desire in exhibits. However, some pertinent information was obtained. Four of the five exhibits that contain stuffed animals received responses related to these specimens. This covered twenty-three of the forty-five, indicating again that the use of stuffed animals is a strong attention getting device.

Six people indicated staying at the phone exhibit for the longest time with the recorded message being the attractant. The message being audio rather than visual also seems better for holding attention.

Only two responses gave any indication of the design factors being attractants. These were just general comments stating that the displays were beautifully done.

Themes that Stimulate Interest

Three questions on the questionnaire were included to help determine the type of exhibit theme that would stimulate interest in the visitor. These were questions 3, 4, and 5.

Question 3 has already been considered in an attempt to find what physical factors attract attention. This question also indicates which themes of the seven glass-enclosed and one phone exhibit at Stony Creek were most popular. As has been stated, forty-three people responded on this question.

Looking at Table 2, there are three groupings: very heavily liked exhibits (those with large numbers of response in columns 1, 2, and 3), medium liked exhibits (large numbers in columns 4 and 5), and least-liked exhibits (large numbers in columns 6, 7, and 8). It is important to add here that those exhibits with large numbers in the least-liked columns do not indicate that the exhibits were disliked or hated.

It is just that, compared to the other exhibits, these had a lower ranking.

It is interesting to note that those with high "like" ratings, are exhibits that again contain stuffed animals. There are three exhibits that fit in this catagory; the Turkey, Snowy Owl, and Duck Migration exhibits. Each of these exhibits deals with the animal on display or some facet of its life. Two other exhibits that contained stuffed animals only received a medium rating. These exhibits differ in the fact that their theme deals with something other than the animals in the exhibit. Here the animals are used to illustrate a certain point of the theme.

On the other hand, it is not an animal theme alone that creates the interest. The phone exhibit provides information dealing with hibernating animals. However, this exhibit is illustrated with line drawings rather than stuffed animals and received a low rating. From this it seems that exhibits with a theme about animals and illustrated by those animals create high interest.

The exhibits with the lowest ratings, the phone and "Want to Help?" exhibits, have themes that are of interest to some but are illustrated by flat-work as stated previously. This may show that exhibit design helps play an important role in attracting attention.

Questions 4 and 5 can be dealt with together since they have reference to the same exhibit. In question 4, it was asked "Which of the exhibits . . . did you spend the most time at?" Question 5 asked what attracted them to the exhibit they gave as an answer in question 4. Forty-eight responded to question 4, where forty-five responded to question 5.

By far the leading exhibit at which people spent the most time was the Turkey Exhibit. People stated that they were attracted to this exhibit because of: the largeness of the bird (5 responses), it contained an animal (3), wing span (2), and several other reasons. Here again an animal is indicated in making an interesting exhibit theme. For a higher stimulation of interest, some form of "spectacular" animal can be used in a theme.

TABLE 3

RATING OF EXHIBITS AT WHICH MOST TIME WAS SPENT

Exhibit	Number of Responses
Turkey	17
Phone	6
"Want to Help?"	6
Duck Migration	5
Snowy Owl	5
Evergreen	4
Nut	4
Snow	1

One important outcome of these questions is indicated by the response to the "Want to Help?" Exhibit. It is interesting to note that a number of people spent more time at this exhibit than at others, yet this exhibit had a low rating for its popularity. The same holds true for the phone exhibit. As stated before, these themes may hold interest but the design is such that it does not attract attention.

Kinds of Exhibits that Create Interest

Only one question was included to determine what kinds of exhibits create interest. Question 1 asked the visitor to rank the various kinds of exhibits at Stony Creek in the order of his personal liking. Forty-seven people responded.

As seen again in Table 4, animals hold a very high interest, especially the live animals. From Table 4 one can see that the snakes, turtles, frogs, and salamanders have a type of mystique which makes people very attracted to them. The fish have a ranking more equal to the other kinds of exhibits.

Here again as in other questions, the phone exhibit ranked low. The recorded audio does not seem to be as popular as previously believed. Here too, exhibits that require visitor participation, which is supposed to add interest, were among the lower rated exhibits.

TABLE 4

RANKING OF KINDS OF EXHIBITS

Exhibits	Number of Responses in Each Ranking							Average Rating
	1	2	3	4	5	6	7	
Live Animal	31	8	2	4	0	2	0	1.723
Photo-Slides	6	1	9	4	11	7	9	4.489
Glass-Enclosed	10	8	8	8	5	6	2	3.340
Phone	1	3	3	3	7	15	14	5.340
Aquariums	3	13	12	11	4	2	2	3.297
Matching Games	4	8	3	7	11	5	9	4.361
Table Animals	2	4	8	12	6	6	9	4.489

Ways Exhibits Affect Visitors

The way the exhibits affect the nature center visitor may be the greatest criterion of success. The Naturalist strives for a certain impact when the exhibit is put together. If this impact is not achieved at least in part, then the exhibit has failed. Five questions were asked of the visitors to try and get

some idea of the impressions they received from the exhibits. These were questions 6, 7, 8, 9, and 10.

Question 6 asked the visitor if any of the exhibits made him feel like becoming more involved with the subject of that display. A no and yes response was offered. In addition, if a yes response was checked, it was asked which exhibit caused this feeling. Forty-five people responded to this question.

Of those who responded, thirteen gave a "no" response. This would comprise 29 percent of the respondents whose interest was not stimulated to any great extent by the exhibits. The other thirty-two that answered yes, gave a variety of answers to "which" exhibit gave interest. These are as follows:

All exhibits	(5)	Nature photos	(2)
Turkey	(1)	Nuts	(3)
Phone	(1)	Evergreens	(1)
Snow	(2)	Wildlife study	(1)
Live Animals	(2)	Matching games	(1)
Snowy Owl	(1)	Bird feeding	(4)
"Want to Help?"	(3)	Nothing particular	(5)

The "Bird feeding" responses referred to several bird feeders placed outside of the building and not included as an exhibit.

This wide variety of answers gives the impression that the Nature Center visitor has a diversity of interests. This is probably due to the varied backgrounds (economic status, education, past experiences, etc.) of the visitor as stated in Chapter I. The replies also point out that variety in exhibit themes and design help to cover the many interests of the visitor.

Question 7 asked the visitor if any of the exhibits made him feel angry or upset. The same responses were offered here as in question 6. Forty-three responses were received.

The majority or 86 percent gave a "no" response indicating they received no such emotional response to anything in the exhibits. However, the "yes" responses proved the most interesting. Of the six "yes" votes, five indicated that the stuffed animals caused this emotional feeling. Many get upset about seeing beautiful animals killed. However, these

people did not realize how these specimens were obtained for the Stony Creek Nature Center. If they did, perhaps their reaction would not be so upsetting. The one other respondent indicated being upset by the Turkey-Dinner relationship.

Question 8 asked the visitor if he felt there were; too many exhibits, just the right amount, or too few exhibits. The respondent was able to check off one of three responses. Forty-seven responded.

Only one visitor indicated there were too many exhibits. He also stated that his purpose in coming was to walk the trails, not look at exhibits.

Responses were fairly even between the two other choices, twenty-one voted for "just the right amount", while twenty-five voted for "too few." The indication here is that Nature Center visitors are very interested in having exhibits available.

Question nine gave the visitor twenty-six adjectives which might describe the exhibits. He was asked to circle those which described the exhibits at Stony Creek. Fifty people responded to this question.

Fourteen adjectives were considered favorable toward the exhibits where twelve were considered unfavorable. Depending on the visitor's reactions, he could list up to the twelve or fourteen responses. Most did not circle the full amount in either catagory, but instead circled anywhere from one to twelve with the average number circled being 5.25 per person.

Using Table 5, it is discerned that the greatest amount of response occured with seven of the favorable adjectives. These seven (entertaining, inviting, truthful, informative, enjoyable, interesting, and friendly) or half of the favorable possibilities accounted for 73 percent of the favorable response. It may be that people have a better understanding of these words or their meaning than of the other words. As an example, "enjoyable" is a more universally used word than would be "aesthetic." Another possibility is that people may recognize these seven as traits that "things" have, where as the seven lesser chosen words may be traits more attributable to humans. Whatever the reason, the exhibits had a generally favorable effect on the respondents.

TABLE 5

NUMBER OF RESPONSES TO DESCRIPTIVE ADJECTIVES

Favorable Adjectives	Number of Times Circled	Unfavorable Adjectives	Number of Times Circled
Simple	14	Complicated	1
Entertaining	25	Boring	1
Aesthetic	12	Repulsive	0
Sincere	16	Fake	0
Inviting	23	Dull	2
Truthful	21	Unreliable	0
Informative	37	Silly	1
Enjoyable	35	Cluttered	0
Interesting	36	Dark	0
Reliable	11	Unfriendly	0
Bright	14	Frightening	0
Friendly	27	Subdued	0
Serious	6		
Forceful	1		

Of the five unfavorable responses, four were chosen by two visitors who stated that they came to

use the trails rather than view exhibits. The one other unfavorable was for the word, "silly" with a notation that this referred to the phone exhibit.

Question 10 offered three responses to the question of whether the visitor had gained knowledge of the outdoors from the exhibits. The three possible answers were 1) a great deal, 2) some, and 3) gained nothing. Forty-six people gave answers.

Of the respondents, 74 percent felt they had acquired some outdoor knowledge from the exhibits. Another 22 percent felt that they had gained a great amount. It would appear from this, that the exhibits are accomplishing one of their major aims: educating people.

Demographic Characteristics of Respondents

Three questions were set up to determine if some of the demographic characteristics of the respondents were weighted and thus may have influenced the outcome of the questionnaire.

Question 11 asked for the age of the respondent. Ages were grouped in certain intervals which might give indications toward maturity, values, outlook, etc.

TABLE 6

AGE DISTRIBUTION OF RESPONDENTS

Age	Number of Respondents
15-18	5
19-25	9
26-35	19
36-45	8
46-55	5
56-65	4
65 over	1
no answer	2

Question 12 asked for the sex of the respondent.

TABLE 7

SEX DISTRIBUTION OF RESPONDENTS

Male	20
Female	22
No answer	10

Question 13 asked who they were in company with.

TABLE 8

VIEWER ACCOMPANIMENT

Viewer with	Responses
Group	7
Spouse	21
Children	16
Friend	14
Alone	6

The average respondent from these answers would be a male or female in their early, middle years, visiting with their family.

No indication at this point is given to indicate whether or not the demographic make-up of the individuals determined the outcome of the questionnaires.

CHAPTER IV

CONCLUSIONS

In response to the previously stated specific objectives of this study, an analysis of the collected data prompts the following conclusions:

Objective 1) A. Animals used as specimens in inanimate exhibits have a high attractive value.

B. When information cannot be given through visual means, printed labels are effective in disseminating at least half of the information. Labels must be kept short and uncomplicated for this to be feasible.

C. Exhibit design and make-up add to the theme-attraction in obtaining visitor attention.

D. Live animals used as exhibits to indicate types of local fauna hold the highest interest for visitors.

E. Exhibits using inanimate objects with short narratives are a highly successful means of reaching visitors.

Objective 2) A. An exhibit theme involving animals holds attention and creates visitor interest.

B. A variety of exhibit themes and designs will

help to reach more people with varied backgrounds.

Objective 3) A. Exhibits in a Nature Center are looked upon by the Nature Area visitor as a favorable form of interpretation.

B. Exhibits are of high interest as a recreational outlet as well as an informative outlet to the Nature Center visitor.

C. Exhibits accomplish, to some degree, the aim of educating the Nature Center visitor in the field of local natural history.

This study is by no means a complete and final analysis of exhibit effectiveness in the field of

interpretation. It is only a start, and may act as a guide to the interpretive professional in the establishment of exhibits.

The findings of this survey only indicate a few trends that are followed at one Nature Center. These trends may vary in other Nature Centers or may be all together irrelevant in some areas. Further work must be done to gain a better understanding of the objective set forth in this study for all areas and the field of interpretation.

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APPENDIX

SAMPLE QUESTIONNAIRE USED IN

STONY CREEK NATURE CENTER STUDY

A Visitor Survey
conducted by
THE FISHERIES & WILDLIFE DEPARTMENT
of
MICHIGAN STATE UNIVERSITY
in co-operation with
THE HURON-CLINTON METROPARKS

The purpose of this survey is to determine what there is in a nature center exhibit that captures the interest and attention of the visitor, and if the exhibits themselves create any thought or change on the visitor's part.

Please answer the following questions as completely as possible.

1) Rank the following exhibits in order, based on how much you enjoyed them (place the letter next to the appropriate number):

A. live animals	most enjoyed	1.
B. photo-slides		2.
C. glass-enclosed exhibits		3.
D. phone exhibit		4.
E. aquariums		5.
F. matching games		6.
G. stuffed, table animals	least	7.

2) What was the percentage of the exhibits (including the live animals) in which you fully read the labels?

____ 0-25% ____ 26-50% ____ 51-75% ____ 75-100%

3) Based on what you remember of the exhibits, rank the following glass-enclosed exhibits in the order in which you liked them. (Place the letter next to the appropriate number.)

A. Turkey exhibit	Liked most	1.
B. Duck migration exhibit		2.
C. Evergreen exhibit		3.
D. Snowy owl exhibit		4.
E. Snow exhibit		5.
F. Want to help? exhibit		6.
G. Nut exhibit		7.
H. Who's that sleeping? - phone exhibit		8.

4) Which of the exhibits mentioned in question 3 did you spend the most time at?

A B C D E F G H

5) What in that exhibit (above) most attracted you to it?

OVER

6) Do any of the exhibits make you feel like becoming more involved with the subject of that exhibit?

____ no
____ yes, which _____

7) Do any of the exhibits make you feel angry or upset for some reason?

____ no
____ yes, which _____

9) Circle the words that you feel describe the exhibits in the nature center you've just visited.

complicated		cluttered
	fake	
simple		bright
	informative	
boring		dark
	enjoyable	
entertaining		friendly
	dull	
aesthetic		unfriendly
	interesting	
sincere		frightening
	reliable	
inviting		serious
	unreliable	
repulsive		forceful
	silly	
truthful		subdued

10) After examining the displays, do you feel you've gained:

____ a great deal of outdoors knowledge.
____ some outdoors knowledge.
____ gained nothing.

11) Your age? ____ 15-18 ____ 19-25 ____ 26-35

____ 36-45 ____ 46-55 ____ 56-65 ____ over 65

12) ____MALE ____ FEMALE

13) Are you with: ____ a group, ____ spouse, ____ children,

____ friend, ____ alone

THANK YOU VERY MUCH FOR YOUR HELP