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A Zoological Park, Why, Where, How
Michigan State University Extension
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Arthur T. Wilcox, Editor
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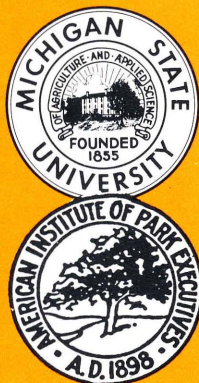
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A Zoological Park

Why
Where
How

MICHIGAN STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
& COOPERATIVE EXTENSION SERVICE
EAST LANSING



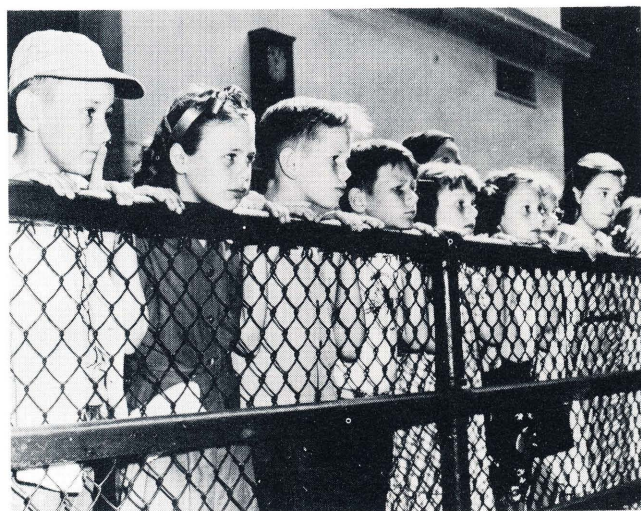
ARTHUR T. WILCOX, Editor

AMERICAN INSTITUTE OF PARK EXECUTIVES
AMERICAN ASSOCIATION OF ZOOLOGICAL
PARKS AND AQUARIUMS

OGLEBAY PARK
WHEELING, WEST VIRGINIA

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Courtesy: Cleveland Zoological Park



Courtesy: Cleveland Zoological Park

Introduction



Courtesy: Zoological Gardens of Berlin, Germany—Photo: Peter Curlis

A moated exhibit area may be seen from the attractive entrance to this building in an outstanding European zoological park.

EACH YEAR millions of people visit zoological parks because animals have a universal appeal to people of all ages and in every walk of life.

A zoological park is a valuable asset to its community. It serves as an important educational institution. It develops community pride and prestige and reflects favorably upon the cultural interests of its supporters. Thus, the community becomes a more enjoyable and worthwhile place in which to live.

The zoological park stimulates business, for visitors come long distances and spend money for meals, housing and retail purchases.

The community government values the zoological park as an excellent means of building a wholesome public relations program.

Skillful display of animals fulfills a real psychological need. Mankind hungers for identification with other living things. As life becomes increasingly artificial and complex, people need more opportuni-

ties for those associations with nature which are made possible in the zoological park.

Parks are built because the public needs them, demands them, and is willing to pay for them. It is true that animals may live longer in captivity and be better fed, cared for and protected than in the wild; but zoological parks are built primarily for the benefit of the public, rather than for the animals. However, the privilege of exhibiting wild animals in captivity carries with it an obligation to provide them with skillful care and healthful, comfortable living accommodations.

Thus the development of a zoological park must consider three important groups:

- the animals
- the public
- the management

Each of these has its own interests and requirements. Often these are similar and the problem of park development and operation is simple and obvious. But at other times they conflict and it is necessary to refer to important basic principles in order to arrive at satisfactory recommendations for development and operation.

This publication will discuss some of these principles to be followed and problems that are met in establishing, designing and operating a zoological park.



Courtesy: Lincoln Park Zoo, Chicago.

The strange creatures of the world are a source of never-ending interest and educational opportunity.

Starting the Zoological Park



Courtesy: Columbus Zoological Gardens, Ohio—Photo: Clara Nickerson

African Darna deer

Zoological parks have wide appeal. Therefore, the leadership necessary to develop community support for a new development may come from citizens in all walks of life. A successful and influential leader in the community, a progressive park commissioner, a newspaper, a strong service club—are examples of

such leadership. The need for a zoological park may seem evident to public administrators, but it is important that interested citizens recognize that need and call for action.

After this citizen leadership is established, general community support must be gained. This may well be done through a meeting of community leaders where problems connected with the establishment of a zoological park can be discussed.

Why Have a Zoological Park?

The reasons are many:

- *Enjoyable.* A zoological park offers an interesting, enjoyable and wholesome leisure time activity. It appeals to all age groups, regardless of social or economic background. In a society which demands that every effort be made to encourage family recreation, the zoological park is especially important. Properly designed with picnic grounds and other park features, it offers the family an unexcelled opportunity to share mutual pleasures and experiences.

A modern zoological park should be more than an animal collection. Attractive landscaped areas have a double function. They furnish pleasing surroundings for visitors and desirable settings for the display of animals.

- *Economical.* Zoological parks are a relatively economical form of recreation from the standpoint of participant cost. In spite of the fact that special supervisory personnel and technical competence are necessary, few recreational facilities give so much value for so little cost.

- *Stimulates business.* Visitors from out of town are attracted to good zoological parks. They, in turn, contribute to community welfare by spending money in retail stores, restaurants, hotels and motels. In many places checks of automobile license plates have indicated that the appeal of the zoological park ranges far beyond local political boundaries.
- *Educational.* The zoological park offers an important opportunity for formal and informal education. Elementary and secondary schools, colleges, youth organizations, and adult groups will take advantage of the facilities made available. The extent of the educational program which may be carried on in the zoological park is limited only by imagination and finances.

With few exceptions schools use existing zoological parks as a valuable supplement to their classroom work. The children's section of the zoological park is becoming increasingly important as a place to dramatize childhood stories and interest children in animal life. Wild west themes, nursery rhymes, farmyard and circus themes have been used successfully for children's enjoyment and education. These exhibits are relatively inexpensive and easily managed. They offer a special appeal to the public because of the close contacts made with exhibits.



Courtesy: Zoological Society of San Diego

An attractive zoological park may be an important tourist attraction. This park entrance has a central ticket booth and motor operated grill closure gate.

The audio-visual techniques involved in children's zoo operation greatly enhance parent-child and teacher-child relationships and stimulate further interest in animals and an understanding of the 'chain of life'. The 'painless' education absorbed by visitors in a well developed park is an important community value; and knowledge of animal behavior, as a part of biological education, becomes an important public service.

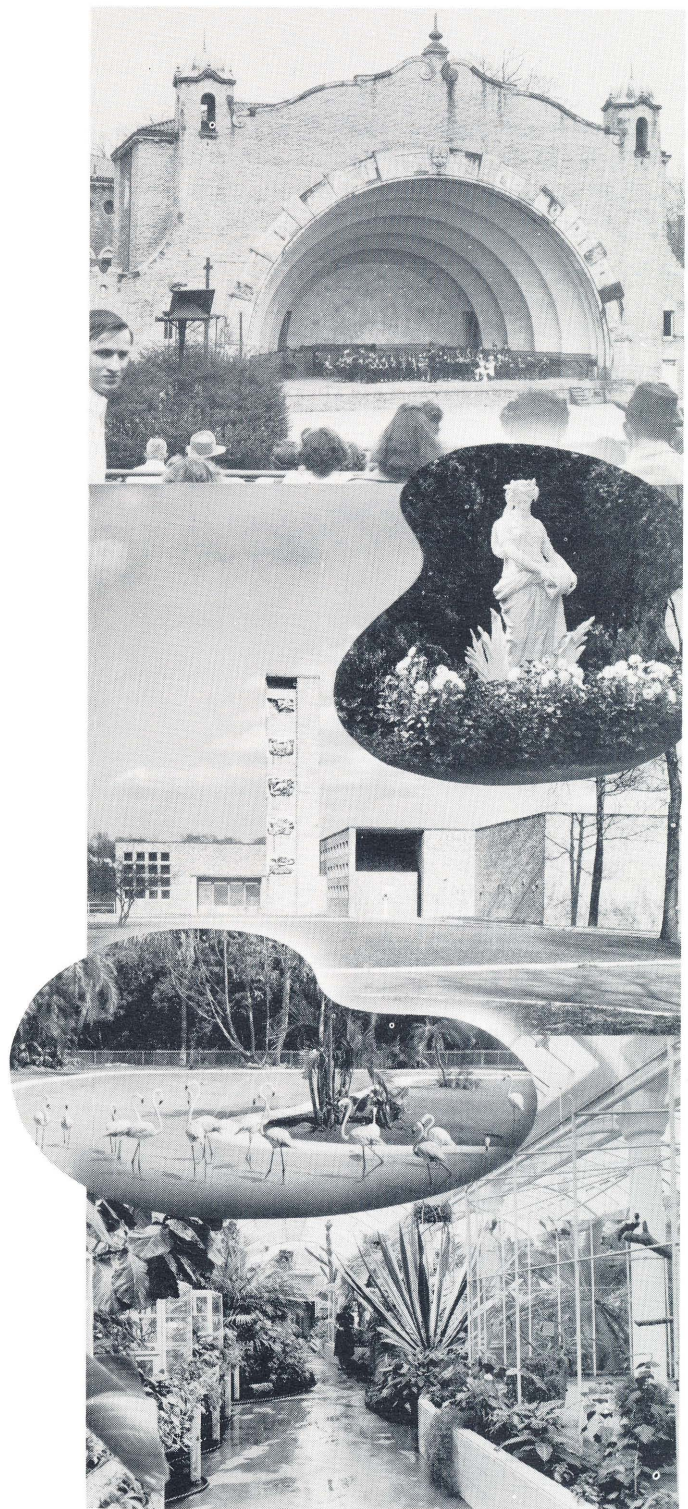
- **Benefits the handicapped.** Those concerned with social work have found that the handicapped are especially enthralled by zoological park experiences. Programs which permit restricted handling of animals have great educational value in our urban society, and special value for therapy work with the blind.
- **Provides newsworthy events.** Appropriate and timely publicity has tremendous human interest and educational value. Well chosen animal stories easily compete with sensational front page headlines. The fact that animals native to far-off land have arrived in the community is front page news. So too is the birth of animals and news about their behavior. Such news contributes to community enjoyment and satisfaction.
- **Cultural asset.** The zoological park is a cultural asset ranking with the art center, museum, and the concert hall. It serves as a source of community pride and helps make the community a good place in which to live.

Develop Community Support

Point out the advantages of the zoological park at every opportunity. Point out examples set by successful zoological parks in other communities. Use movies, television, press, radio and lectures. Use every proper method to interest the general public in the need for a zoological park. Campaigns waged through the schools are especially effective in establishing zoological parks.

The aid of funds raised by experts or civic project specialists may be invaluable even though such service may seem expensive. Enlist the aid of key leaders in the community to help disseminate information to every home and every group. Keep always in mind, regardless of how sympathetic the public may seem, that a campaign must be carefully prepared. Until the campaign is successfully concluded, it must be considered to be of doubtful outcome.

A Zoological Park



Top and inset, courtesy: Toledo Zoological Gardens, Photo: Mel Block; center photo, courtesy Cleveland Zoological Park; inset, courtesy of Zoological Society of San Diego; Bottom, courtesy of Rotterdam Zoo, the Netherlands, photo by C. Engelse.

The zoological park may become a major cultural center. It is a source of great community pride, and contributes to the desirability of the community as a place in which to live.

Governing Authority

Zoological parks can operate successfully under several types of organization. Successful governmental control in one community may be inappropriate in another and local conditions will determine what method of governmental responsibility is best.

The director of a zoological park may have authority delegated to him through any of a number of types of governmental organization.

Under *city manager*, *strong mayor* or *commission* forms of government the director may be responsible to:

- a city manager, a mayor or a city or county commissioner.
- the head of a department such as a public works director, public service director or park superintendent. These men are in turn responsible to a city manager, mayor or commissioner.

Under any system, the cooperation of a good zoological society or an advisory board of influential citizens can be of great value in promoting the growth of the program and maintenance of high park standards.

Public boards are the most desirable form of control for zoological parks. Such boards have authority to administer park and recreation facilities under which the zoological park may operate or they may administer the zoological park alone. Under either



Courtesy: John Ball Zoological Gardens, Grand Rapids, Michigan

A zoological society contributes to the success of this park. The sculptured bear at the entrance appeals to children and adults alike.

plan a zoological society may work through the board to promote the zoo program.

Experience has shown that non-political boards, serving overlapping or staggered terms of office, provide a continuity of program planning, development and maintenance which is most important for sound park operation. With such a board and with a comprehensive budget, the director can plan on orderly development and growth of the park as an assured fact; for the zoo provides a never ending source of education and entertainment to serve the ever present interests of the public.

A *zoological society* is a group of interested and often influential individuals who may manage the zoological park or act as an advisory body in its development and operation. Such non-profit organizations are sometimes called "friends of the zoo," "zoo foundations" and "zoological associations." Their promotional activity is valuable in obtaining money or exhibits through gifts, grants, donations, bequests and other methods, and creating interest in new zoological park development and operation.

Several well known zoological parks have a long history of private endeavor and leadership in which influential individuals or strong societies have initiated, developed and operated parks with great success. The majority of public zoological parks, however, have been developed with *public funds* supplemented by gifts, grants and other support from individuals and affiliated groups. Some of these groups have done outstanding work in securing funds for buildings, exhibits and successful programs. A survey of 38 public zoological parks shows that more than 80 percent have supporting zoological societies.



Courtesy: Houston Zoological Gardens, Texas

Control by a public board contributes to the success of this zoological garden. A well designed entrance increases the visitors' anticipation of a pleasant visit.



Swope Park Zoological Gardens, Kansas City, Missouri. Informal design is especially pleasing to the visitor. It permits the most effective use of existing topography in developing interesting exhibits.

Direct appropriation from municipal operating revenues is the usual source of funds for annual operation and maintenance. This source of revenue is recommended where funds are available, but it is not productive in cases where tax rates are limited or held to a minimum. Direct appropriations may be very unsatisfactory as a source of funds for capital improvements. Reliance upon annual appropriations may result in tying immediate needs to immediate income. Long-range planning then becomes difficult. Requests for funds usually are made by the zoological park administrator in the form of an itemized budget to city officials.

A *direct tax levy* is one of the best sources of revenue since it provides a sustained income and permits the park authority to plan its operations with the assurance of adequate finances.

Amortizing bond issues and *self-liquidating revenue bonds* are excellent sources of funds for capital improvement programs. These financing plans permit early and complete development of the zoological park with repayment of the obligation over an extended period. Bonding power is subject to varied legal restrictions and requires sound public support in order to be successful. Thus, proceeds of bond issues should be allocated to improvements of unquestionable public appeal.

In addition to municipalities, other governmental agencies, either local, state or national may, under certain circumstances, provide funds for capital developments as part of cooperative planning programs.



Courtesy: New York Zoological Society

Train rides provide a source of revenue to the park as well as needed transportation and a welcome form of entertainment.

Fees and charges are becoming increasingly important as sources of revenue. Entrance fees are collected in many ways. In some zoological parks, both adults and children are charged the same fee and there are no free days. In other parks, certain days are free. In still other places, children are charged a reduced fee.

While many parks have no admission charge, an ever increasing number are adopting the entrance fee as a means of supplementing income and providing additional services to visitors. Entrance fees result in more equitable sharing of maintenance cost by the general public and the actual park users. It has also been found that the public is likely to be more appreciative of the park when it must assume a direct share of the cost, thus reducing vandalism. A still more important reason for the entrance fee is that visitors residing outside of the taxing area must contribute to the cost of operation when they visit the zoological park.

Concessions. It is strongly recommended that the zoological park management handle sales of refreshments, novelties, guidebooks and animal food. In some cases it may be desirable to have a concessionaire operate under a lease agreement. However, direct park operation should be exhaustively explored before this method is adopted.

Gifts, donations, legacies and bequests of money or animals may be important to the development of the zoological park. Although these sources for development do not occur regularly, they may provide important opportunities to develop phases of the zoological park program which cannot be provided for in other ways. The purchase of exotic animals or the development of revenue producing exhibits such as children's zoos are examples.

Memberships. The zoological park which is operated by a society may be enabled by charter provision or corporate designation to sell memberships. These memberships should be in several categories such as annual, contributing and life memberships. Funds thus derived may be available for use without restriction. Free admission may be a privilege of membership.

Other activities and services will produce revenue to a well organized zoological park. Examples are: rental of children's go-carts under a fee and deposit plan, train rides, trained animal shows, animal rides and automobile parking.

MEMBERSHIP APPLICATION

ZOOLOGICAL SOCIETY OF SAN DIEGO, INC.
Box 551, San Diego 12, California

Date.....

Name.....
(Please Print)

Address.....

Memberships are deductible from income tax.

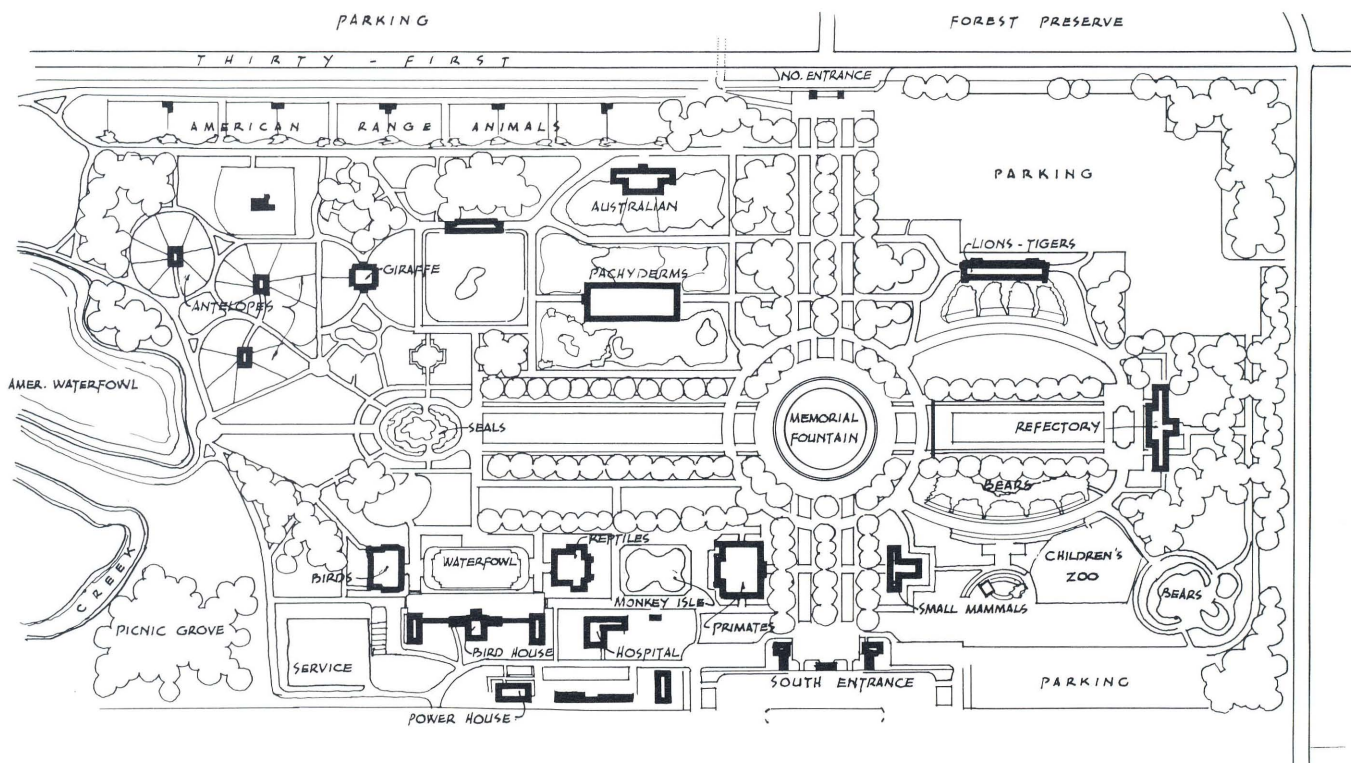
Annual Membership per person	\$5.00	<input type="checkbox"/>
Annual Family Membership	\$7.50	<input type="checkbox"/>
Annual Sustaining Membership	\$25.00	<input type="checkbox"/>
Life Membership	\$200.00	<input type="checkbox"/>
Patrons	\$1,000 to \$10,000	<input type="checkbox"/>
Benefactors	over \$10,000	<input type="checkbox"/>

I enclose \$.....

If sponsored, by whom

Zoological societies have done outstanding work in developing the zoological parks of America. Members of this society are entitled to hold office,

receive a monthly magazine, attend society meetings, enter the park without charge, and receive ten passes.



The Chicago Zoological Park, Brookfield, Illinois. Visitors in this well developed park enjoy the beauty of a formal garden as well as animal ex-

hibits, informal landscaping, and an outstanding exhibit of animals in habitat settings.

Organization

Typical functional divisions in a zoological park are illustrated on the accompanying chart. This chart should be regarded as a guide. It should be adapted to the requirements of local situations and adjusted to make the most effective use of the experience and interests of the director and his staff.

The director is in charge of all operations. He directs and carries out the policy. He also directs fund raising for park development and operation. In small zoological parks the director may also be an office manager, do public relations work, have direct supervision of buildings and grounds, or assume other duties. Animal keepers and others with appropriate interests and abilities may be given educational or office management responsibilities under competent supervision.

Many zoological parks will be responsible only for animal care, if they operate as part of a park and recreation department. Other functions will be performed by appropriate park divisions.

Some may integrate office management, public relations, police and public service and similar functions with other specialized divisions of the local government.

The success and quality of a zoological park is to a large extent determined by the quality and abilities of the personnel. This is especially true of those in responsible supervisory positions.

Superintendents of divisions should have formal training, supplemented with working experience and active professional association.

Typical Functional Divisions

Office Management	← The size and scope of operation will determine the complexity of office organization.
Planning and Design	← A successful zoological park requires the most carefully coordinated work of the architect, landscape architect, engineer and zoologist. The importance of securing competent professional assistance cannot be overestimated.
Maintenance	← Maintenance and repair work may be carried on by zoological park crews but are often performed by the service departments of other governmental divisions.
Animal Acquisition and Maintenance	← The director, curators and veterinarian cooperate to maintain the animal collection at a desirable level of quality and quantity.
Health and Research	← The veterinarian has complete responsibility for animal health. He cares for the sick, prescribes diets and insists upon good sanitation in animal exhibits.
Public Service	← Service to visitors is an important function of a zoological park. This division must be efficient and provide the visitor with services which contribute to his comfort and enjoyment.
Police	← The police department must be alert at all times to give assistance and provide maximum safety for both visitors and animals.
Public Relations and Interpretive Programs	← Interpretive programs and public relations designed to make visitor use more enjoyable and valuable are becoming increasingly important in good management.

Planning and Design

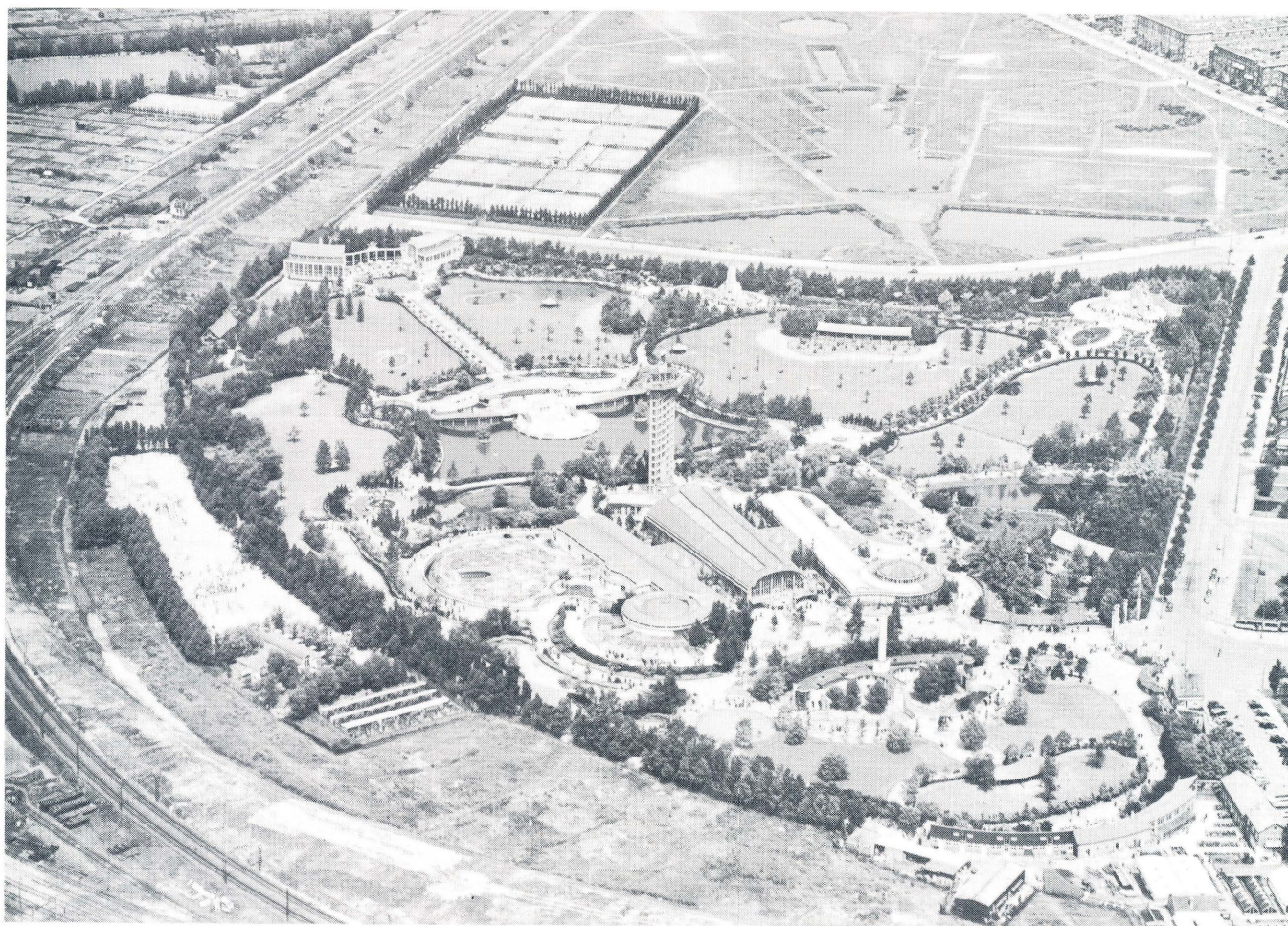
The design of a zoological park involves the work of many specialists. Their work must be carefully coordinated and directed toward a threefold objective:

- The animals must have healthful, appropriate and comfortable housing.
- The displays must be planned to give the maximum enjoyment to visitors. Naturalistic settings are preferred wherever practicable.
- The arrangement must facilitate efficient and economical operation and maintenance of the entire zoological park.

Steps in Planning

With these objectives in mind, planning should proceed in an orderly manner:

- The character of the collection must be determined.
- The necessary acreage must be determined and a site selected.
- The character of each animal of the planned collection must be individually considered from the point of view of natural environment, size, color, extent and swiftness of movements, and unusual or typical habits. Then housing for the animal, whether cage, pit, tank, moated area, or range can be designed in size, style and scale to emphasize and even dramatize its special character.
- Broad site plans, showing general arrangement and circulation for visitors and park personnel, are prepared.



Courtesy: KLM Airlines

The great Rotterdam Zoological Garden with its broad landscape exhibits includes a tall observa-

tion tower, civic center, auditorium, conservatory, restaurants, and marginal playground.

- Detailed plans for grading, landscaping, drainage, storm and sanitary sewers and water, gas and electric distribution systems, walks and service drives are prepared.
- Architectural plans, working drawings, specifications and construction contracts for the individual buildings and exhibits are prepared.

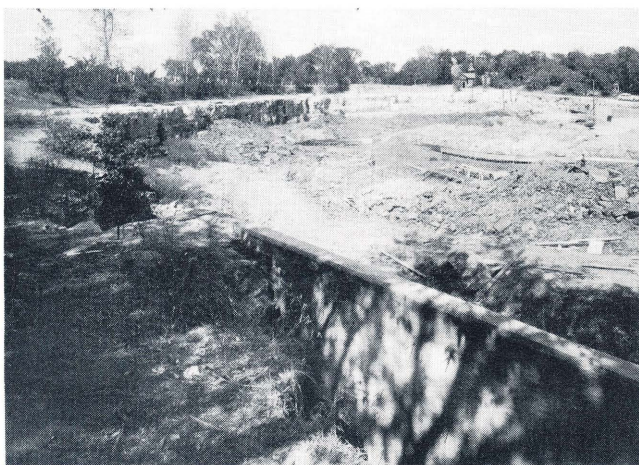
If plans are sensitively prepared and well executed, each animal will respond, thrive and appear to its best advantage. If this is not done, it is possible to give the unfortunate impression of a prison and the zoological park will have defeated one of its purposes of displaying animals in pleasant surroundings for their value in illustrating animal life and the natural sciences.

The zoological park administration and staff are trustees for a collection of living creatures. It is their responsibility to see that high standards are maintained through every detail of planning, building, maintenance and operation.

Factors in the Site Selection

Size of the Zoological Park. The size of the park depends on several factors:

1. Type of collection
2. Availability of land
3. Source and amount of funds for construction and maintenance



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

Photo: Anderson Photo Company

This construction view of the African veldt exhibit illustrates the importance of adapting design to the topography. Note the use of natural rock walls.



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

Photo: Anderson Photo Company

The completed exhibit. Moat walls of reinforced concrete are 8 to 10 feet high. Guard rails are set at an angle. Overlooks are built on natural rock projections.

The site should provide space for ample parking, scenic buffer and expansion areas, and room for efficient circulation of both visitors and park maintenance staff. A national survey of zoological parks has indicated a desirable minimum of 75 acres and a practicable maximum of 200 acres.

Location. A location which is easily reached from centers of population is desirable for a new zoological park. Adequate public and private transportation facilities, including ample parking areas, are essential. Multiple road access which will avoid traffic congestion during peak periods is very important.

A buffer zone around the zoological park is important. This landscaped zone will vary in width but should be wide enough to provide for future expansion, protect surrounding areas from excessive noise and objectionable sights, and provide adequate seclusion for animal exhibits. Locations near ball-parks and stadiums that attract large concentrations of people should be avoided.

Natural Features. Rolling topography, used intelligently, is ideal for zoological park development because it is both economical and interesting. The high cost of altering steep slopes or flat areas to make an attractive park may be prohibitive. Erosion and drainage problems are also more difficult on such sites.

Many soil conditions are unsuitable for zoological park construction. Soil and water table conditions should be carefully examined in order to avoid sand, peat, swamps or other undesirable areas.

Good natural drainage is important. Surface and

subsurface drainage are major problems in development. Surface water should run off rapidly without soil erosion. Subsurface drainage and control of ground water table may be very important problems where deep dry moats are planned.

Proper sanitation requires adequate sanitary sewers to carry off animal wastes. Sewer mains and sewage disposal plants are costly. Therefore, it is advantageous to select a site near an existing sanitary system of adequate capacity.

Adequate supplies of good drinking water must

be available, because the water requirements of a modern zoological park are large.

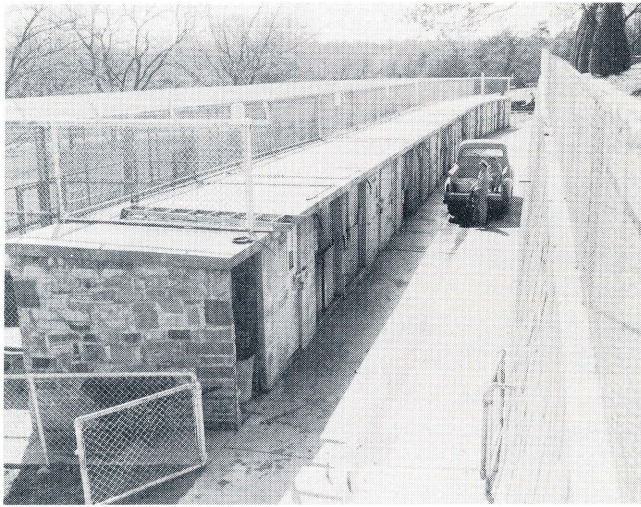
Rivers, streams, springs and lakes add greatly to the beauty of the zoological park. Every effort should be made to make use of open water areas. Water is an important feature in any recreation area.

All desirable vegetation should be preserved and incorporated into the master plan. The planting of large trees is costly and young trees require many years to reach maturity. A wooded or partially wooded site is desirable for a new area.



The Columbus Zoological Gardens, Ohio. Picnic areas and a place to relax amid pleasant surroundings contribute greatly to visitor enjoyment. Adequate provision for parking is most important.

Parking areas may occupy a large space and require careful planning to assure efficient movement of traffic. A waterfowl area on the river is an interesting feature here.



Courtesy: City of Dallas, Texas.

Careful design of exhibits to permit efficient care of animals is essential. Shift doors permit safe, efficient handling of the large cats kept in this exhibit.

Planning the Collection

Regional Collection. A regional collection of native animals is relatively inexpensive and easy to assemble. Although native animals, birds or reptiles are as sensitive to captivity as those from the far corners of the world, they are closer to their natural environment and may be more easily managed. However, some species can be kept in captivity only with difficulty. The mountain sheep, caribou, pronghorn antelope, moose, and many American snakes and insectivorous birds are examples. The experience of other zoological parks may be an invaluable aid in choosing satisfactory animals.

General Collection. A general collection should include a diversity of animals from the local region and more distant lands. Such a collection is more expensive to acquire and maintain than a regional collection. It also creates problems relating to diet, health, and housing of the animals. Specialized types of housing are frequently required.

But a general collection has wide appeal and permits great latitude in arrangement and presentation. With careful planning, many animals have similar requirements and may be housed and exhibited in close proximity. Consider the availability of specimens, cost of procuring and maintaining them, their adaptability to captivity, potential longevity, and general appeal to visitors. As an aid to planning, it is sometimes helpful to group animals according to their appeal to visitors.

Animals of general popular interest:

monkeys	elephants	giant turtles
tigers	rhinoceros	parrots
giraffes	sea lions	pythons

Unusual or bizarre animals:

hedgehogs	anteaters	chameleons
armadillos	peacocks	iguanas

Animals with which visitors are familiar:

wild dogs	foxes	elk	macaws
zebras	camels	parrots	turtles

It may be desirable to display animals according to their habitat requirements or their native geographic area, so the visitor can understand the relationship of animals to their natural surroundings.

Aquatic	Tree Dwellers	Burrowers	High Alpine
hippopotamus	marmosets	gophers	conies
sea lions	sloths	badgers	marmots
mink	squirrels	moles	mountain goats
penguins	woodpeckers	kingfishers	eagles

Grasslands	Tropics	Arctic
prairie dogs	gorillas	polar bears
antelopes	anacondas	lemmings
kangaroos	birds of paradise	snowy owls
ostriches	porcupines	hares



Courtesy: New York Zoological Society

Satisfactory park design requires many technical skills. Here, architect Harmon Goldstone inspects new construction in a great ape exhibit.

Suggested Collection for a New Zoological Park

Zoological parks frequently begin as a small unit in a larger park area and develop, as opportunity permits, into extensive collections. The following exhibits are suggested for a long range park development program. The first six are relatively inexpensive

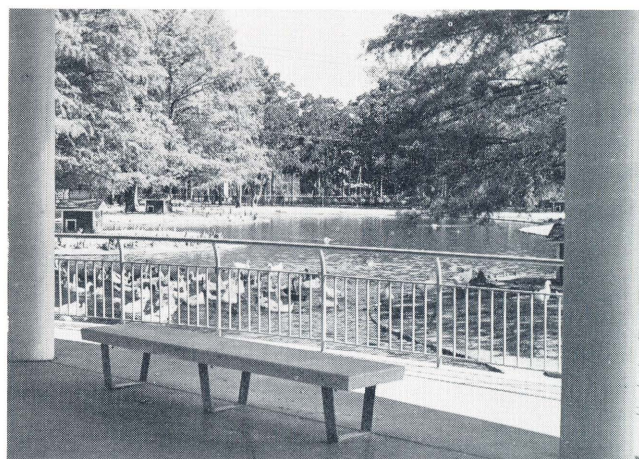
and easy to maintain. The remaining ones are, with the exception of farm and children's zoos, more costly but are highly desirable in a well-rounded zoological park collection. The farm and children's zoo may be a valuable separate development in any park system.

Waterfowl



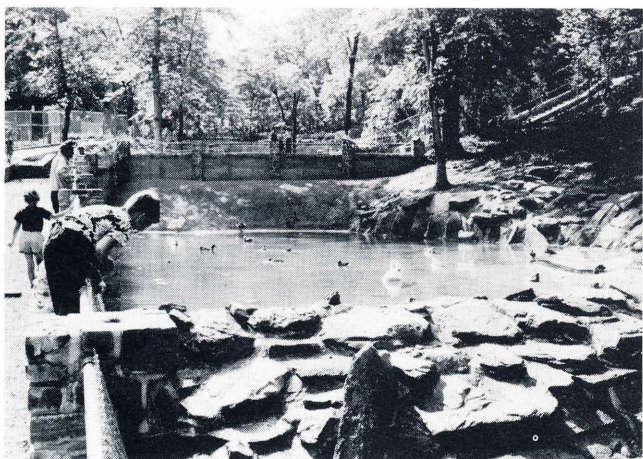
Courtesy: Detroit Zoological Park

Waterfowl exhibits on naturalistic lakes can form the beginning exhibit in a new zoological park and may attract wild birds.



Courtesy: Houston Zoological Gardens, Texas

Attractive architectural features and facilities for visitor comfort add to the enjoyment of this beautiful display of waterfowl.



Courtesy: John Ball Zoological Gardens, Grand Rapids, Michigan

This small exhibit is one of several set against a steep hillside. The visitors' walk is separated from exhibits by a low barrier.



Courtesy: Zoological Society of Philadelphia

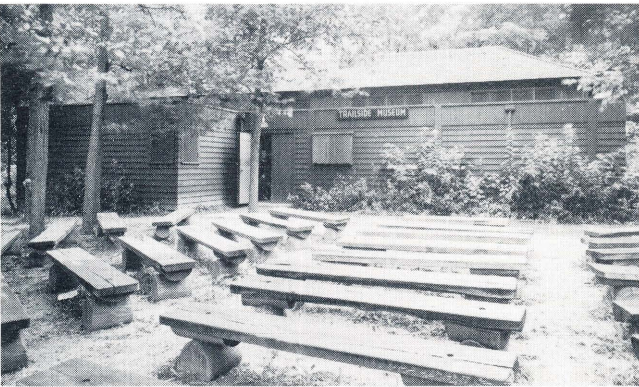
Skillful use of signs is important in waterfowl displays. Here colored signs and descriptive messages are used to make identification easier.

Nature Cabins



Courtesy: Detroit Zoological Park

This well stocked trout stream is part of a nature trail located close to the Junior Audubon nature cabin. The area adjoining the nature cabin is an ideal spot for self-guiding nature trails, botanical gardens and similar exhibits.



Courtesy: Cleveland Metro. Pk. Dist.—Photo: R. Marvin Wilson

For a well-rounded nature program at the Rocky River Trailside Museum, outdoor seats supplement rooms and museum facilities.



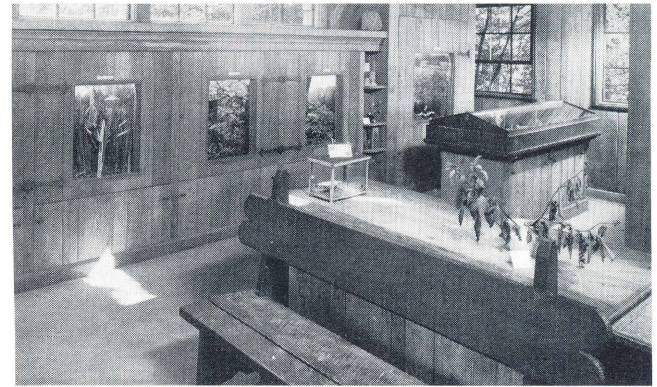
Courtesy: Bay City Times, Michigan—Photo: Elmer H. Pincombe

The Trailside Museum at Bay City State Park is the result of cooperation between private citizens and nature organization.



Courtesy: Oakland Park Department, California—Photo: Harold Winder

The Rotary Natural Science Center is headquarters for interpretative programs. Here are the offices of the park naturalist staff, memorial library, lecture hall, exhibit cases and an indoor bee hive.



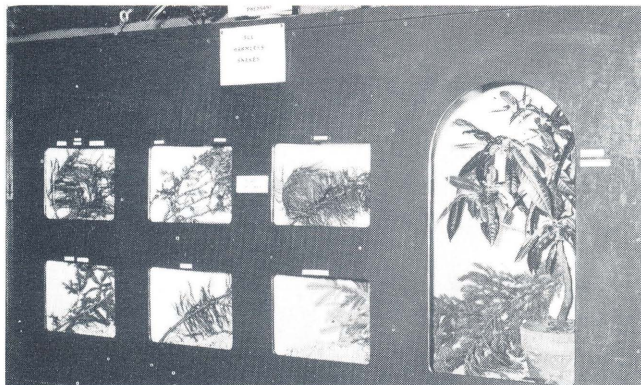
Courtesy: Cleveland Metro. Pk. Dist.—Photo: R. Marvin Wilson

Attractive architectural design and a variety of display techniques are found in the Brecksville Trailside Museum.



Courtesy: National Park Service—Photo: Abbe Rowe

Guided tours by a trained naturalist at Roosevelt Island Orientation Station, National Capital Parks, contributes to public appreciation of nature.



Courtesy: Detroit Zoological Park

Reptiles hold a peculiar fascination for both children and adults. A nature cabin may be used for small exhibits, mammals, reptiles, birds and fishes. Note the plain but effective labeling.



Courtesy: National Park Service—Photo: Abbe Rowe

This trailside exhibit at Great Falls, Maryland, is an effective device for public enjoyment and education. Bulletin boards, with pictures and notes of current interest, may be changed regularly.

Bear Dens



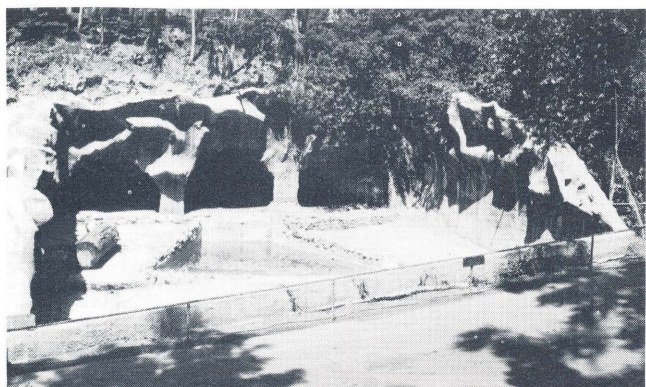
Courtesy: City Park Zoo, Denver—Photo: Bob Talkin

An artificial structure with moats in front of exhibits. Service areas are inside the structure. The Mesa Verde section was originally intended for monkeys.



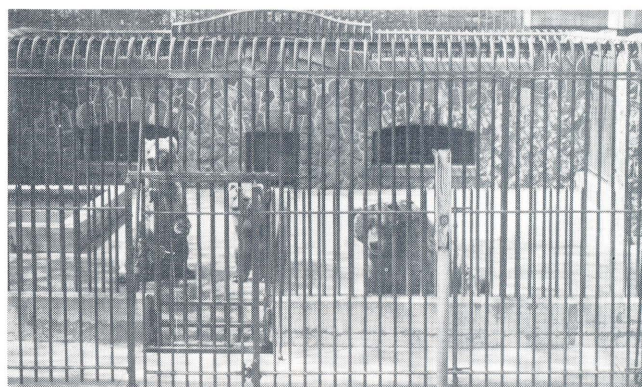
Courtesy: Columbus Zoological Gardens, Ohio

This exhibit at the Baltimore Zoological Park illustrates the use of a large water area, and well designed walls to display polar bears in a natural setting.



Courtesy: Zoological Society of San Diego

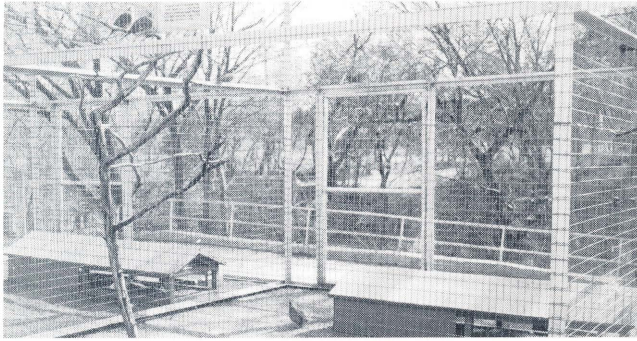
These bear grottos are in a deep canyon shaded by eucalyptus trees. A service road is in the background. Sightseeing buses use the public walk.



Courtesy: Cleveland Zoological Park

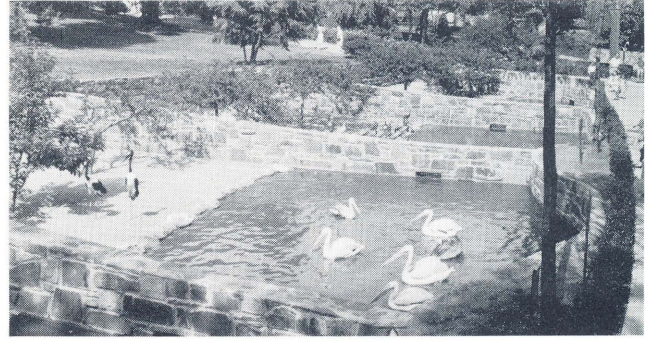
In many places bears must be restricted to small exhibit areas. Here stout bars and a keeper's walkway separate visitors and animals.

Bird Runs



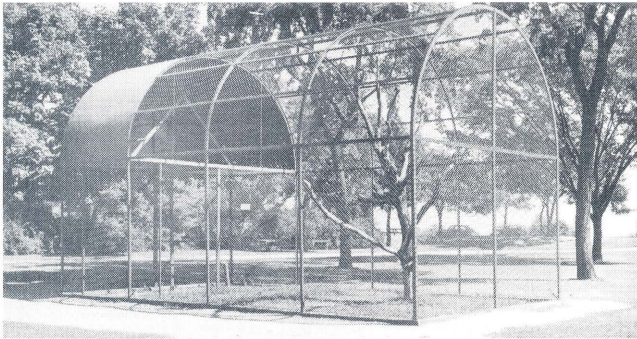
Courtesy: City of Dallas, Texas

Quail occupy the floor area while doves prefer the upper portion of the enclosure. Huts serve for protection and nesting. Doves have special boxes at a higher level.



Courtesy: Zoological Society of Philadelphia

Pools and yards for birds are stepped down to take advantage of natural contours in "Bird Valley." Note the use of plant materials in the exhibit and along walks.



Courtesy: Racine Zoological Park, Wisconsin

This simple flight enclosure for birds makes use of a native tree for perching. Shelter and perching bars are provided at one end.



Courtesy: Zoological Society of San Diego

This large wading bird flying cage contains three pools and over one hundred species of birds. A walkway inside permits close observation.



Courtesy: Chicago Zoological Park, Brookfield, Illinois

Photo: Sickles Photo Reporting Service

Interior view of a large flight cage of stainless steel. Trees, shrubbery and carefully molded pools add interest to an otherwise bare but efficient ground surface.



Courtesy: Zoological Society of San Diego

A view of the walkway inside the flying cage shown above. Double safety doors insure control of birds. The structure is 40 ft. long, 81 ft. high and 72 ft. wide.

Native Animal Grottos



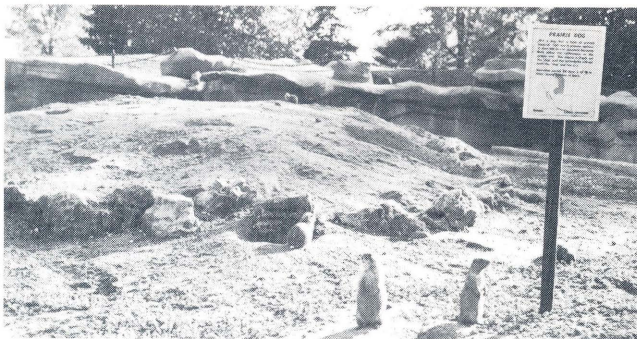
Courtesy: Potter Park Zoo, Lansing, Michigan

This small animal grotto is one part of a larger grotto display. Water for the animals flows in a channel on one side of the pen. The entire area has drains and traps for efficient cleaning.



Courtesy: City of Dallas, Texas

A simple enclosure for prairie dogs. Concrete block walls are surmounted by a concrete overhanging cap. A small stream running down the rocks to a corner pond furnishes drinking water.



Courtesy: Detroit Zoological Park

Prairie dogs make an entertaining exhibit with their shrill whistles and quick movements. The sign of printed cardboard is replaced when necessary.



Courtesy: Zoological Society of Philadelphia

Four otters are exhibited in this enclosure converted from a sea-lion enclosure. Stone masonry was added to the walls and a rock house and slide installed.

Deer and Other Hoofed Stock



Courtesy: Rotterdam Zoological Garden, The Netherlands

Photo: Mej. W. M. de Kwaadsteniet

A spacious area for display of hoofed stock. Note the shelter and the observation tower in the background.



Courtesy: Columbus Zoological Gardens, Ohio

This elk exhibit in the zoo at Buffalo, New York is distinguished by a simple dry moat, partially hidden from view by means of a low hedge and chain barrier.



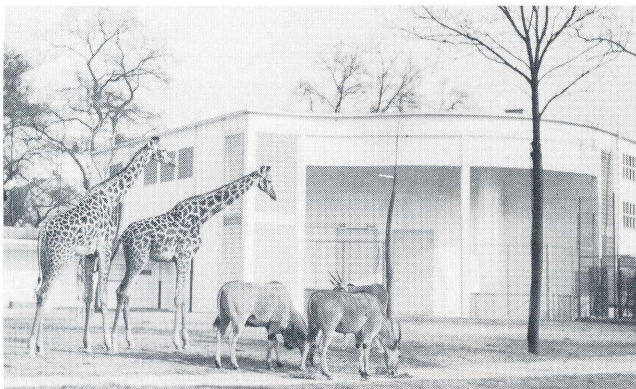
Courtesy: Detroit Zoological Park

A large naturalistic bison exhibit. Note the terraced rock formation which slopes to the bottom of a dry moat to afford effective control with no sign of fencing between visitors and exhibit.



Courtesy: Potter Park Zoo, Lansing, Michigan—Photo: Huby Pictures

Gates permit shifting of animals and efficient maintenance from the service yard behind. A rubbing post is used for play and to work off excess energy.



Courtesy: Frankfurt-am-Main Zoological Garden, Germany

Photo: Dr. B. Grzimek

Giraffe and impala are exhibited together successfully in the enclosure in front of this modern European giraffe house.



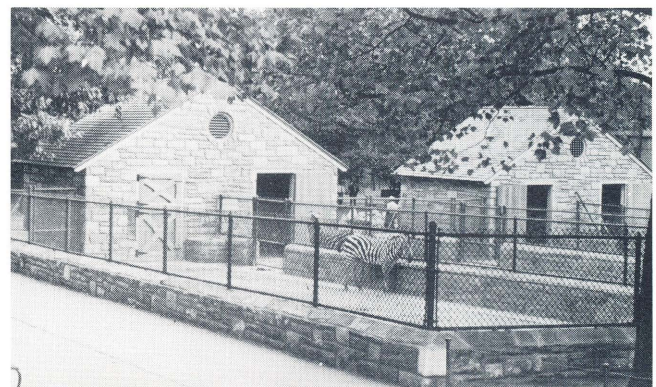
Courtesy: New York Zoological Society

Nyala run across this large African veldt exhibit. Visitors watch from a walk above the moat. Freedom of movement is important for both animals' comfort and visitors' enjoyment.



Courtesy: Detroit Zoological Park

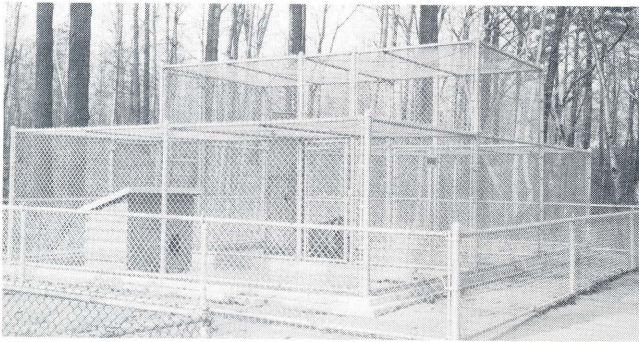
Artificial rock formations and a spacious barless enclosure combine to make this African veldt exhibit an outstanding attraction.



Courtesy: Zoological Society of Philadelphia

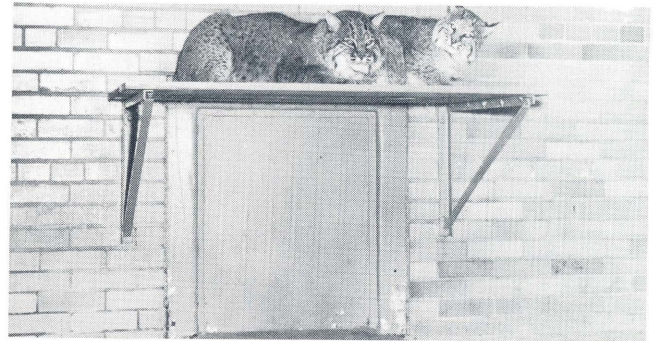
Carefully designed and maintained buildings and enclosures add immeasurably to the attractiveness of animal exhibits.

Small Mammals



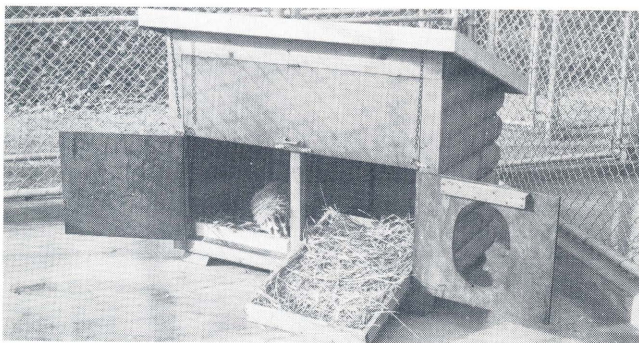
Courtesy: Manitowac Zoo, Wisconsin—Photo: Louis Frandrick

These simple enclosures for small mammals are easily constructed of stock materials and may be adapted to certain bird exhibits.



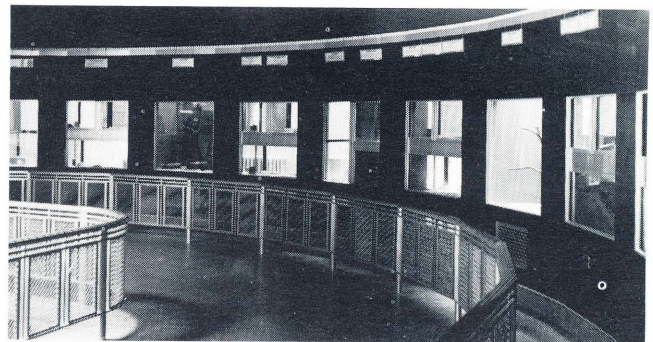
Courtesy: Potter Park Zoo, Lansing, Michigan

Raised wooden platforms are important places for rest and retreat. Cages are equipped with doors to outside exhibit areas and adjacent cages.



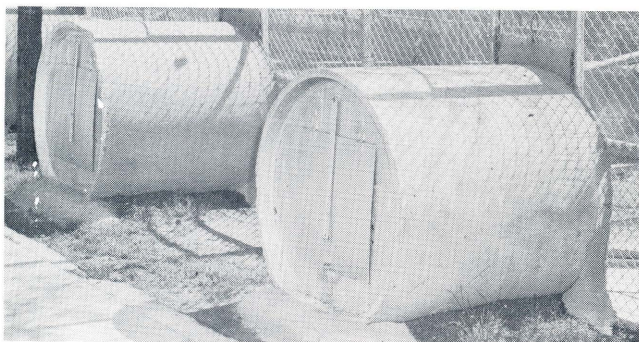
Courtesy: Manitowac Zoo, Wisconsin—Photo: Louis Frandrick

This simple shelter of wood is used for badgers, raccoons and bobcats exhibited in the simple enclosures illustrated above. Note removable trays and control doors.



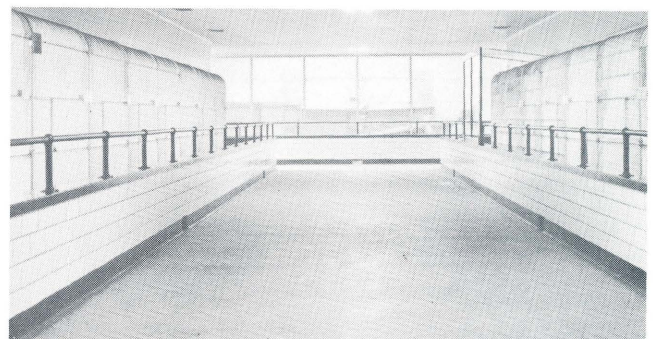
Courtesy: Smithsonian Institution, National Zoological Park, Washington, D.C.

A nocturnal room for small mammals. Light intensity can be controlled. Cages rest on shelves against the window openings.



Courtesy: City of Dallas, Texas

These simple dens for small mammals are made from concrete pipe sections, slanted to provide drainage and equipped with doors at each end.



Courtesy: Staten Island Zoo—Photo: Jack Muntzner

Here cages measuring 6 feet on each side open to outdoor cages of the same size. The visitor area is darkened to provide better visibility.

Monkey Islands



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

Photo: Anderson Photo Company

This monkey island is surrounded by a moat 20 feet wide and 3 feet deep. Masonry is laid to permit easy cleaning. A shelter for monkeys is in the island.



Courtesy: Potter Park Zoo, Lansing, Michigan—Photo: Huby Pictures

Monkeys and aoudads inhabit this island built in a depression. A shelter beneath the rocks is equipped with heat lamps, a prime consideration in this climate.



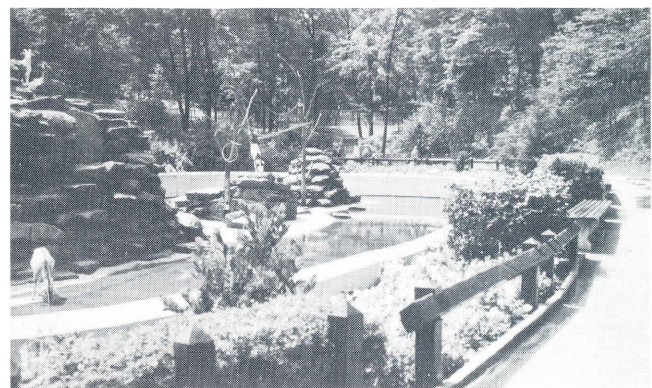
Courtesy: Park Department, Davenport, Iowa

This grass covered island is surmounted by climbing trees and play equipment. An artificial waterfall adds interest to the exhibit.



Courtesy: Zoological Society of Philadelphia

The monkey island at the Philadelphia Zoo features a rocky mountain with caves where the animals can take shelter. A ferris wheel and rings are provided for the monkeys' exercise and visitors' amusement.



Courtesy: John Ball Zoological Gardens, Grand Rapids, Michigan

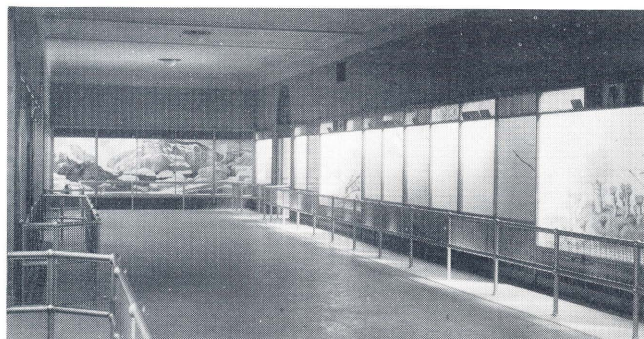
This small monkey island includes goats as part of the exhibit. Benches are provided for visitors. The landscaped border enhances the beauty of a naturalistic setting.



Courtesy: Cleveland Zoological Park

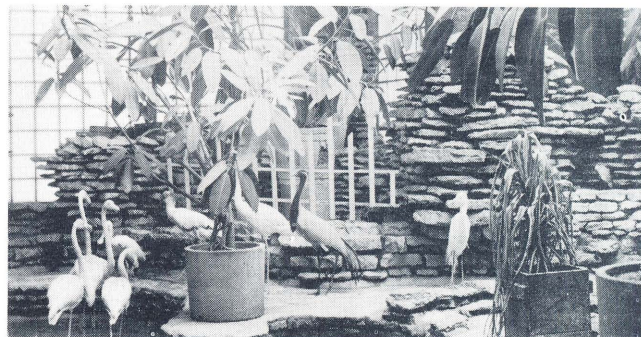
Note the long, low lines of the rockwork in this monkey island. A landscaped background adds to the attractiveness of this exhibit.

Bird Houses



Courtesy: Smithsonian Institution, National Zoological Park, Washington, D.C.

Ventilation in these bird exhibits is facilitated by bars and louvers. A penguin cage is at the far end. Labels above the exhibits are tilted for easier reading.



Courtesy: Toledo Zoological Gardens, Ohio—Photo: Mel Block

The fresh attractive greenery of potted plants adds to the attractiveness of this exhibit of wading birds around a pool. Diffused lighting through the glass blocks adds to the effectiveness of the display.



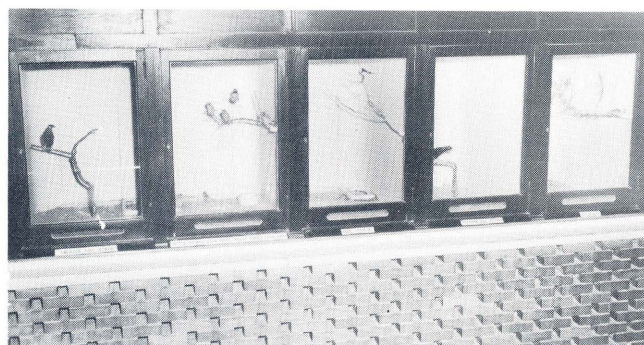
Courtesy: Zoological Society of Philadelphia

The birds in this area are separated from the public by a rail. At night a few perch on the rail, but in general they stay in their habitat.



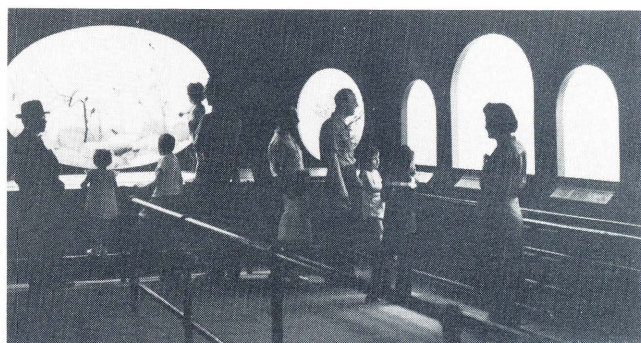
Courtesy: Woodland Park Zoological Garden, Seattle

Sloping glass fronts reduce glare and potted plants soften the plain, efficient building surfaces of this Parrot hall.



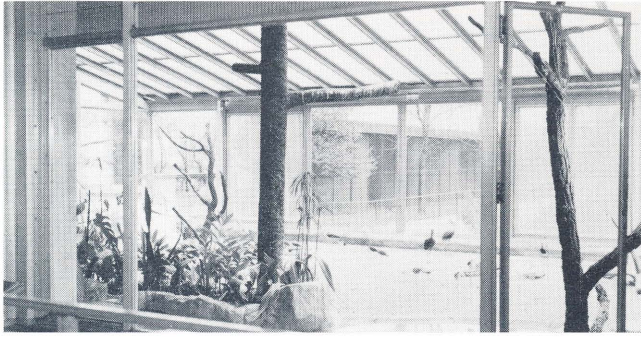
Courtesy: Potter Park Zoo, Lansing, Michigan—Photo: Huby Pictures

These small exhibits are separated from visitors by a low ornamental brick wall and keeper's aisle. Perches are carefully selected to fit both perching and space requirements.



Courtesy: New York Zoological Society

These carefully framed 'jewel box' displays of small birds are viewed from a darkened room. Thus the birds are less conscious of the presence of visitors.



Courtesy: Chicago Zoological Park, Brookfield, Illinois

Interior view of an aquatic bird house. The use of live plants is most important in large exhibit areas of this kind.



Courtesy: Cleveland Zoological Park

This modern bird house illustrates good lighting of exhibits and labels. Rock work in the exhibits blends with modern construction materials.

Large Cats



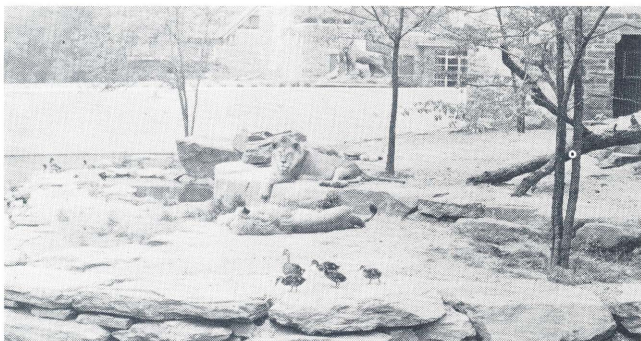
Courtesy: Detroit Zoological Park

This spacious barless exhibit provides ideal display conditions for the continued delight of amateur photographers as well as more casual visitors.



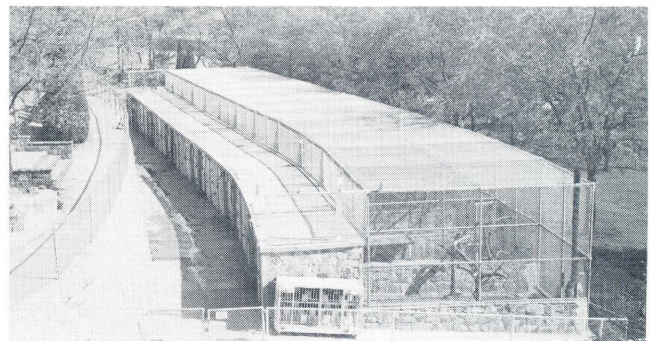
Courtesy: Zoological Society of Philadelphia

This exhibit with its restricted space and close association of animals and visitors is designed for maximum safety, ease of maintenance and efficient animal care.



Courtesy: Zoological Society of Philadelphia

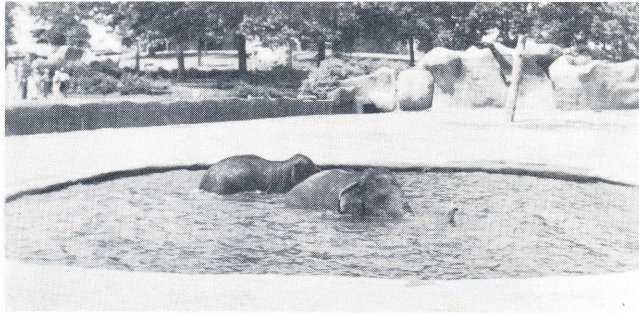
Ducks wander at liberty near these well fed lions in a grotto protected by a water-filled moat and sheer concrete wall. A sheer concrete wall prevents the animals from escaping.



Courtesy: City of Dallas, Texas

These cages of simple design permit easy cleaning and good control of animals. Each cage has a raised wooden shelf for retreat, a pool of running water and a masonry den.

Pachyderm Exhibits



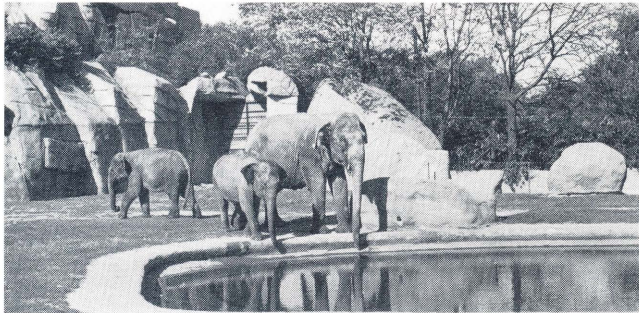
Courtesy: Detroit Zoological Park

The pool in the exhibit shown below is 12 feet deep in its center. A terraced bottom permits animals to choose their water depth.



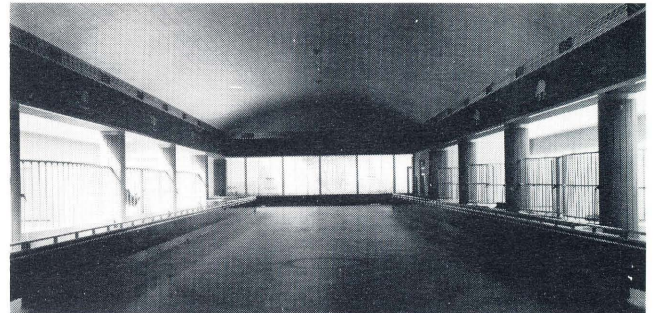
Courtesy: Zoological Society of Philadelphia

Interior view of a modern pachyderm house. A moat, but no bars, separates the public from rhinos, hippos and tapirs.



Courtesy: Detroit Zoological Park

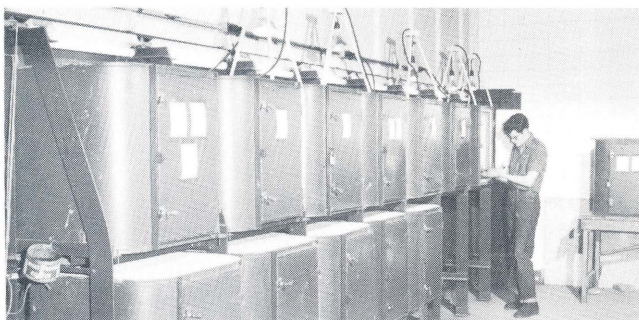
Massive artificial rock walls enclose this elephant house and provide a fitting background for these animals. The elephants perform daily in the ring.



Courtesy: Smithsonian Institution, National Zoological Park, Washington, D.C.

The giraffe cage is at the end of this large hall. A rhino is seen on the left. Tanks for tapirs and pigmy hippos are in the cages on the right.

Reptile Houses



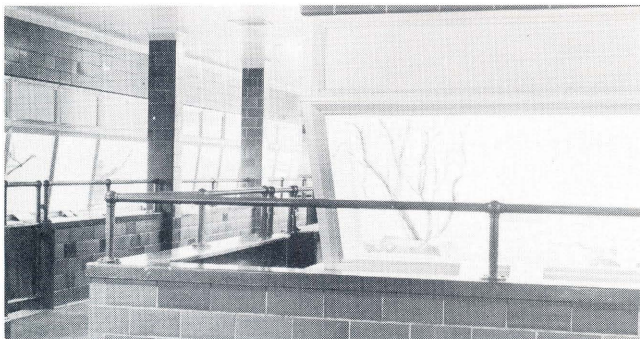
Courtesy: Lincoln Park Zoo, Chicago

A rear view of reptile cages. Cards are for keepers' records. Cages are heated with soil heating cables and the tripods hold ultra violet or infra red lamps.



Courtesy: New York Zoological Society

In this remodeled reptile house, all cages have separate heating, lighting, and humidity controls. General labels are above each cage, more detailed labels below.



Courtesy: Staten Island Zoo—Photo: Jack Muntzner

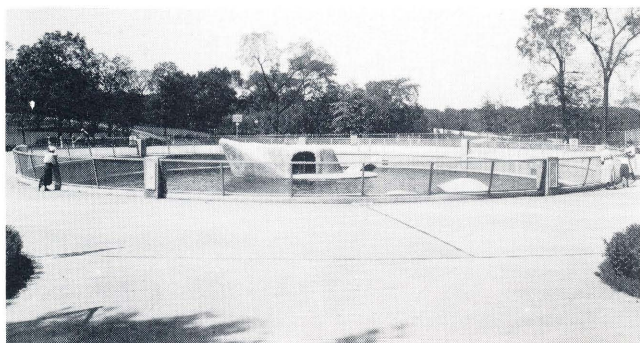
Aluminum cage frames and angled glass panels in a modern reptile display area. Each exhibit uses natural materials to suggest the animal's habitat.



Courtesy: Detroit Zoological Park

A fascinating alligator exhibit in a naturalistic outdoor setting. Note the use of rocks, log and low trees seen against a concrete wall in the background.

Seal Pools



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

The walkway around this pool slopes inward to improve visibility. The pool is 6½ to 8 feet deep with a central island for shelter and play.



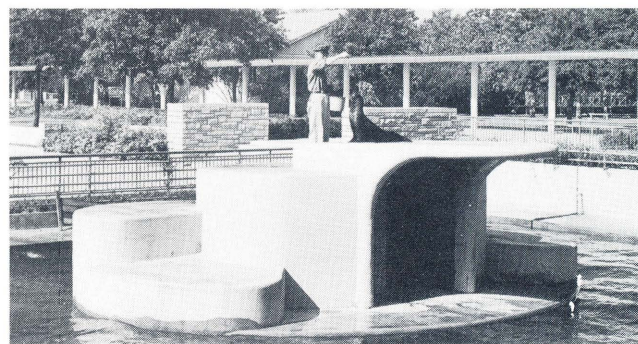
Courtesy: New York Zoological Society

Animals dive from a platform into a blue painted pool. An aluminum guardrail keeps visitors from putting their hands through the fence.



Courtesy: Audubon Park, New Orleans

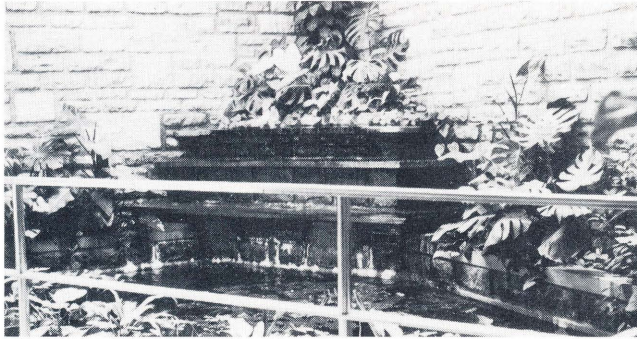
The attractiveness of this sea lion pool is enhanced by its unusual architectural treatment. A central island provides area for protection, rest and play for the animals.



Courtesy: Houston Zoological Gardens, Texas

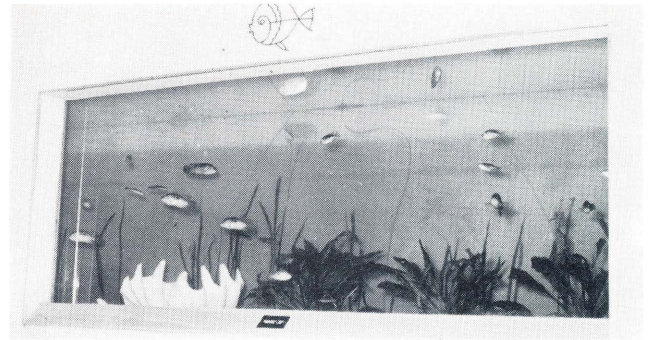
The design of this seal island provides essential facilities for animals' comfort and harmonizes with the surrounding architectural features. A shaded visitors' walkway is in the background.

Aquariums



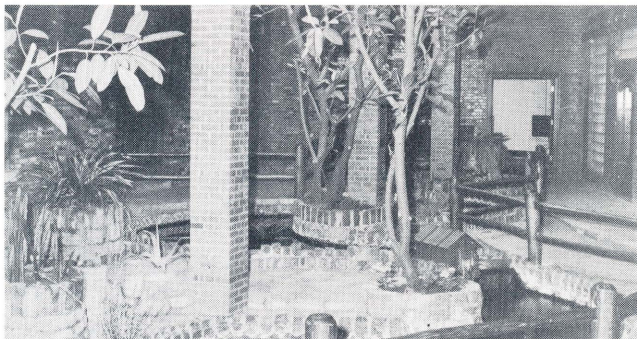
Courtesy: Columbus Zoological Gardens, Ohio

This 3,000-gallon pool at the aquarium entrance contains 35 large goldfish. It is purely decorative, a tropical setting to make the first impression a good one.



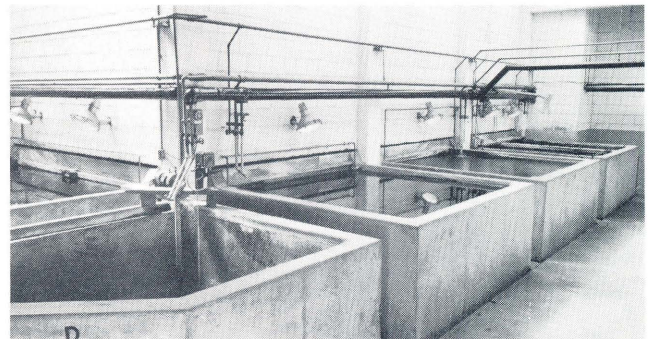
Courtesy: Columbus Zoological Gardens, Ohio

Each community tank in this exhibit area has an appropriate illuminated sign. This tank contains 160 tropicals. The building has "twilight" lighting indoors.



Courtesy: Toledo Zoological Gardens, Ohio—Photo: Mel Block

A special attraction in this aquarium is a winding stream set at floor level and stocked with fish. A rustic fence complements the stone and brick construction.



Courtesy: City of Dallas, Texas

Three large tanks are supplemented by one corner reserve tank. Pipes are for air, water and refrigeration. Natural lighting comes from the skylights above.

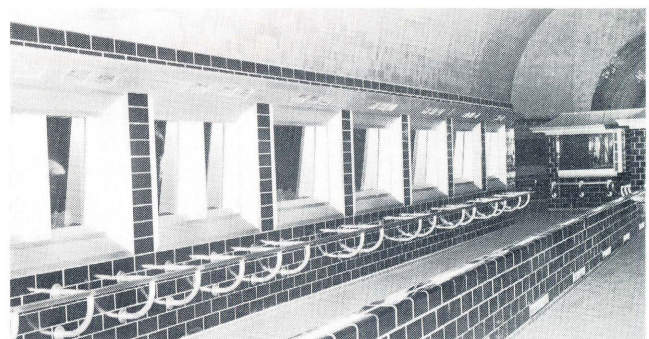


Courtesy: City of Dallas, Texas

Adequate public space is an important feature

Courtesy: Park Department, Davenport, Iowa

This moated castle exhibit leads to the make-believe land of the children's zoo at Fejevary Park.

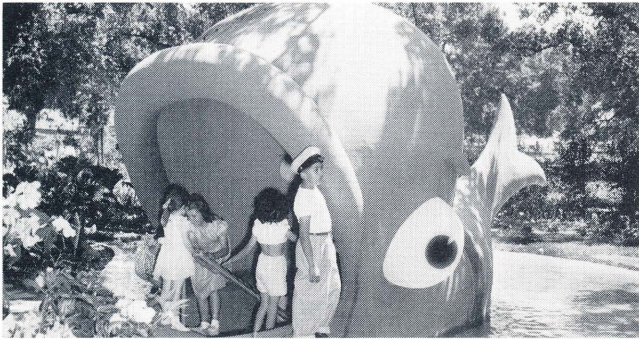


Courtesy: Detroit Zoological Park

Courtesy: Detroit Zoological Park

The background of this as well as other exhibits in the Belle Isle Children's Zoo is landscaped.

Farm and Children's Exhibits



Courtesy: Oakland Parks Department, California

Photo: Harold Winder

Willie, the Blue Whale, has his own ocean in Children's Fairyland. He spouts, and he also sports a small aquarium in the back of his mouth.



Courtesy: New York Zoological Society

A "play ring" where children can have the valuable experience of touching animals. Exhibits are changed frequently and an attendant is always on duty.



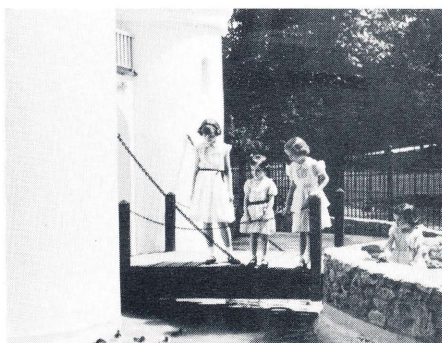
Courtesy: Detroit Zoological Park

This old woman lives in a concrete shoe with guinea pig children separated from young visitors by a child-size fence.



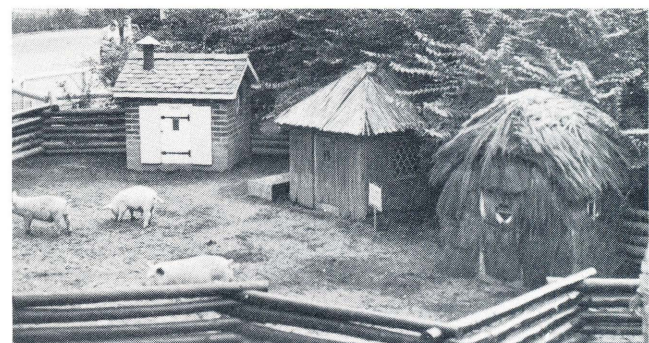
Courtesy: Potter Park Zoo, Lansing, Michigan—Photo: Huby Pictures

The red barn has four rooms. Exhibits include a burro, a horse and colt, a cow and calf, a ewe with twin lambs, kids, and three little pigs.



Courtesy: Park Department, Davenport, Iowa

This moated castle exhibit leads to the make-believe land of the children's zoo at Fejervary Park.



Courtesy: Detroit Zoological Park

The background of this as well as other exhibits in the Belle Isle Children's Zoo is landscaped.

Design Factors

Good zoological park design calls for the many technical skills represented by zoologists; architects; landscape architects; mechanical, civil, sanitary and electrical engineers; horticulturists; acoustic, color and lighting specialists; sculptors; painters; and others. The planners who contribute such varied knowledge must work in close cooperation and mutual understanding. Whenever possible, they should visit and examine work in other parks.

Good design will coordinate the requirements of three principal groups:

- Animals
- Visiting public
- Operating staff

Courtesy: New York Zoological Society

Comfortable, contented animals. A gayal family.



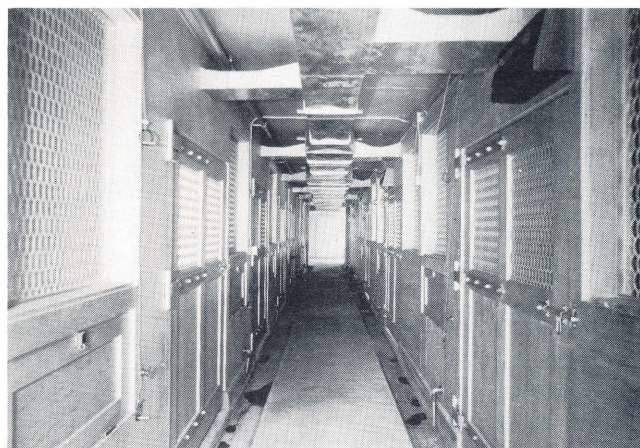
Courtesy: New York Zoological Society

Eating accommodations in pleasant surroundings.



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

Design for efficient operation. A keeper's aisle.



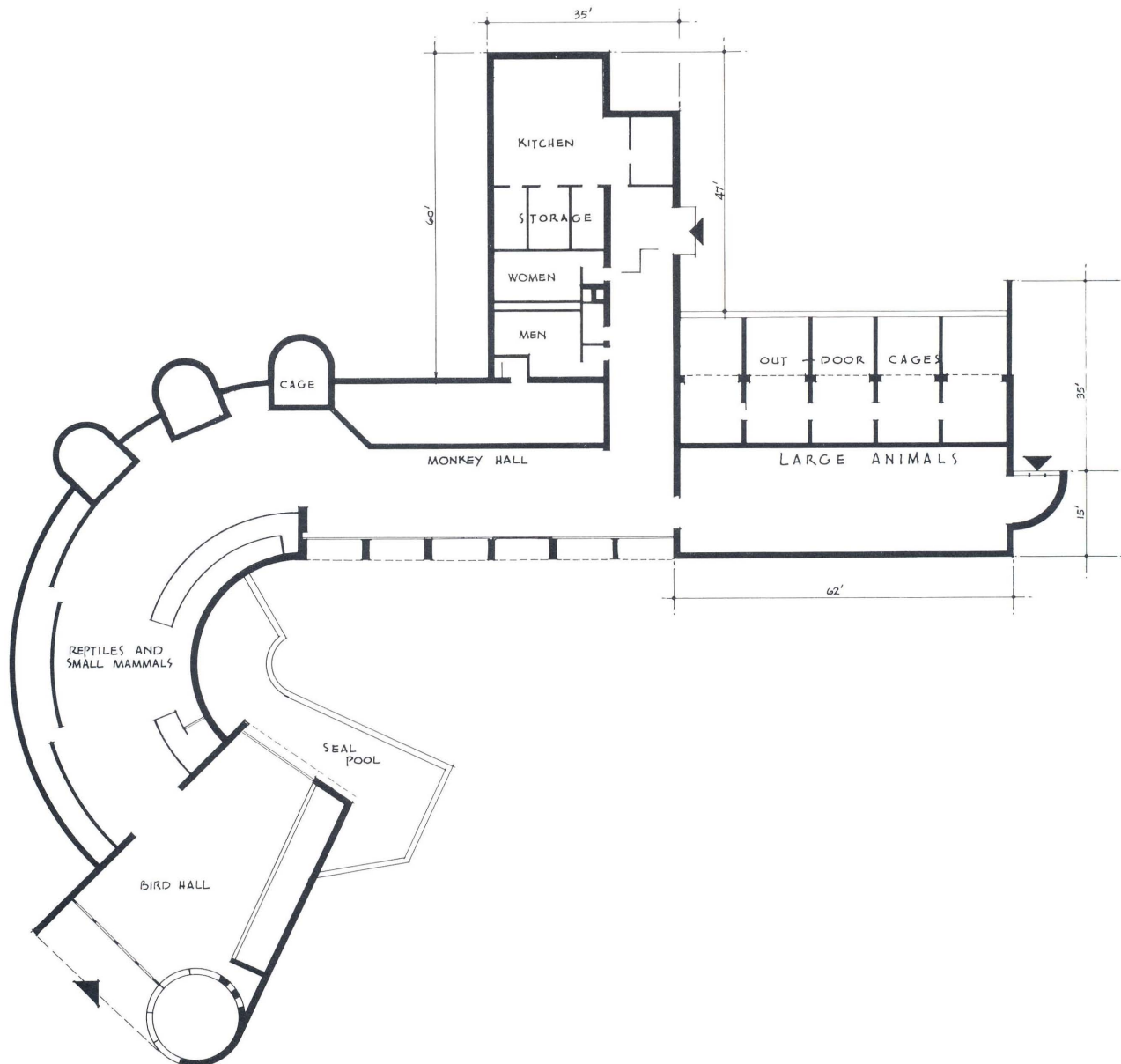
Animals

Animals seem to prefer natural materials—rock, wood, pebbles, sand and growing plants—in their living quarters. On the other hand concrete, metals, tile, and similar materials are necessary in modern construction. Their use, however, should always be tempered by consideration for animal well-being and for the appearance of the exhibit.

The size of each individual enclosure should be scaled to the size of its inhabitants and should allow them maximum practicable freedom to jump, fly,

climb, run or swim. All animals should be provided with suitable places for retreat and rest. One-way vision glass may be used effectively for display of highly nervous animals. Outdoor exhibits should have shade and shelter.

If several animals are in the same enclosure, avoid dead ends and pockets so that one cannot corner another. Appropriate naturalistic “props” should be supplied for climbing and play. Proper temperature, humidity, ventilation and light control are important to the health of all species.



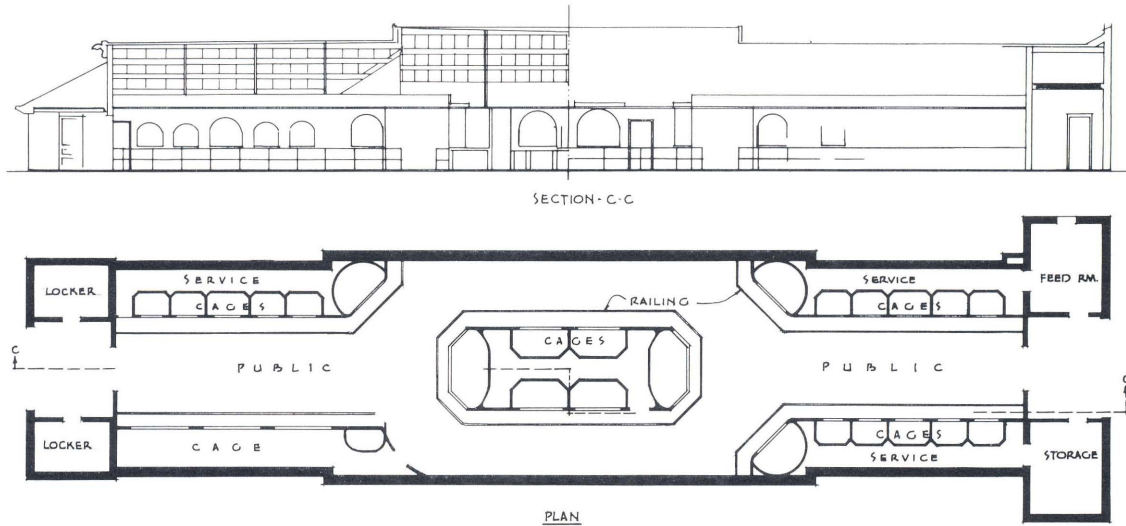
Zoo building, Pleasure Driveway and Park District, Peoria, Illinois. This interesting combination building displays birds, reptiles, fish, small mammals, monkeys, apes and large cats. The unusual circular floor plan permits maximum vari-

ety in exhibits without detracting from the overall appeal of the architectural design. Food preparation rooms and public toilets are located in a wing. A seal pool is designed as an integral part of the building.

A proper cycle of rest and activity for diurnal and nocturnal species must be considered. No animal should be on 24-hour display. Seasonal exhibition of some animals may require additional housing. Fresh drinking water must always be available, but without risk of accidental drowning or flooding. Enclosures must be easy to clean and safe for the keeper. This

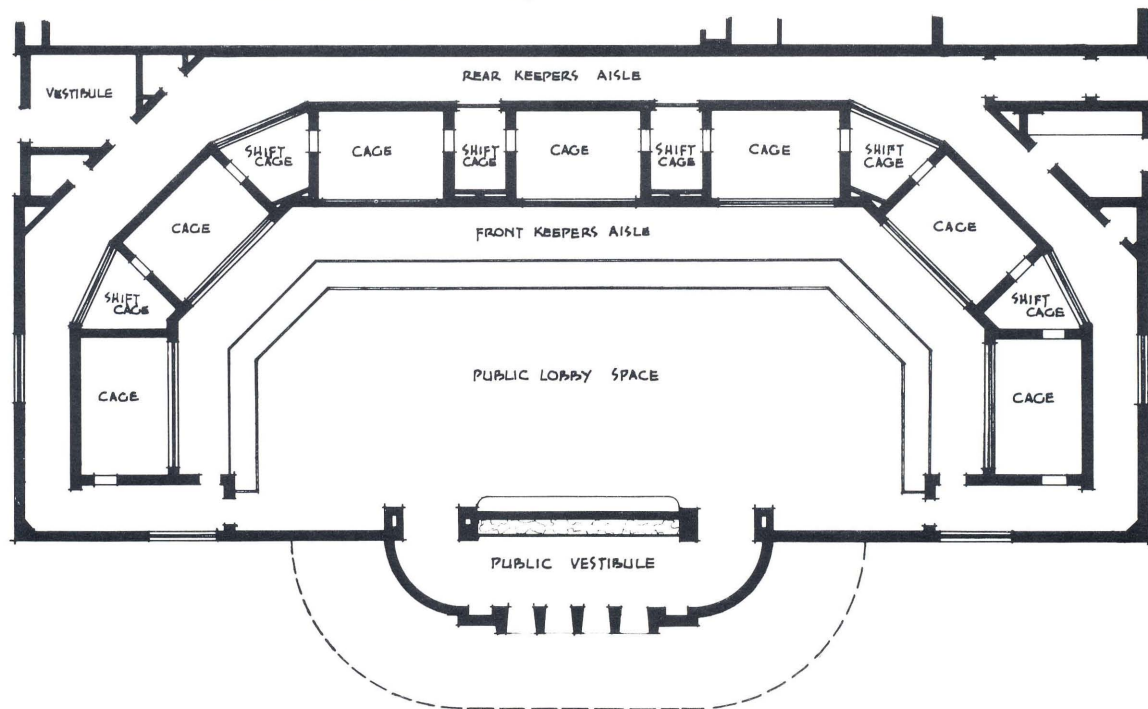
may require observation windows, remote control doors and shift cages.

Waste lines draining animal enclosures should be large enough to prevent clogging by litter. Strainer baskets, traps, catch basins and clean-outs should be ruggedly constructed, and easy to maintain.



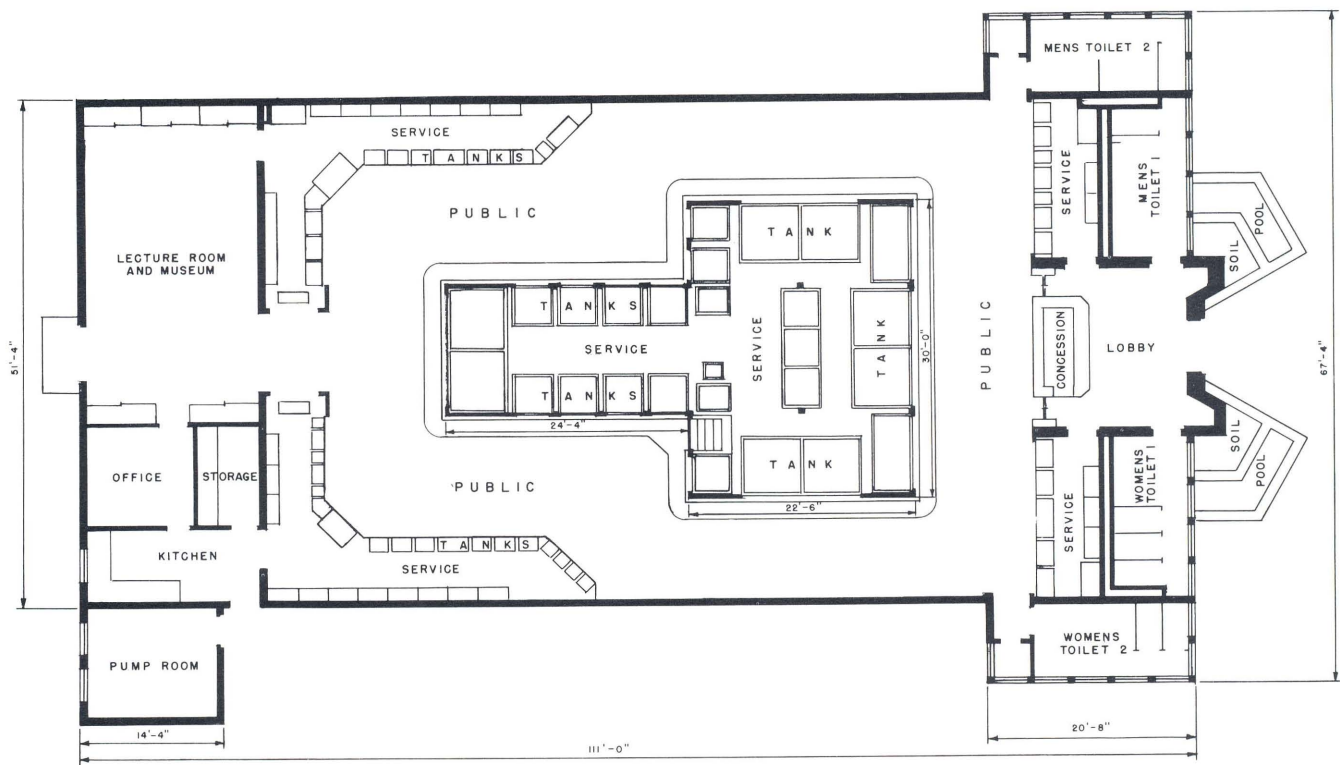
The interior of the small mammal house in the Bronx Zoo, New York. Animals are displayed in brightly-lighted cages, while the public views them from a darkened hall. Aluminum railings

keep visitors away from the glass fronts of the cages. Flush metal doors give access to the backs of individual cages made accessible by efficient service aisles.



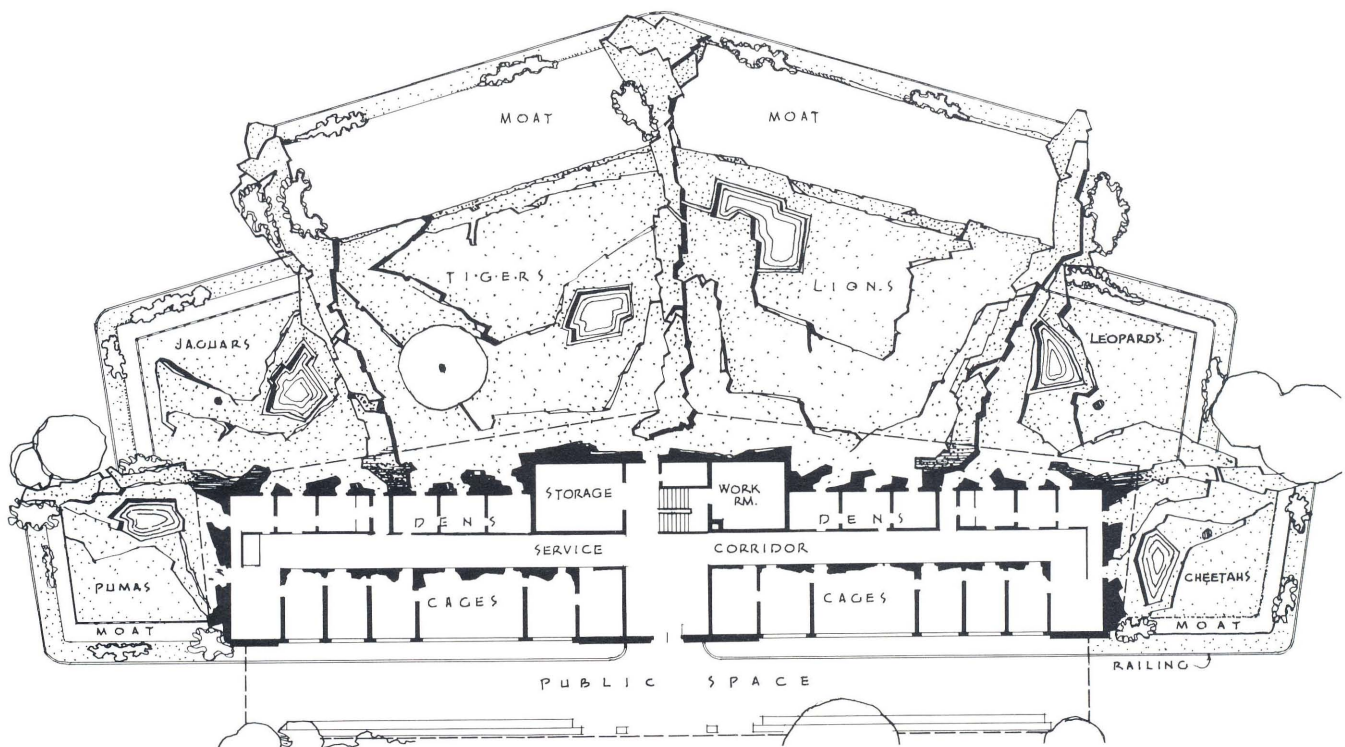
The ape house at the Detroit Zoological Park is part of a larger structure. An amphitheatre for animal shows is supplemented with quarters for training and care of chimpanzees and ponies. Cages with barred fronts are separated from the

darkened public space by a continuous glass wall. Sloping floors permit visitors to view animals from any part of the area. Cages are equipped with colorful modeled fiberglass play equipment. Shift cages and doors control the animals.



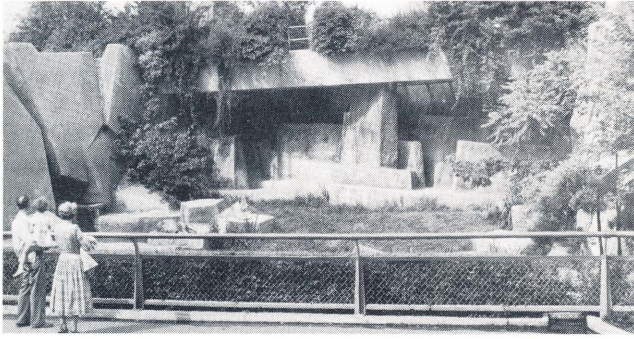
A lecture room and museum adds to the services provided in this aquarium at Fort Worth, Texas. Efficient arrangement of aisles for servicing in-

dividual tanks is most important. Note the variety of tank sizes and provision for reserve tanks. Smaller tanks are viewed in two tiers.



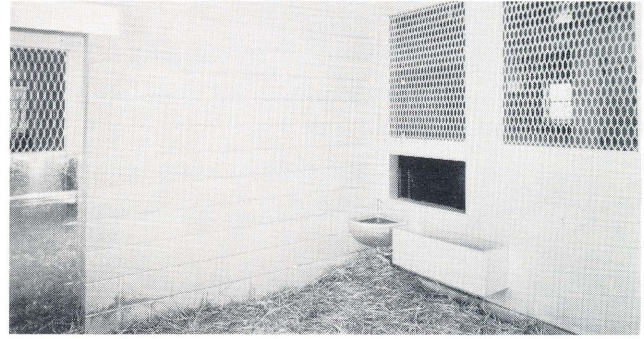
The feline house in Woodland Park Zoological Gardens, Seattle. Large naturalistic outdoor exhibits are protected by fences and moats. Smaller

display cages are viewed from a public hall with doors at each end to facilitate traffic flow.



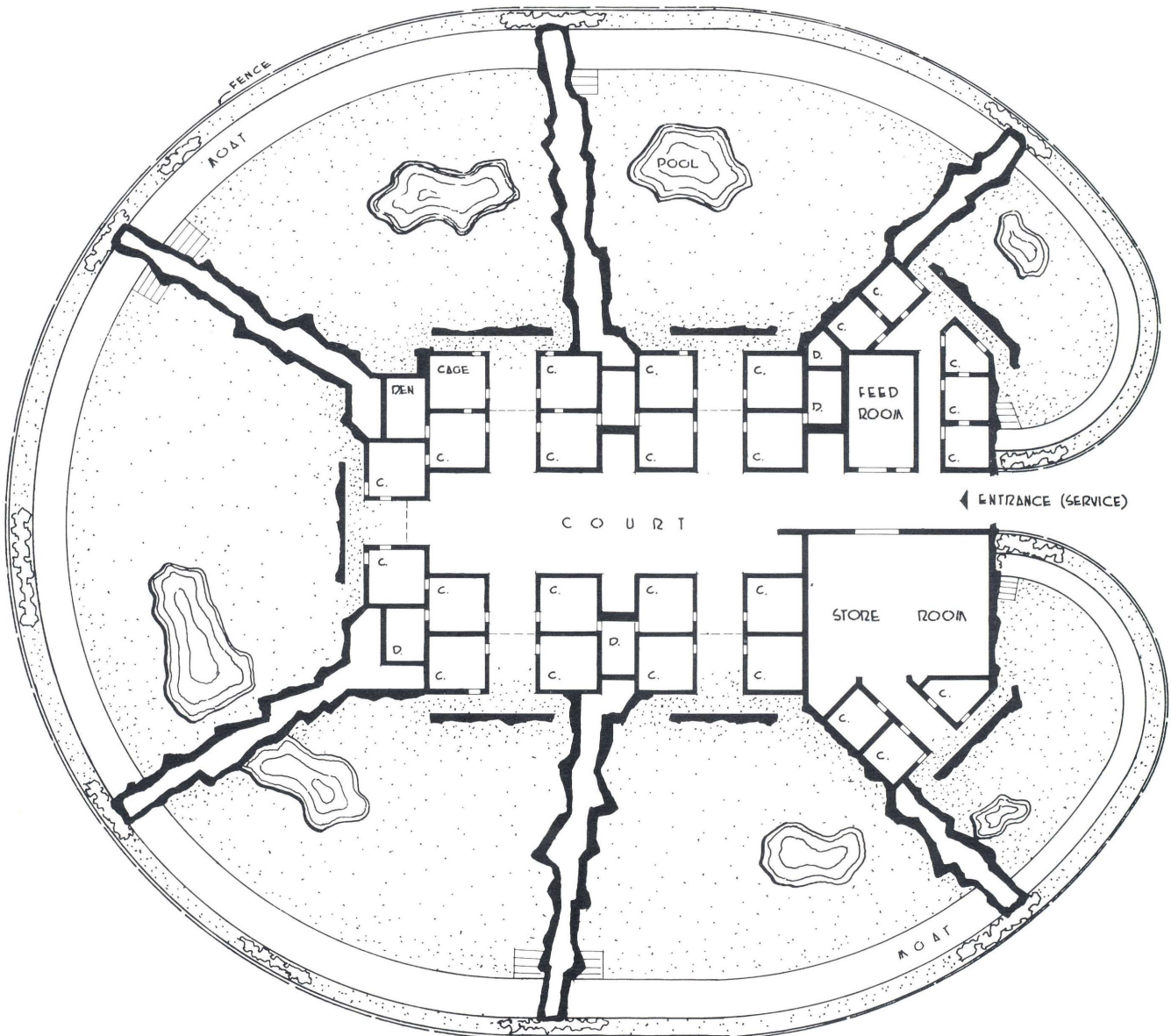
Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

Under unnatural conditions every effort should be made to provide comfortable quarters with water and food available under sanitary conditions.



Courtesy: Woodland Park Zoological Gardens, Seattle

Animals prefer to live in a habitat of natural materials with room to move about, rest and retreat.



The bear grotto in Woodland Park Zoological Gardens, Seattle, Washington.

The numerous pens in this unit are designed to

permit good control of animals under all conditions. Moated exhibit areas surround the central structure.

Enclosures are intended:

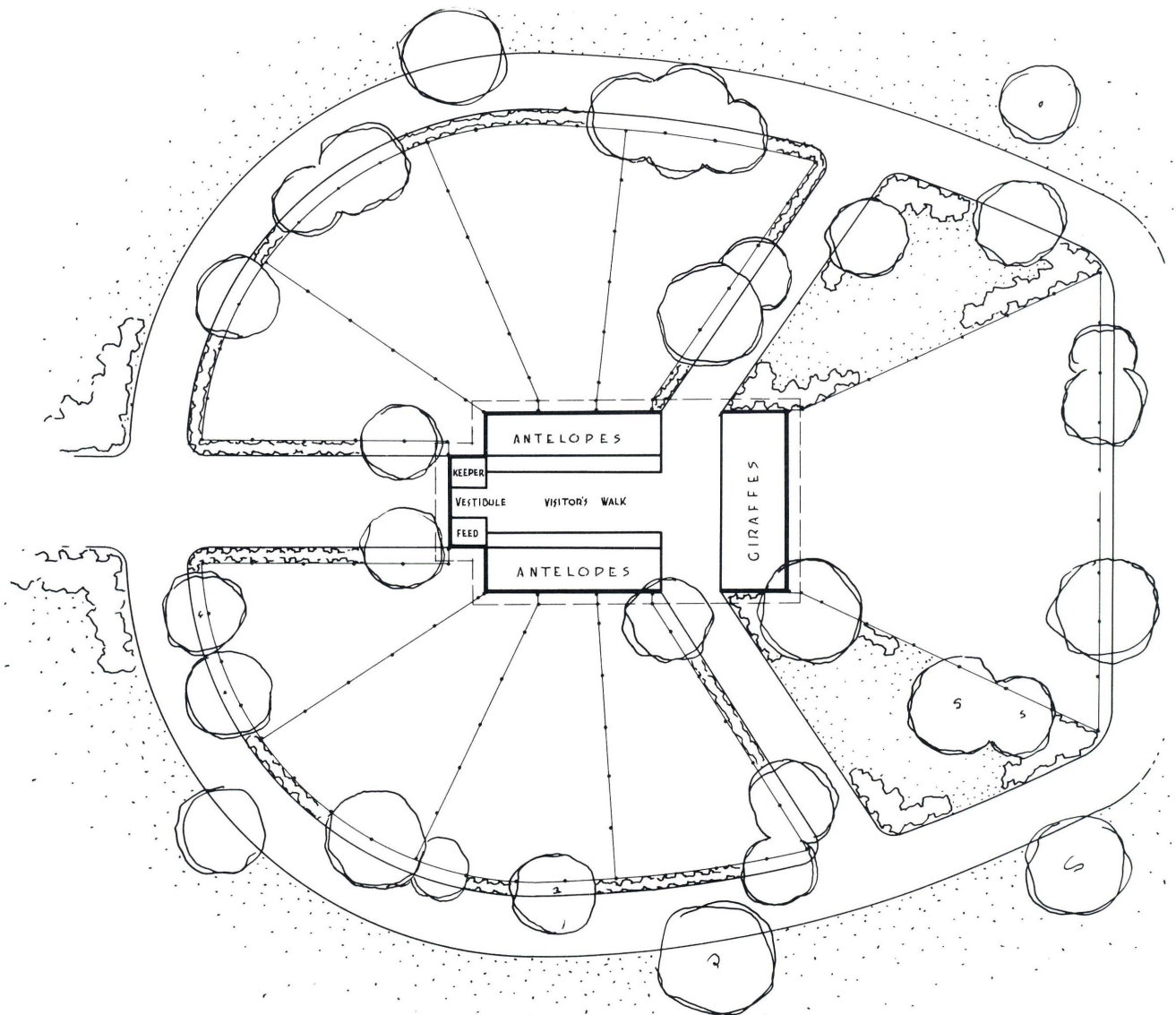
- to keep animals from escaping
- to protect the public and keepers from the animals
- to protect the animals from the public
- to provide maximum attractiveness and visibility

There are several types of enclosures which may be combined in various ways to produce the best possible exhibits.

- Barriers include railings, fences or full height walls of various materials. There are also invisible barriers. These include low voltage electric charges, supersonic

devices, and differences in temperature and illumination. It has been found that these devices vary in their success in keeping animals within bounds.

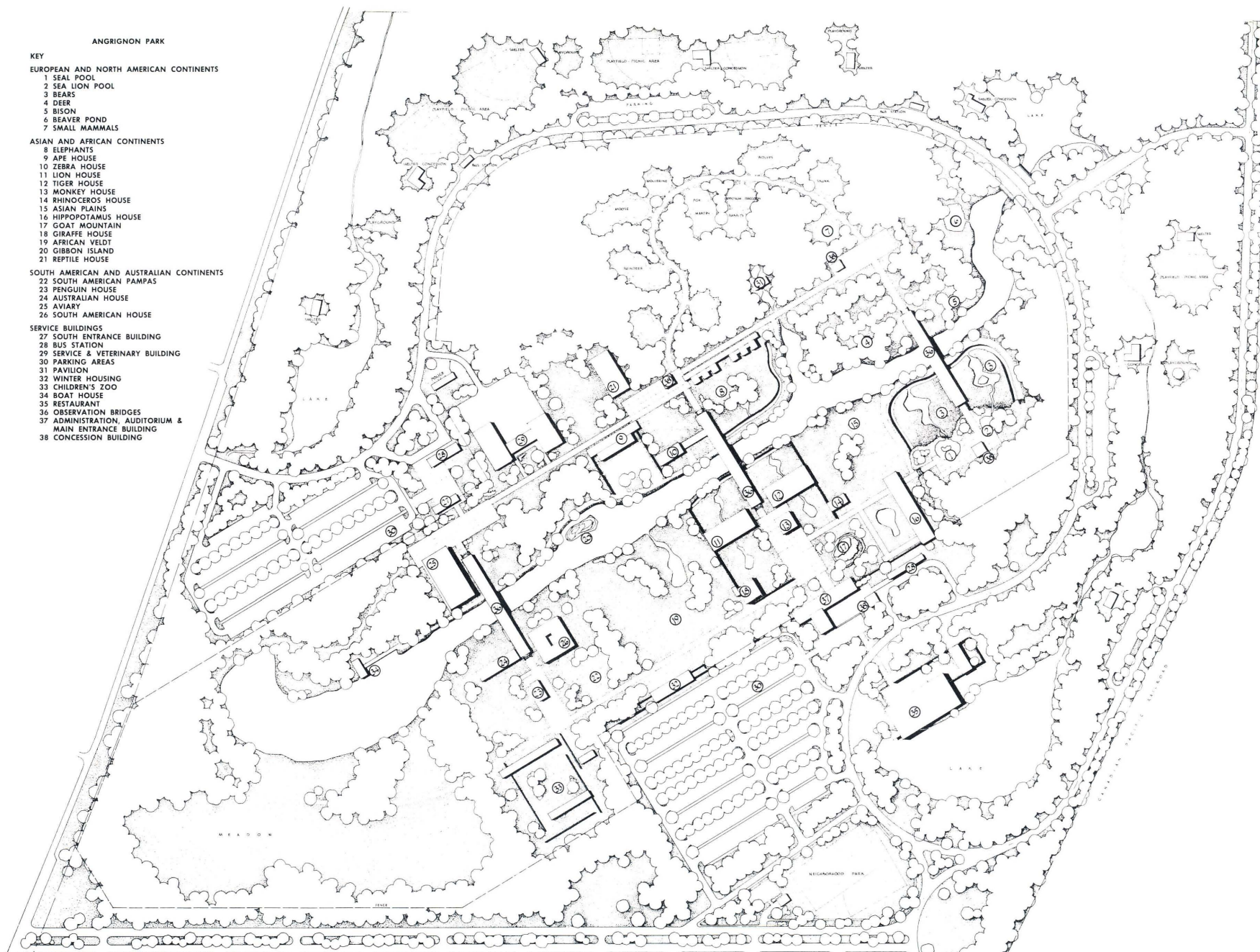
- Moats may be either dry or water-filled.
- Sunken levels are intended to prevent escape by climbing or jumping vertically. They can be constructed by changes in elevation between the visitor and the exhibit, or by forming a sloping bank in the exhibit area.
- Indoor cages, tanks and pens may be lighted by the judicious use of stage and show window techniques.



The giraffe and antelope exhibit area in Swope Park Zoological Gardens, Kansas City, Missouri. This simple, effective design permits visitors to

move around the open pens and into the central housing unit. Border plantings are an important element in exhibits of this kind.

- ANGRIGNON PARK
- KEY
- EUROPEAN AND NORTH AMERICAN CONTINENTS
- 1 SEAL POOL
 - 2 SEA LION POOL
 - 3 BEARS
 - 4 DEER
 - 5 BISON
 - 6 BEAVER POND
 - 7 SMALL MAMMALS
- ASIAN AND AFRICAN CONTINENTS
- 8 ELEPHANTS
 - 9 APE HOUSE
 - 10 ZEBRA HOUSE
 - 11 LION HOUSE
 - 12 TIGER HOUSE
 - 13 MONKEY HOUSE
 - 14 RHINOCEROS HOUSE
 - 15 ASIAN PLAINS
 - 16 HIPPOPOTAMUS HOUSE
 - 17 GOAT MOUNTAIN
 - 18 GIRAFFE HOUSE
 - 19 AFRICAN VELD
 - 20 GIBBON ISLAND
 - 21 REPTILE HOUSE
- SOUTH AMERICAN AND AUSTRALIAN CONTINENTS
- 22 SOUTH AMERICAN PAMPAS
 - 23 PENGUIN HOUSE
 - 24 AUSTRALIAN HOUSE
 - 25 AVIARY
 - 26 SOUTH AMERICAN HOUSE
- SERVICE BUILDINGS
- 27 SOUTH ENTRANCE BUILDING
 - 28 BUS STATION
 - 29 SERVICE & VETERINARY BUILDING
 - 30 PARKING AREAS
 - 31 PAVILION
 - 32 WINTER HOUSING
 - 33 CHILDREN'S ZOO
 - 34 BOAT HOUSE
 - 35 RESTAURANT
 - 36 OBSERVATION BRIDGES
 - 37 ADMINISTRATION, AUDITORIUM & MAIN ENTRANCE BUILDING
 - 38 CONCESSION BUILDING



The newest large zoological park in North America is being developed in Montreal. This area is designed to display animals according to their native continents. A special feature is the stream running through the area and crossed by three raised observation bridges.

Carefully planned play and picnic grounds surround the central area and afford valuable scenic protection. Adequate facilities are provided for both private and public transportation.



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

Provision for play is important for animals and adds to the enjoyment of the visitors.

Visitors

The purpose of the zoological park is to provide visitors with enjoyable experiences. Several factors contribute to this enjoyment:

Circulation. Upon arrival, visitors require parking lots, unloading areas, and safe pedestrian walks. Entrances and exits must be designed to handle this visitor traffic without congestion. Ramps should be used in place of steps wherever possible.

It should be possible to see all the exhibits in a zoological park and return to the starting point with a minimum of unnecessary walking. Forced routing of visitors is undesirable, for many visitors do not care

to see all the exhibits. Numerous cutoffs should be planned to accommodate such persons. Formal geometric patterns are generally to be avoided because of their monotony. So called "spaghetti" circulation plans are confusing and difficult to police.

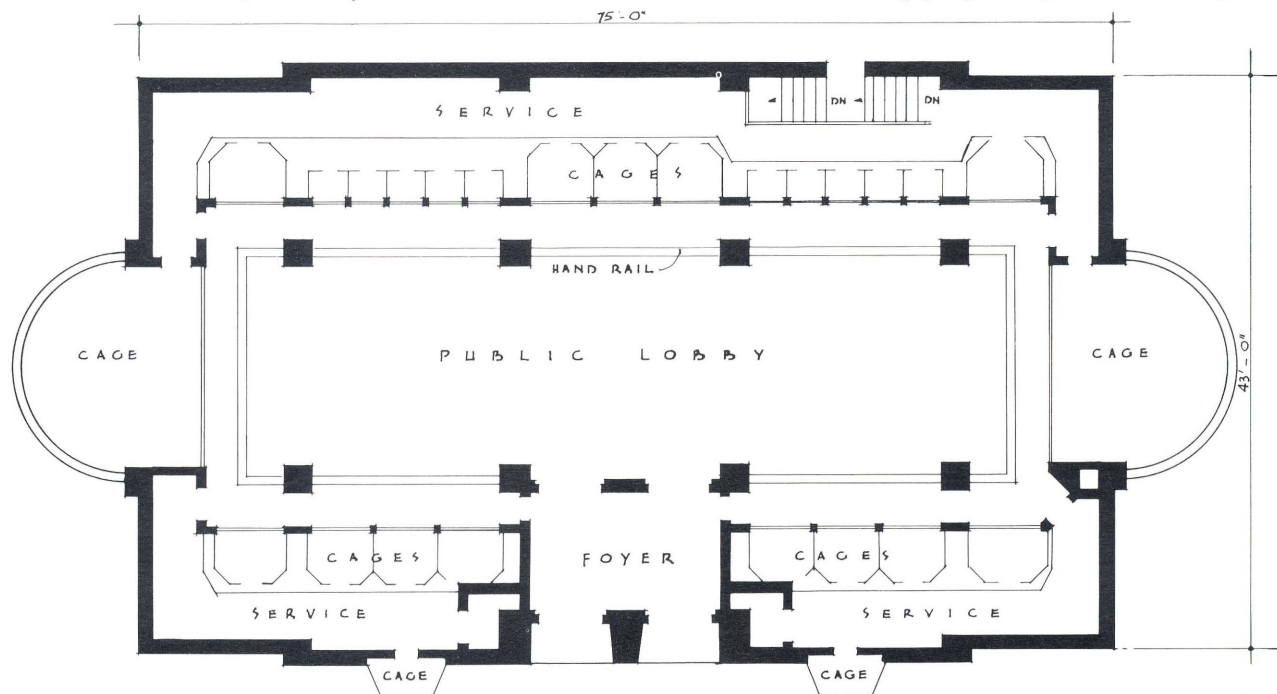
Strive for an informal sequence of spaces, related to natural features of the exhibits, which lead easily from one exhibit to the next. Variations in size and type of exhibit are interesting and minimize visitor fatigue. A close relationship between the exhibits and existing natural features will further their effectiveness.

In many large zoological parks, tractor trains, push chairs and boat tours are an attractive addition.

Control and Safety. Even when no entrance fee is charged, it is desirable to have a fence completely around the area. This will keep the visitors on the walkways, provide an attendance check, minimize vandalism, and in emergencies prevent animals from escaping. Exhibit barriers not only protect people from the animals but they keep visitors from annoying the animals. Barriers should be as indestructible and unclimbable as possible.

Directional and warning signs should be clear and concise. Staff members should be prepared and ready to give directional information to visitors.

A public address system can be used for general announcements, emptying the park at closing time



Potter Park Zoo, Lansing, Michigan. Small display cages in the aviary are arranged around a central public space and serviced from alleys behind. A large display cage with depressed floor and high ceiling is located at each end of the

building. Beside each entrance door are glass fronted cages where colorful birds are displayed to attract visitors. All supplies needed for maintenance of the exhibits are kept in the building. An interior view of this building is shown on page 23.

and for emergencies. A coded staff warning system will make communications possible without exciting the public during an emergency.

All enclosures must be securely locked when staff members are not present. A master system is desirable.

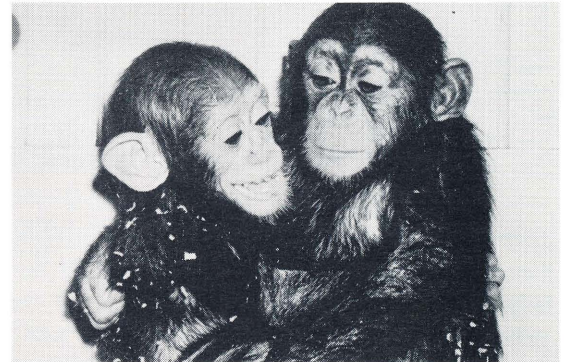
Comfort. The park visitors' comfort and enjoyment is increased by the following facilities and services.

- benches
- restrooms
- drinking fountains
- lost and found center (articles and children)
- parcel checking
- first aid room
- snack stands
- picnic facilities
- restaurants
- public telephones
- information services

Displays. Animal exhibits should afford the greatest enjoyment and benefit to the visitor. A few display principles may be noted:

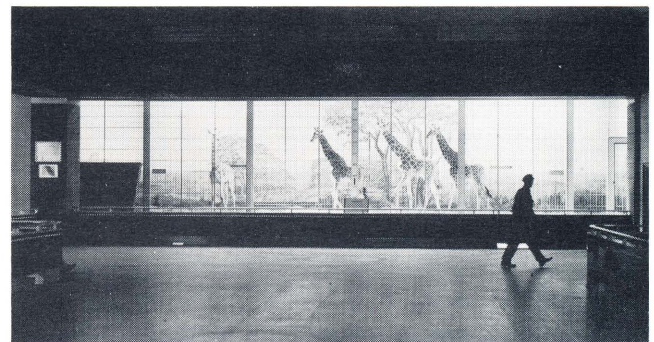
- Viewing distance from an animal should vary with its character and degree of activity. The eye level position of both children and adults should be considered. It may be appropriate to use special platforms for children so that their view is not blocked. Sloping ramps, or stepped walks, rising one behind the other and separated by safety railings, are effective for large numbers of visitors.
- Backgrounds, plantings and display accessories should be appropriate and beautiful. The advice of sculptors and other artists is often helpful.
- Light should fall on the exhibit, not on the spectators, and never in their eyes. Avoid reflections by having sloping glass, dark floors, low overhangs, dark walls, or plantings behind the viewers.
- Mesh and bars should be dark colored with dull finishes. Exhibit backgrounds are generally best if they are complementary to the animal's coloration and lighter in tone than the foreground bars or mesh.
- Objectionable odors should be controlled by ventilation in indoor exhibits.
- Maximum audience participation is desirable whenever possible. Feeding of

specially prepared food and facilities for photographers and artists are recommended. Where feeding of animals cannot be permitted safely, the exhibits should be carefully protected from the public.



Courtesy: Cleveland Zoological Park

Visitors expect, and should be able to see those animals which have a special appeal. "Gee, mom, stop ticklin'!" is a credit to any guide book.



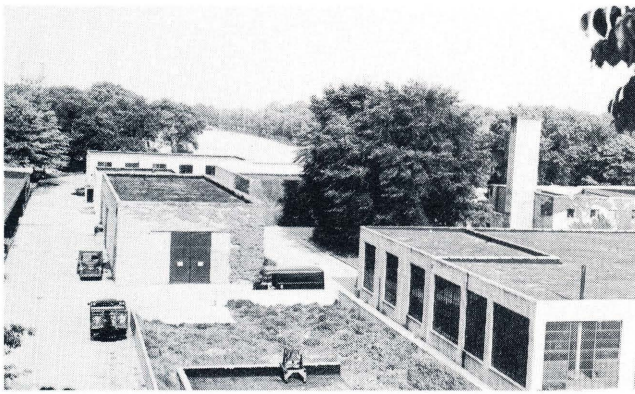
Courtesy: Smithsonian Institution, National Zoological Park, Washington, D.C.

The size of exhibits and the viewing distance from animals should vary with their size, character and degree of activity.



Courtesy: John Ball Zoological Gardens, Grand Rapids, Michigan

A place for rest and relaxation will enhance the enjoyment of visitors while they enjoy the exhibits in a carefully landscaped setting.



Courtesy: Detroit Zoological Park

A key to efficient operation is an adequate, well planned service area. Buildings in this large service area are: Long open storage shed for equipment; railroad equipment storage and lumber storage building; commissary for food storage and preparation; greenhouse; machine, paint and carpenter shop; hospital; and a public service store-room attached to the administration building.

Staff Facilities

Administration. Design for efficient staff operation is most important. Office space requirements for the director, curators, their assistants, and clerical, accounting and secretarial staffs will depend on the size of the park operation. A technical library and a small meeting room with motion picture facilities are useful for the general staff and for the educational program. A members' lounge is desirable if there is a zoological society. Since good public relations are vital to a zoological park, it is important to make generous provisions for press, radio and television representatives.

Accommodations for the comfort and well-being of employees are an important part of every modern park. Toilet facilities, locker and shower rooms and a pleasant place to eat lunches should be considered in planning service area facilities.

Health and Research Facilities. The necessary hospital, isolation and laboratory facilities are highly specialized. Their design requires close cooperation between architect and veterinarian. These facilities can range from the minimum necessary for routine care of the animals to important centers for research in the biological sciences.

Receiving and Storage. All food and supplies should be checked through one receiving and shipping room to insure proper control. In a large operation, a railroad siding may be desirable. Besides ordinary storage space, there must be suitable provision for storing frozen food, fresh vegetables, meat, grain, other animal foods, supplies and bedding.

Building and Grounds Maintenance. The service area for the park should be centrally located with an access road leading directly to the outside. A service road through the park which is separate from pedestrian traffic is desirable. In any case pedestrian walks should be designed to be used efficiently for grounds maintenance.

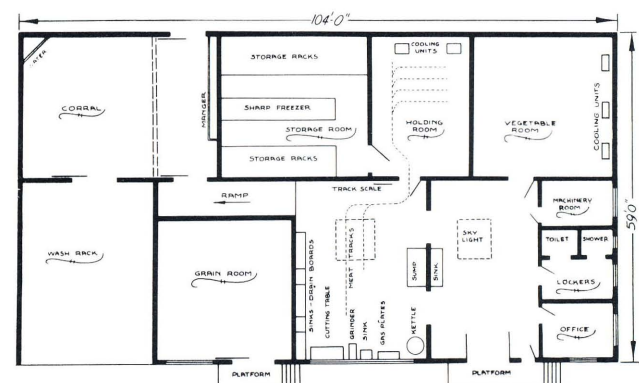
Adequate garage and storage space for trucks, cars, cages, equipment and tools is essential. In some cases, a greenhouse, cold frames, and starting beds are useful to maintain both indoor and outdoor plantings for the exhibits.

Maintenance shops with facilities for painting, sign making, plumbing, electrical work, carpentry, and machine repair should have a well-trained staff for handling minor repairs. Except in extremely large organizations, major construction and repairs are usually contracted to others.

Buildings deteriorate rapidly, becoming unsafe for both man and animals as well as unattractive to the visiting public. It is imperative that park personnel be ever alert to the appearance and maintenance of the physical plant. Buildings, paths, roads, fences, benches, animal enclosures, lawns, trees and planted areas contribute to the total appeal of the park and should be kept in good condition at all times.

Needed repairs should be promptly reported in writing, in order that they may be taken care of by appropriate departments. It is considered good practice for employees on duty to report emergency repair needs immediately and make temporary corrections to insure continuing satisfactory use.

Scrupulous standards of sanitation must be maintained throughout a zoological park for the sake of animal health as well as for the effect on the public. While naturalistic settings and the use of natural



Courtesy: Zoological Society of San Diego

Floor plan for the commissary at San Diego Zoological Gardens, Balboa Park. Ceiling tracks facilitate movement of heavy meat cuts.

materials are highly desirable, most of the construction should make use of easily cleaned, impervious materials such as concrete, tile, stone, terrazzo, brick and glass.

Metals should be used with caution where they will be exposed to water or corrosive substances. Ferrous metals must be galvanized or regularly re-

painted. Various bronze, stainless steel or aluminum alloys, because of their low maintenance requirements, may be much more efficient in exhibit construction.

Collection and storage of manure for fertilizing the park grounds, disposal of dead animals and litter, must be accomplished in an inconspicuous, sanitary and inoffensive way.

Animal Acquisition and Maintenance

Acquisition

Animals are acquired by:

- birth
- gift
- purchase
- expeditions
- exchange with other zoological parks
- arrangements with state conservation departments.

Some animals are protected by law and may be collected only by special permission. Others are subject to state or federal quarantines. Care must be taken to secure proper permits and make quarantine arrangements.

Recreation and Parks Department GRIFFITH PARK ZOO	
SPECIMEN RECORD	
Common Name <u>Elephant "Indian" (Siam)</u>	Latin Name <u>Elephas indicus</u>
Distribution <u>Siam. Siam Government Farms</u>	
Food <u>Banana Sprouts, Oat Hay, Carrots, Apples, Stale Bread</u>	
Acquired by <u>Purchase from Louis Goebel</u> Date Acquired <u>May 23, 1948</u> - \$ <u>4,000.00</u>	
No. <u> </u> Sex <u>Female</u> Disposition <u>Mild, Good</u> Demise <u> </u>	
Note: <u>Hair boils were found on the back side of ears. Also a few lice were found upon arrival.</u>	
Named <u>"Bojo"</u> by Andy Chapkiss in contest June 7, 1948	

Courtesy: Griffith Park Zoo, Los Angeles, California

Basic information about each animal is kept on this specimen record card. Additional notes concerning the animal's care are kept on the back of the card.

KEEPER'S DAILY REPORT		
To be filled out and handed to Headkeeper before close of each day.		
DATE <u>4/12/55</u>	WING <u>MAMMAL</u>	
<u>FROM</u>	<u>ACCESSIONS</u>	<u>DESCRIPTION</u>
<u>GUS SIEVERS</u>	<u>COTTONTOP MARMOSSET</u>	
<u>240 ST. MARKS PL.</u>	<u>FEMALE - ADULT</u>	
<u>STATEN ISLAND I</u>	<u>GIFT</u>	
<u>DEATHS</u>		
<u>RHESUS "MINNIE"</u>		
The specimens in my charge are normal—Except		
<u>BLACK LEOPARD "BLACKIE" - LEFT HIND FOOT</u>		
The following building or equipment matters need attention—		
<u>LATCH ON DOOR BROKEN - LEFT VISITOR RAILING - BROKEN</u>		
<u>Gordon</u> Director	<u>O'Connor</u> Curator or Veterinarian	<u>Barber</u> Headkeeper
		<u>J. Munroe</u> Keeper

Courtesy: Staten Island Zoo, New York

These reports are made in pencil. Cause of death and ailments are recorded on a veterinarian's report in triplicate for director, veterinarian and office file.

New animals should be examined promptly by the veterinarian for general health, soundness, and freedom from contagious diseases. It is desirable to quarantine all new animals and adjust them to the diet which they will receive in their new home before they are put on display.

Each new animal should be accurately identified by the curator or director. A label should be prepared to include common, scientific and pet name, habitat and other appropriate information.

New animals should be housed in attractive and properly designed exhibition quarters. The privilege of exhibiting captive wild animals carries with it an obligation to provide every specimen with:

- Proper living quarters
- Proper temperature and humidity
- Adequate and proper food
- Veterinary services

It is vital to the program that all captive animals be quartered and handled in a humane manner. Employees must never handle animals carelessly.

Reports

Daily reports on animal exhibit conditions should

be submitted by individual keepers to their superiors for referral to the curator or director. These reports serve two important functions:

- The supervisors and director have reliable records of management.
- The keepers must make periodic checks of all important matters under their care.

Reports should include all important information relating to animal care:

- building temperatures
- illnesses
- veterinarian treatments
- acquisitions
- transfer of animals to other divisions
- births
- deaths
- equipment
- food receipts
- needed repairs

Animal inventory cards are useful.

An inventory card may be prepared for each animal upon its arrival. This card should include date, sex, age, source, cost, common and scientific name, nickname and other information. Upon loss or disposition of an animal, the card is placed in an inactive file.

The card system provides a continuous inventory and serves as an important record of longevity and number of species or specimens exhibited. Cards may be filed alphabetically or by class (mammals, birds, reptiles), order or family.

Duplicates of these cards should be supplied to keepers for the animals under their care. On them, they can make notations concerning breeding dates, eating habits, and behavior.

Health treatments should be recorded on cards of the same size as the inventory card and attached to them. An actual "nose count" census should be taken at least once a year.

Commissary reports should be made on food delivery receipts issued with each food delivery and signed for by each keeper.

Animal Maintenance

A zoological collection may consist of a variety of animals (birds, mammals, reptiles, fishes, amphibians, insects) from all parts of the world. There is great diversity in their sizes, habits and requirements for food, temperature and habitat. *Animal maintenance is a 24-hour-a-day job for trained personnel.* Properly trained and experienced personnel must be ever aware of individual animal needs and the importance of maintaining attractive exhibits of healthy animals.

Health and Research

Large zoological parks have one or more full time veterinarians on their staffs. Recently an increasing number of veterinarians have been employed by zoological parks. Smaller parks may engage local practitioners on an individual call or retainer basis.

The veterinarian should make regular visits for routine inspection of food and feeding practices, animals and sanitary procedures. It is not enough that the veterinarian be called only in cases of emergency or acute illness.

Because no veterinarian can be equally well versed in zoology and veterinary medicine, close cooperation and consultation with the curator and director in matters of natural history is essential to the success of the veterinarian's endeavors.



Courtesy: Detroit Zoological Park

Specialized equipment is important for proper care of animals. This squeeze cage permits perfect control of large animals.

In addition to clinical treatments and surgery the veterinarian can supervise:

- Preventive medicine (vaccinations, sanitation, disinfection, etc.)
- Nutrition and food quality
- Vermin control
- Breeding programs
- Health examination of animals for purchase or sale
- Research

All treatments should be recorded and become part of each animal's life history in the zoological park.

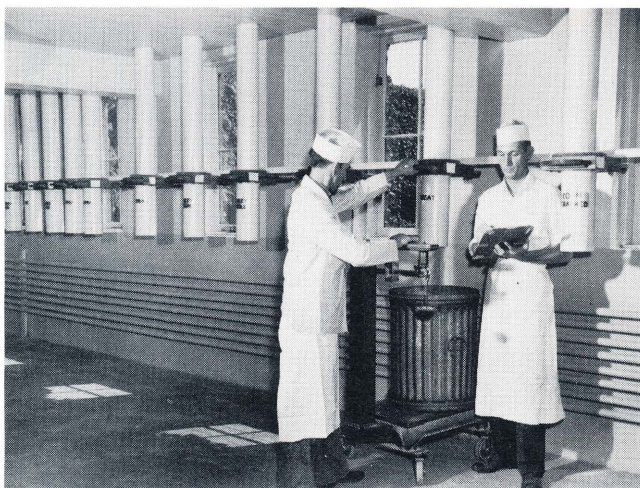
All animals which die in the zoological park should be autopsied. This provides useful knowledge about the causes of illness and death of captive wild animals and enables the veterinarian to take necessary precautions against contagious or infectious disease.

Veterinary service should include adequate facilities for conducting treatments and laboratory procedures. Consultation with other veterinarians, specialists and physicians should be encouraged.

All drugs, medicines, and veterinary equipment should be carefully protected at all times. Keepers should not be permitted to prescribe or administer treatments to animals other than under veterinary supervision.

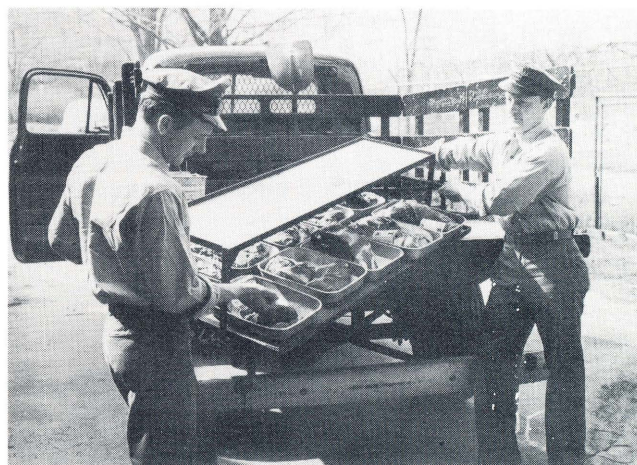
Commissary

The commissary and all food equipment should be kept scrupulously clean at all times.



Courtesy: Detroit Zoological Park

The orderly control of food and supplies increases efficiency, minimizes mistakes and contributes to a higher employee morale.



Courtesy: Detroit Zoological Park

All animal foods should be carefully prepared and distributed. Here, rations for individual animals are ready for delivery.

Food should be of good quality. It may be economically purchased from successful bidders by contracts according to carefully made specifications. Perishable items should be purchased for small and frequent deliveries. Staple items may be purchased in large quantities at appreciable savings if proper storage facilities are available. It is questionable whether the average size zoological park should attempt to maintain cold storage equipment for storing large quantities of food.

All food received and dispersed from the animal commissary should be checked for quantity and quality. It is poor practice to demand that keepers maintain their charges in a clean and sanitary manner and then provide inferior food for the animals. Good quality food is more economical than inferior or second grade produce because inferior food involves labor for culling and often waste through spoilage. Inferior food may cause the death of valuable animals. However, judicious purchase of such items as ungraded eggs or under-sized potatoes can be advantageous.

Food storage will usually be centered in a commissary. Zoological parks vary in their practices as to centralized or decentralized preparation of food for animals. If all the work is done in a central commissary, it gives the veterinarian close control over the diet of each animal and doubtless results in less waste of food.

On the other hand, this practice requires personnel to do work that the keepers might do and which would give them a closer association with the animals under their care. In either case, there should be an absolute minimum (no more than a day's supply) of food stored or refrigerated away from the central commissary.

Night Attendant

At least one attendant should be on duty during the hours that the park is closed, and after regular working hours. This attendant must recognize irregularities in the animal collections and take proper action in case of emergency. He must be experienced with operation and maintenance of heating, plumbing and electrical equipment. In addition, the night attendant must serve as a patrolman or guard. The number of such attendants is determined by the size of the park. In some cases it may be advantageous to have these employees in residence on the park property.

Courtesy: Smithsonian Institution, National Zoological Park, Washington, D.C.

The first refrigerated bird cage in America. The need for constant control of temperature suggests the importance of having skilled attendants on duty at all times.



Public Service and Police

The operation of services which directly affect the public and thereby influence attendance and revenue is one of the most important phases of zoological park management. The sale of food, beverages, souvenirs, literature, rides, etc. may be carried on by the zoological park management or contracted to concessionaires. In the latter case, sanitary practices, types of merchandise, service, equipment, uniforms and personnel must be closely controlled by the park management.

Park attendants should be chosen with care and impressed with the fact that they make the first contact with visitors. Therefore, they should be neat, in uniform, courteous and fully familiar with the park, its rules and its program.

Police protection may be provided by municipal police personnel, by special park police or by specially deputized zoological park personnel. Employees should be aware of their responsibility to act at all



Courtesy: Swope Park Zoological Gardens, Kansas City, Missouri

The park management must exercise close control over those services which affect the park visitor directly, and thereby influence his attitude toward the park.



Courtesy: Zoological Society of San Diego

Courteous, neat personnel make a lasting favorable impression on visitors. Here many young animals roam in freedom. A former resident 'N'gagi' looks on with brazen frown.

times as guards of their area but to depend upon uniformed police officers to handle serious offenses.

The director should be notified immediately of all serious accidents, arrests or other important incidents. These incidents should be promptly recorded in written reports. Park personnel should be prepared and competent to assist police and emergency crews in handling serious disturbances, crowds, etc.

Cooperation between park and law enforcement

agencies should be encouraged. Preparation for special events which require additional police protection should be worked out well in advance with the appropriate police agencies.

Proper first-aid facilities are of vital importance and not without serious implications from the standpoint of liability. Employees must be cautioned not to act as self-appointed doctors. Serious accidents should be handled only by police or trained personnel.

Public Relations and Interpretive Programs

Public Relations



Courtesy: New York Zoological Society

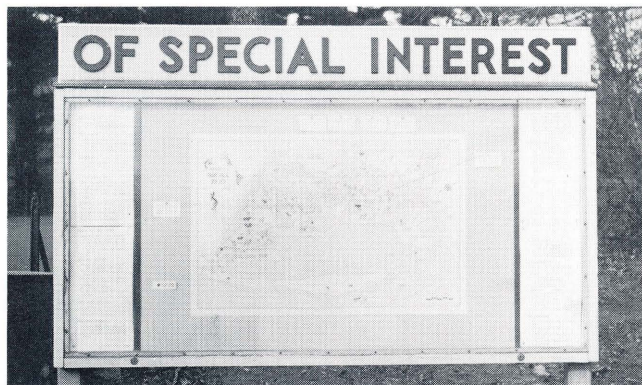
Spider Monkey

Public relations may be defined as the cultivation of favorable public attitudes toward your organization, its programs and its purposes. An effective public relations program is essential to the suc-

cessful operation of a zoological park. The public should be made to feel that it plays an important part in the success of its zoological park.

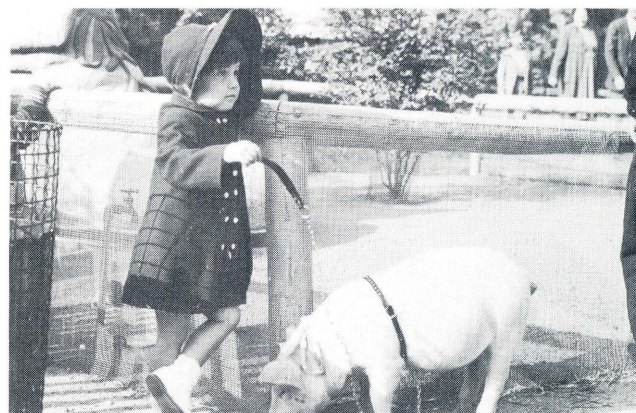
A good public relations program possesses certain characteristics. It should be:

- Based on well defined objectives and achievements.



Courtesy: New York Zoological Society

On this bulletin board one can find information about special attractions, restaurants, feeding hours, exhibits, comfort stations, use of cameras and lost children.



Courtesy: Detroit Zoological Park

Animals visit with children on the walks of Belle Isle Children's Zoo.

- Continuous, subtly repetitious, periodically evaluated, and flexible.
- Planned to utilize material which inspires confidence, develops respect, and secures approval of the public.
- Designed to utilize all effective means of communication: word of mouth, newspapers, radio and television.
- Developed in such a way that every member of the park organization is aware of its value.

Public Relations and News

Skillful use of information which has news value is an important part of any public relations program.

The citizens of a community are made aware of the program through radio, television, newspapers and other publications. Radio and television station managers and publication editors are experts in their fields. They are well qualified to help with public re-



Guide books, folders and maps have both souvenir and educational value. Monthly publications, annual reports and scientific or popular bulletins may be part of a complete interpretive program.

lations problems. Their friendship and confidence are most important.

Information about the zoological park should reach many people in various citizen-interest groups:

taxpayers	teachers	zoo employees
children	social agencies	labor unions
zoo visitors	civic clubs	women's clubs

Consider the attitudes of these groups when releasing information.

Information is news when:

- It is timely, new, unreported, novel, unexpected, humorous, romantic, mysterious, or full of suspense.
- It concerns large numbers of people.
- It concerns conflict and competition which is not distasteful to the public.
- It deals with future plans, exhibits, and animal acquisitions.

News releases should be carefully planned:

- The local situation will indicate the best time for news releases. Generally speaking, all major news offices should receive news at the same time.
- News agencies should be encouraged to visit the zoological park in order to prepare appropriate releases.
- Information should be released at frequent and regular intervals.
- Information should be clear, brief, factual, and well organized for easy use by the publicizing agencies. A central office should make all releases to insure quality control.

- Close cooperation with news editors enables the park to release information about unfavorable incidents in a manner which is least damaging to the organization.
- Regularly scheduled newspaper columns and broadcasts are important devices for building good will.
- A file of photos and information ready for quick use is invaluable. Be careful to give proper credit for all material. Credit is easy to give and builds priceless goodwill.
- Outdoor advertising may sometimes be used to advantage. Billboards, and posters on taxicabs and buses convey messages to many people. A bus poster may say: "Do you have two hours? It only takes three minutes to go to the zoo!"

Public Relations and Park Operation

The physical character of the zoological park and the nature of the contacts between personnel and the visiting public are important factors in the public relations program.

Good construction and proper maintenance of buildings, enclosures, and grounds are necessary to create a good impression on visitors. Damage to park property should be corrected immediately for uncorrected damage makes a bad impression and invites vandalism.

Concessions, whether operated through contracts or directly by the park organization, should be oper-



Courtesy: National Park Service—Photo: Abbie Rowe

Interpretive programs add to visitor enjoyment and understanding of the park. Good programs lead to repeated visits and more intelligent use of park facilities.

ated efficiently and courteously as an integral part of the zoological park program.

All employees of the park should be given training to help them leave a favorable impression with the public. Insist upon courtesy at all times.

- Employees should be neat and orderly. The public should be able to recognize them readily by their uniforms, insignia, or distinctive headgear.
- They should be well acquainted with the zoological park so they can answer questions intelligently. They must know when a question should be referred to others for an answer.
- Employees should always handle animals carefully.
- Telephone etiquette is important. Many telephone companies have informative booklets with helpful suggestions.
- Selected employees should be trained to give talks to the many outside groups which will ask for this important service.

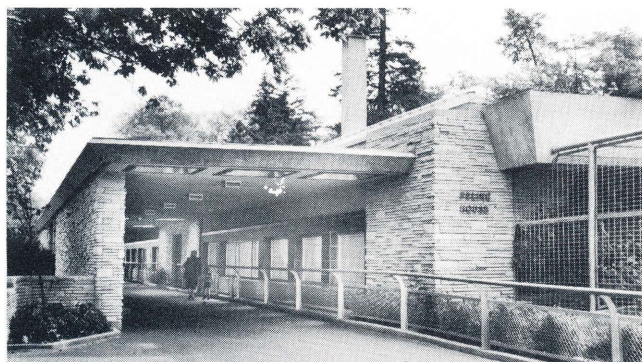
Interpretive Programs

For Park Visitors

A primary function of the zoological park is to provide visitors with an enjoyable and relaxing leisure time activity. Education is a secondary consideration but a most important one, for increased knowledge and understanding leads to greater appreciation and enjoyment.

A zoological park is most fortunate, because few things generate as much curiosity as do animals.

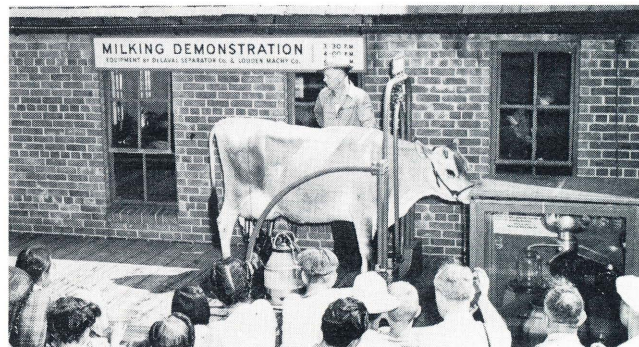
- Curiosity leads to questions.
- An interpretive program answers these questions and provides an important community educational service.



Courtesy: Woodland Park Zoological Gardens, Seattle

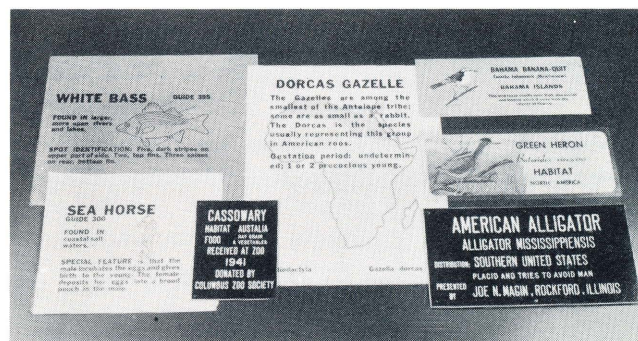
Attractive architecture and construction in a skillfully landscaped setting are sources of community pride and good public relations.

A Zoological Park



Courtesy: New York Zoological Society

Animals need not always be wild to hold the interest of urban residents. This milking demonstration is in the 'Farm-in-the-Zoo.'



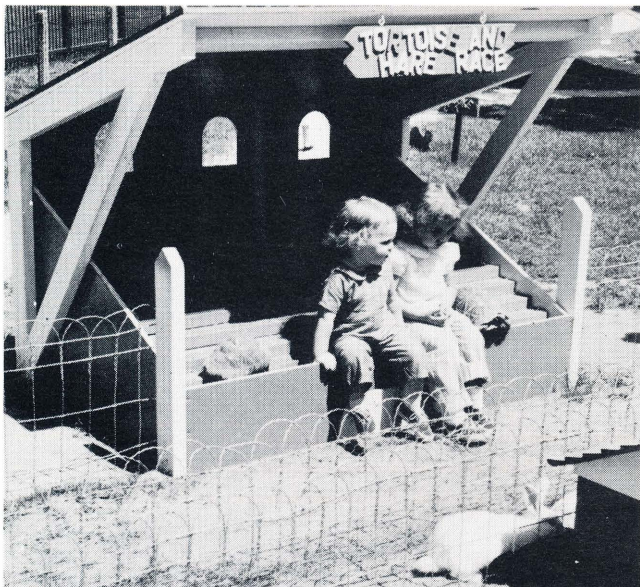
Signs and labels should be attractive and easily read and understood. Colored panels may be used to indicate different types of exhibits or geographic location of native habitats. Maps and illustrations are often more effective than any words could be.

Materials used on these labels are: thin paper to be illuminated from behind, beverage board, lightweight cardboard, paper laminated between plastic sheets and laminated plastic with routed letters. Increasing use is being made of white and transparent plastics for text panels and for protective coverings.



Courtesy: Staten Island Zoo, New York—Photo: Jack Muntzner

Doctor Patricia O'Connor, veterinarian, demonstrates skeletonizing to a group of fascinated students in the laboratory of this zoo.



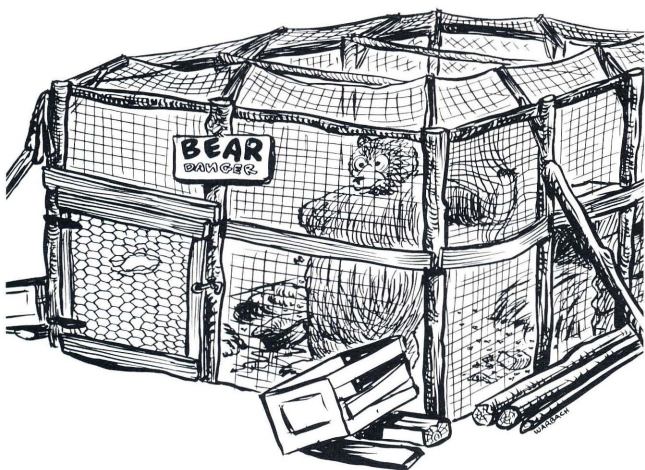
Courtesy: Park Department, Davenport, Iowa

The story book comes to the zoo to provide an important educational function in this community.

Each part of an interpretive program should educate the visitor and increase his enjoyment of the park.

Proper labeling of exhibits is most important. Labels may take many forms but they should be durable, attractive, easily read and understood. Some suggestions are:

- Be accurate, specific and brief.
- Use illustrations and range maps.
- Use scientific names with discretion.



Courtesy: Oscar Warbach, Michigan Department of Conservation

Exhibits, improperly designed, poorly constructed and carelessly maintained, can destroy public interest and reflect adversely on all governmental services.

- Relate animals to art, fiction, economics, and their use in primitive cultures.

A headline above an exhibit meets the need for the hurried visitor. A detailed label below it will serve the more interested people and the serious student. Many people really want to learn about animals. Make maximum use of educational charts, poster type graphic presentations and the latest museum display techniques. Such educational material should be supplemented by a well staffed question-answering service, by popular leaflets, periodicals and by technical publications.

A good interpretive program will result in repeated friendly visits. A dynamic program of changing exhibits and displays assures continued visitor interest. Special exhibits make news and maintain interest. Some of these are:

- "Tree-of-Life" displays
- Invertebrate collections
- Self-guiding nature trails
- Nature cabins with question boards and seasonal exhibits.
- "Special Day" exhibits for Christmas, Easter, Ground Hog Day, Thanksgiving, etc.
- Display of new acquisitions.
- Conservation and life history displays.
- "Animal of the Month" exhibits
- "Community Zoo Week"

Some zoological parks feature sea lions, chimpanzees, lions, or elephants in trained animal shows.



Courtesy: Detroit Zoological Park

A well designed exhibit is good for the animal, for the public employee who must care for both animal and visitor, and the visitor whose good will is vital.

Other devices for adding to visitor appreciation are:

- Guide books, interpretive folders and research publications
- Post cards and souvenirs
- Guided tours
- Information desks
- Automatic slide projectors, movies and endless tape recorders.

Under skillful control, a well modulated and subdued public address system may be used to advantage for recordings and scheduled talks. Such a system is also valuable in announcing closing times, feeding schedules and special events. It should be kept in mind, however, that one of the most disagreeable experiences in a public park is to be subjected to a blaring or constantly chattering public address system.

For Community Organizations

The zoological park has a responsibility to the organizations in its community. Cooperation with these organizations results in increased interest in nature, wildlife conservation and related fields. The park program may assist schools and other educational in-

stitutions, museums, youth service agencies, natural science interest groups, recreation departments and others through such devices as:

- Traveling exhibits.
- Slide talks and movies.
- Radio and television programs.
- Making animals available for study and art.
- Providing autopsy material for educational institutions.
- Cooperative research and planning.

It is especially important to work closely with group leaders who will in turn multiply the effectiveness of the public relations program by working in turn with their own organizations.

Park Sponsored Groups

The zoological park may choose to sponsor special groups in order to improve its public services. "Zoo ranger" clubs, junior memberships, and Scout troops may become part of the program. There are opportunities for many special interest clubs to pursue animal-oriented activities connected with modeling, painting, photography and animal study.



Courtesy: New York Zoological Society

Here is a sight to long remember! Wild animals in an exhibit wrought with skill and understanding.



Courtesy: Toledo Zoological Gardens, Ohio—Photo: Mel Block

The fascination which wild animals hold for man knows no barrier of age or class.

Editor's Note

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